King's Cross Central

Environmental Statement

May 2004

Prepared for Argent St George, London and Continental Railways and Exel by:
RPS
in association with Arup, Air Quality Consultants Ltd, International Heritage Conservation
and Management and The English Cogger Partnership.

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King's Cross Central

Environmental Statement

Volume I: Main Report Parts 1 to 8

Prepared for Argent St George, London and Continental Railways and Exel by RPS

May 2004
This Environmental Statement incorporates the Development Specification documents for the Main Site and Triangle Site that together provide a full description of the proposed King’s Cross Central development. These Development Specification documents are submitted as part of the planning applications, as set out in the covering letter to the applications. To avoid duplication they are not reproduced within this Environmental Statement. Summaries are provided in Part 3.

**Volume I: Main Report**

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King’s Cross Central

Environmental Statement

Volume I: Part I Introduction

May 2004
1.1 Introduction to the Environmental Statement

1.1.1 Argent St George, London and Continental Railways and Exel plc (the Applicants) propose the comprehensive redevelopment of King’s Cross Central, being former railway lands within the King’s Cross Opportunity Area. Planning applications have been submitted for development of two areas which together comprise the overall King’s Cross Central site. These are:

- The Main Site that is within the administrative boundary of the London Borough of Camden, to the west of the Channel Tunnel Rail Link (CTRL) realignment of York Way; and
- The land to the north-east of the Main Site and to the east of the realigned York Way, referred to as the Triangle Site, within the administrative boundaries of the London Boroughs of Islington and Camden.

1.1.2 The location of the King’s Cross Central site is shown on Figure 1.1.1 and site boundaries for the two planning applications are shown in Figure 1.1.2.

1.1.3 For the Main Site, the Applicants propose:

“Comprehensive, phased, mixed use development of former railway lands within the King’s Cross Opportunity Area, as set out in this Development Specification. The development comprises business and employment uses within the B1 use class; residential uses, serviced apartments and hotels; shopping, food and drink and professional services within the A1, A2 and A3 use classes; the full range of community, health, education, cultural, assembly and leisure facilities, within the D1 and D2 use classes; multi storey and other car parking; re-erection of the linked triplet of gas holder guide frames to enclose new residential and other development, on the site of the Western Goods Shed; re-erection of the guide frame for gas holder no. 8, alongside the re-erected triplet, to enclose new play facilities and open space; relocation of an existing district gas governor; works of alteration to other existing buildings and structures, to facilitate their refurbishment for specified uses; new streets and other means of access and circulation; landscaping including open space; new bridge crossings and other works along the Regent’s Canal; the re-profiling of site levels; and other supporting infrastructure works and facilities.” (Paragraph 3.1 of the Main Site Development Specification)

1.1.4 For the Triangle Site, the Applicants propose:

“Mixed use development of part of the former railway lands within the Camden Kings Cross Opportunity Area and an Islington Area of Opportunity, as set out in this Development Specification. The development comprises residential; shopping, food and drink and professional services within the A1, A2 and A3 use classes; a health and fitness centre (use class D2) incorporating medi-centre facilities, a crèche and community facilities (use class D1); amenity and open space; habitat area; recycling and other ancillary uses; parking; highway works to provide access; and other supporting infrastructure works and facilities.” (Paragraph 3.1, Development Specification, Triangle Site)
1.1.5 The Applicants have also submitted a number of related applications for listed building and conservation area consent, to undertake demolition and other works that are necessary for the planning application proposals to proceed.

1.1.6 This Environmental Statement accompanies the planning applications for the proposals, in accordance with the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999 (SI 1999 No 293) (referred to herein as the EIA Regulations). It forms the report of an Environmental Impact Assessment (EIA) and addresses the whole King’s Cross Central area i.e. the Main Site and the Triangle Site.

1.1.7 The purpose of the EIA process is to provide:

“...a means of drawing together, in a systematic way, an assessment of the project’s likely significant environmental effects. This helps to ensure that the importance of the predicted effects, and the scope for reducing them, are properly understood by the public and the relevant competent authority before it makes its decision.” (The Department of the Environment, Transport and the Regions (DETR) Circular 02/99 Environmental Impact Assessment - paragraph 9)

1.1.8 Although this Environmental Statement reports on the effects of the two sites together, it also considers the scenario whereby the Main Site goes forward without the Triangle Site for whatever reason. This is addressed further in section 1.3.52.

1.1.9 Generally, references throughout this Environmental Statement to “the site” mean the King’s Cross Central site comprising the Main Site and the Triangle Site together.

1.1.10 This Environmental Statement incorporates the Development Specification documents for the Main Site and Triangle Site that together provide a full description of the proposed King’s Cross Central development. These Development Specification documents are submitted as part of the planning applications, as set out in the covering letter to the applications. To avoid duplication they are not reproduced within this Environmental Statement. Summaries are provided in Part 3.

1.1.11 It should also be noted that, in addition to the Main Site and the Triangle Site, there is a separate area to the north of the Main Site, known as the Linear Land, for which the Applicants plan to bring forward a planning application shortly. The Linear Land lies between the new CTRL embankment and the North London Line. It is within the Applicant’s control and forms part of the Camden King’s Cross Opportunity Area. This site is likely to be used for different uses to those of the Main Site and the Triangle Site. The Planning and Development Brief by the London Boroughs of Camden and Islington states:

“Opportunities remain for additional commercial or industrial development, and the area is suitable for supporting infrastructure and services such as a waste disposal, compaction and recycling facility.” (paragraph 3.3.49)

1.1.12 However, the Linear Land is not part of the planning applications for the Main Site or the Triangle Site and is not assessed as part of this EIA. Nor is its use for any particular infrastructure or other development use relied upon.
1.1.13 Information has been made available in order to undertake a robust EIA and where there are any gaps in knowledge or any uncertainty these matters are identified within the text. As is common with major development proposals, further studies would be undertaken and further reports prepared at later stages of the design and development process (should the proposals achieve planning permission), in relation to some specific issues, but this does not preclude in any way the preparation of a full EIA and an assessment of all relevant effects at this outline stage. The topic of Cultural Heritage and Townscape, for example, has been fully assessed recognising that the detailed design of buildings would come forward later. This has been possible because there is sufficient information available about the nature of the proposed development (for example its scale, height, massing and alignment) and there is a regulatory (planning) process to deliver acceptable (high quality) details as phases come forward for approval, at the reserved matters stage.

Format of the Environmental Statement

1.1.14 The Environmental Statement is divided into 4 volumes. Volume 1 comprises the main Environmental Statement and Volumes 2 to 4 the detailed Specialist Reports for each of the topics addressed. There is also a stand alone Non-technical Summary.

1.1.15 The volumes are divided into Parts. This Part continues by describing the planning policy context, the approach taken for this EIA and consultation undertaken.

1.1.16 Part 2 describes the site and its surroundings as it is currently, in 2003/4; when development work would commence in 2006/7; and also how the site would be expected to evolve if the proposals did not go ahead.

1.1.17 Part 3 describes the proposals, including the way in which they have evolved.

1.1.18 The proposals are then assessed for two stages of the project, first construction and second operation of the development. The effects predicted to occur during construction are reported in Part 4, and those during operation in Part 5.

1.1.19 Part 6 contains a glossary of terms and list of abbreviations, Part 7 contains the references and Part 8 the appendices.

1.1.20 Volumes 9 to 19 contain the detailed specialist reports for all the topics assessed, with the exception of Transport. Most specialist report address effects at both the construction and operational stages. Transport is addressed in the Environmental Statement in Part 5.3. For those specialist readers who may wish to explore transport issues in more detail, there is a separate Transport Assessment that accompanies the planning applications.

1.1.21 The non-technical summary provides information about the proposals’ likely significant environmental effects and is written to enable understanding by the non-specialist reader.

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1 Much of the EIA work including preparation of a Scoping Report was undertaken in 2003.
**The EIA Team**

1.1.22 This Environmental Statement has been prepared by the following consultants:

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1.2 Planning Policy Context

Planning Policy Framework

1.2.1 Planning policy objectives for King's Cross Central seek to strike a balance between the aim of maximising development opportunities given its brownfield characteristics, central London location and high level of public transport accessibility and of conserving and enhancing its heritage and other environmental resources. Specific planning objectives and policies for the site are set out in London-wide guidance (the adopted London Plan, February 2004), and in the Unitary Development Plans for Camden and Islington.

1.2.2 UDP policy covering the Main Site is set out in adopted chapter 13 of the Camden UDP (April 2003), which supercedes the King's Cross chapter of the adopted Camden UDP (March 2000). This chapter was adopted by the Council following a full review process including detailed consideration at a Local Plan Inquiry in April 2002. Accordingly, it contains current and up-to-date policies. This King's Cross chapter is carried forward unchanged into the deposit draft Camden UDP review (June 2003). UDP policy relevant to the Islington part of the Triangle Site is to be found throughout the adopted Islington UDP (June 2002).

1.2.3 Supplementary planning guidance for King's Cross Central has recently been produced by both Councils (King's Cross Opportunity Area - Planning and Development Brief). This was adopted by Camden Council in December 2003 and by Islington Council in January 2004. This document, termed hereafter the Joint Brief, updates previous guidance – in Camden's case the Community Planning Brief, 1994, and in Islington's case the draft Planning Brief, September 1996.

1.2.4 This section outlines the broader planning policy context for the King's Cross Opportunity Area and then focuses on more specific topic-based objectives for development there. In both cases the various strands of London-wide and local policy together with appropriate references to national policy are drawn together under a series of generic headings. In terms of London-wide guidance, reference is made to both the adopted London Plan and the preceding strategic guidance for London planning authorities, RPG3 (1996), because the latter fed directly into current UDP policy and indeed is quoted within it.

King's Cross Opportunity Area

1.2.5 Land at King's Cross is identified as a major development opportunity at both strategic and local level. It is one of five Major Development Opportunity Sites in Strategic Guidance for London Planning Authorities, RPG3 (May 1996). Such sites are intended to bring forward development that can rebuild the local urban structure, define a new image for their areas, extend Central Area uses where appropriate and bring benefits to their local communities. At King's Cross proposals should be brought forward for a new urban quarter of London with a distinctive identity, enhancing features of historic and conservation importance (para 2.37).
1.2.6 These objectives are carried forward into the London Plan where King’s Cross is identified as one of six Opportunity Areas in Central London. It is recognised to have the best public transport accessibility in London which affords particular scope for high density business development as well as housing. This takes forward guidance in PPG13, March 2001, which encourages the maximum use of the most accessible sites to accommodate major generators of travel demand (paras 20-21).

1.2.7 The development framework should draw upon the historic features of the site to create a truly sustainable business and residential community, reliant on minimum use of cars (the London Plan, para 5.37). Indicative estimates for new jobs at 11,400 and new homes at 1,250 to be provided at King’s Cross are given in Table 5B.1. Where possible, the London Plan expects these estimates to be exceeded (para 5.31).

1.2.8 The King’s Cross Opportunity Area is defined further in the adopted Camden UDP chapter 13. The key objectives for the area are to achieve a development that is firmly integrated with the local area in terms of:

- physical connections;
- economic connections;
- social links;
- managing the impact;
- working with the community (para 13.3).

1.2.9 It is recognised that, as one of the largest brownfield sites in Central London, King’s Cross presents the opportunity to be a landmark, environmentally sustainable development that embraces its built and natural heritage (para 13.12).

1.2.10 The Triangle Site, along with adjoining areas east of York Way is within one of the Islington UDP’s four main Priority Areas for Regeneration (Policy E12). The focus for regeneration within this King’s Cross priority area are to transform it into a vibrant and distinctive new quarter for London, and to maximise the benefits for Islington arising from the development of King’s Cross Central, which is acknowledged to be mainly located in Camden (para 6.4). Approximately coincident with this designation is the King’s Cross Special Policy Area, which gives more detailed guidance to influence future development, namely the minimisation of adverse impacts of infrastructure projects; the effective use of regeneration monies, and the need for the local community to receive a fair share of benefits (Policy Imp18). Within these two wider policy areas, the Triangle Site itself is identified as an Area of Opportunity, a designation which indicates that the Council’s desire for investment in the plan period, but where the precise form and boundaries are uncertain (Policy Imp11). Islington’s use of this label is on a more local scale than its use by the GLA and Camden, as the Triangle Site is one of 28 such areas in Islington. The adjoining York Way garage forms another of Islington’s Areas of Opportunity.

1.2.11 Both UDPs seek mixed use development on their parts of King’s Cross Central. (Camden’s Policies SKC2 and KC1; Islington UDP para 13.6.12 in respect of the King’s Cross Special Policy Area; and the Joint Brief (sections 2.1-2.2). In particular the King’s Cross Opportunity Area is identified as one of the few sites in Camden suitable for activities that are major generators of travel demand such as offices and retail (Policy RE4 in Camden’s adopted UDP and Policy SD5 of the deposit draft UDP review). Indeed the
1.2 Planning Policy Context

The site is at the top of the search hierarchy in the sequential approach to determining the location of office and business uses (Policy EC4 in Camden’s adopted UDP and Policy E1 of the deposit draft UDP review) and similarly for food and drink (Policies SH3 and R1 respectively), leisure (Policies LC2 and C3 respectively), non-residential tourist uses and hotels (Policies TM1 and C5 respectively).

1.2.12 The Islington UDP mirrors the encouragement of mixed use development in strategic Policy ST14 and local Policy Imp5, which both apply throughout the Borough. The Council is supportive of proposals for leisure, cultural and recreational facilities, particularly where serving areas and population groups that currently have least choice (Policy R1). The development of arts, cultural and entertainment activities are encouraged in town centres and at other accessible locations (Policy R21).

**Topic-Based Objectives**

**Economic objectives**

1.2.13 To maximise the potential of development sites, the London Plan seeks development proposals with the highest possible intensity of uses compatible with local context, design principles and public transport capacity (Policy 4B.3). Average site densities of least 3:1 should be achieved with good public transport, and in highly accessible areas within Central London and some Opportunity Areas, ratios nearer to 5:1 can be achieved (para 4.44). Policy 5B.2 states that within the Central Activities Zone, boroughs should accommodate commercial development associated with business, tourism and retail, subject to the promotion of housing and identified special policy areas, and that developments will be expected to maximise density taking account of local amenity, land use mix and transport capacity.

1.2.14 The Joint Brief indicates a potential scale of around 400,000 sq. m of commercial development, providing around 20,000 jobs (para 2.2.4). It recognises that the provision of a critical mass of office floorspace is a cornerstone of viable regeneration for the King's Cross Opportunity Area (para 2.4.4).

1.2.15 Camden seeks sustainable development which supports and develops London's role as a world business, commercial and cultural centre, and which creates employment and training opportunities both generally and for local people (Policy SKC1). Proposals will be expected to accommodate a range of business uses (Policy KC3 and Joint Brief para 2.4.3).

1.2.16 Retail and leisure uses are both recognised as an important part of the mix of land uses expected within the King's Cross Opportunity Area (Camden UDP, Policies KC1 and RE4). The scale of retail development must be such that it does not threaten the viability and vitality of neighbouring centres (Camden UDP, para 13.35). Appropriate types of development are said to encompass convenience, comparison, service and food and drink uses in order to meet the needs of the new resident, working and visiting population as well as gaps in provision for surrounding communities (Joint Brief, para 2.2.4). Retail uses are said to be appropriate in the Triangle Site because of the lack of outlook at lower levels and to enliven the street frontage (Joint Brief, page 76). Commercial leisure is included in the definition of suitable leisure and entertainment uses as well as cafes, restaurants etc (Joint Brief, para 2.5.2).
1.2.17 The need for flexibility in the development taking account of its phasing over an extended
development period is recognised in both Camden's UDP chapter 13 (Policy SKC3) and in
the Joint Brief, para 2.4.3.

**Transport objectives**

1.2.18 One of the objectives of the London Plan is to secure a closer integration of transport
and spatial development. This is taken forward through policy to improve public transport
capacity and accessibility at areas of greatest demand, and to support high trip generating
development only at locations with both high levels of public transport accessibility and
capacity (Policy 3C.1).

1.2.19 Policies within Camden's UDP chapter 13 encourage improvements to the public
transport interchange, and require development proposals to provide a safe and
accessible environment for all users of existing and proposed public transport systems; to
provide high levels of accessibility, facilities and safety for pedestrians, cyclists and people
with disabilities; and to encourage development proposals where proposed car usage and
car parking provision is at minimum levels necessary (Policies KC5-7).

1.2.20 Amongst the objectives for the King's Cross Special Policy Area in the Islington UDP is
the desire to enhance the street environment and create a 'walkable neighbourhood' that
is safe, easy and pleasant to use by people on foot; and to ensure that the north-east part
of the King's Cross Central site is fully integrated into the future development of the area
(Para 13.6.12).

**Heritage objectives**

1.2.21 The London Plan encourages conservation-led regeneration by stating that the Mayor
will, and boroughs should, support schemes that make use of historic assets and stimulate
environmental, economic and community regeneration (Policy 4B.12). Camden's UDP
chapter 13 recognises that the Opportunity Area has a diverse and unique character with
a distinct sense of place, and is of outstanding national architectural, historical and
industrial archaeological importance (Para 13.66).

1.2.22 Development control policies relating to listed buildings and development/demolition
within Conservation Areas flow from PPG15, September 1994. Opportunities for
heritage enhancement at King's Cross Central include:

- creation of a successful civic setting for the stations;
- reuse of certain of the heritage buildings;
- salvage and reuse of historic items of streetscapes and street furniture (mentioned
  under Camden Policy KC11).

1.2.23 The Joint Brief provides more detailed guidance on the ease with which individual
structures can be integrated into a comprehensive masterplan. For example it
acknowledges that the Culross Buildings (features of the site are described in section 2.1)
may stand across the potential alignment of a key north-south route through the site, and
across important potential north-south views (Para 3.3.10), and that the Plimsoll Viaduct
may inhibit permeability within the site and successful re-use of the Coal Drop buildings
(Para 3.3.29). The Joint Brief also provides guidance on the relocation of historic
structures, namely the possibility of relocating the gas holder guideframes onto the site of
the Western Goods Shed (para 3.3.29). It also states that archaeological finds, if they were found, should be dealt with in accordance with PPG16 (para 3.2.9).

1.2.24 More detailed objectives are set out in Conservation Area Statements. The Regents Canal Conservation Area Statement (2001) stresses the intactness and group value of the Goods Yard (page 18), and acknowledges that reconciling new development in this area with the established character of the old will take skill and imagination (page 25). The replacement Conservation Area Statement for King's Cross (2003) acknowledges that the character and appearance of the area south of Goods Way in the Opportunity Area is undergoing substantial change (para 4.1.2), and that the potential therefore exists for development of a very high standard of urban and architectural design that capitalises upon, and takes into account, the character and appearance of the Conservation Area (para 6.1.1). It also recognises however that dense, mixed use development will result in significant changes to the character and appearance of the central part of the Conservation Area (para 6.1.2).

Ecological objectives

1.2.25 The London Plan recognises that in such a highly urbanised quarter, environmental quality is crucial (para 5.37). Camden's UDP chapter 13 expects development proposals to include well managed and maintained high quality open spaces which build upon the positive values of the Camley Street Natural Park and the Regent's Canal (paras 13.64 - 65). Opportunities to enhance biodiversity within both parts of the Opportunity Area and along the Regent's Canal are set out in the Joint Brief (paras 3.5.7 and 3.5.14), and development proposals will be assessed for their effects on these.

1.2.26 The importance of the Regent's Canal is recognised in Camden's adopted UDP by Policies RC1-12, and in the deposit draft UDP review by Policies RC1-2. In particular the Council seeks development at King's Cross that achieves a successful balance of:

- the protection of the historic canal environment;
- the enhancement of the canal's biodiversity;
- access to and along the canal for pedestrians;
- the use of the canal for recreation; and
- the use of the canal for transportation, especially during the construction of development (Camden UDP, para 13.69).

1.2.27 The protection and enhancement of the Camley Street Natural Park is covered in Policy KC10.

1.2.28 Islington also acknowledges the importance of the Regent's Canal in its UDP by reflecting its status as a Site of Metropolitan Importance where high priority will be given to the protection and enhancement of its nature conservation qualities (Policy Env22), its maintenance and improvement as a Green Corridor (Policy Env25), and through special development control guidelines (Policy D35). The Borough importance of the habitat on the east side of the Triangle Site (Copenhagen Junction) and south side of the North London Line is also included in Policy Env22.
Resource Use Objectives

1.2.29 The London Plan sets out the need for developments to embrace sustainable design and construction, including the need for applications to be accompanied by statements showing how sustainability principles will be met (Policy 4B.6). New developments should include energy efficient and renewable energy technology and design wherever feasible (Policy 4A.7).

1.2.30 The Joint Brief expects applicants to show how they have sought to incorporate energy efficiency, water management and waste management and recycling measures into the development (paras 3.4.9, 3.4.26, 3.4.34). An important element is to design-in future flexibility within the master plan and design, so that decisions made today do not prejudice future options as technologies mature (para 3.4.5).

Design Objectives

1.2.31 Local policies in Camden's UDP chapter 13 deal with urban design, views and the need for a high quality environment with links into the surrounding areas. Specific objectives in Policies KC8, KC9, and KC10 and their supporting text are:

- to protect strategic views, and where appropriate, views to and from important local landmarks (covered in more detail in adopted Policies EN43, EN44 and EN45 and in deposit draft review Policy B9);
- to achieve physical integration with the surrounding area;
- to achieve a townscape of the highest quality, including creating a highly attractive public space between and in front of the Grade 1 listed stations.

1.2.32 Similar Borough-wide objectives for the protection of strategic and local views, and for the achievement of high quality design are set out in section 12 of the Islington UDP. Policy D4 encourages architectural innovation and imaginative design solutions, subject to certain qualifications. Tall buildings (defined in the plan as higher than 30m above ground level) are however stated to be inappropriate in Islington (Policy D9).

1.2.33 The Joint Brief includes guidance on the preferred approach to master planning the site, including routes and connections, links with areas outside the site, public place making and crime prevention (section 3.2). Sub-area design guidelines are also included in the Joint Brief (section 3.3) for six sub-areas, i.e.:

- the land between the stations and connecting to Euston Road;
- south and west of the canal;
- the Canal and the Granary area;
- towards the CTRL embankment;
- York Way and the Triangle Site;
- north of the CTRL embankment.

1.2.34 The guidance on the Triangle Site confers some flexibility over building heights in this location, stating that good design may allow a tall building to be located here.
Part 1 – 1.2 Planning Policy Context

Community Objectives

1.2.35 The Joint Brief states that the Council’s main objective is to create firm links between the development and the local area so that it is a relevant and positive addition to, and well integrated with, this part of London (para 1.4.3).

1.2.36 For the new development itself, Camden seek the provision of a substantial quantity of new housing (a net increase of at least 1,000 units, Policy KC4). Further guidance in the Joint Brief gives an aspiration for at least 1,800 homes within the Main Site and the Triangle Site (para 2.2.4).

1.2.37 A wide variety of types and sizes of housing is sought. In particular Camden seek 50% of the first 1,000 units for affordable housing apportioned as 35% social housing for rent and 15% for essential workers and other intermediate occupiers. They have a target of 50% split of affordable housing for any units above the base figure (Policy KC4). The Joint Brief clarifies that this should include a significant element of social housing for rent and housing for essential workers but may also include other forms of low-cost housing (para 2.9.16).

1.2.38 The Islington UDP (Policy H16) requires 25% affordable housing in schemes of over 15 dwellings, although their more recently revised supplementary planning guidance on affordable housing (April 2003) seeks an interim minimum percentage requirement of 35% (25% social rented and 10% intermediate housing) (para 5.3) with an aspiration for 50%.

1.2.39 Camden’s UDP chapter 13 lists a number of benefits which may be sought from developers depending on the needs and demands generated by the scheme and the viability of providing them, ranging from provision of cultural facilities, a primary healthcare centre, funding for traffic and environmental management to implementation of a code of construction practice (Policy KC12 and para 13.72). Islington’s UDP seeks to ensure that the local community receives a fair share of the benefits which these projects within the King’s Cross area will generate (Policy Imp18), including affordable homes, jobs, health and community facilities and environmental improvements (para 13.6.12).

1.2.40 The London Plan emphasises the importance of assessing the social and economic implications of major development in, or with the potential to impact on, Areas of Regeneration (Policy 3A.25).

Conclusions

1.2.41 The applicants’ proposals for the Main Site and the Triangle Site, which are the subject of this Environmental Impact Assessment, have been framed within the context of the above policy.

1.2.42 The policy objectives summarised in this section provide the backdrop for the detailed assessment of environmental impacts and associated identification of mitigation measures. The assessment methods used have also been informed by relevant policy requirements.
1.3 Approach to the Environmental Impact Assessment

Introduction

1.3.1 This section describes the general approach taken for the EIA. More specific methodologies are described for each of the specific topics that are assessed.

1.3.2 First, this section describes the legislative framework within which the EIA has been undertaken and identifies key guidance. Second, the scoping process is described. This is the process of identifying which environmental topics the EIA should focus on and provides its terms of reference. Third, the overall EIA methodology is described. It focuses on (i) the definition of the baseline year of 2006/7 (and why the existing situation is not, in this case, an appropriate baseline for assessment purposes); (ii) the definition of the scheme upon which the assessment has been based; and (iii) the general approach taken in assessing the various environmental effects.

EIA Legislation and Guidance

Legislative Framework

1.3.3 The legislative framework for EIA is set by European Directive 85/337/EEC on the assessment of the effects of certain public and private projects on the environment, as amended by Directive 97/11/EC. The implementing regulations relevant to the proposed project are The Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999 (SI 1999 No 293). These regulations are referred to as the EIA Regulations for the purposes of this Environmental Statement (which forms the report of the EIA).

1.3.4 The EIA Regulations (Part I) define “Environmental Statement” as meaning a statement:

“(a) that includes such of the information referred to in Part I of Schedule 4 as is reasonably required to assess the environmental effects of the development and which the applicant can, having regard in particular to current knowledge and methods of assessment, reasonably be required to compile, but

(b) that includes at least the information referred to in Part II of Schedule 4.”

1.3.5 Table 1.3.1 sets out these requirements together with the location of this information within this Environmental Statement.
Table 1.3.1 The Location of Information Required for Inclusion in an Environmental Statement

<table>
<thead>
<tr>
<th>EIA Regulations: Schedule 4, Part I</th>
<th>Location within Environmental Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>i) Description of the development, including in particular-</td>
<td>Development Specifications and section 3.2.</td>
</tr>
<tr>
<td>(a) a description of the physical characteristics of the whole development and the land-use requirements during the construction and operational phases;</td>
<td></td>
</tr>
<tr>
<td>(b) a description of the main characteristics of the production processes, for instance, nature and quantity of the materials used;</td>
<td>Part 4 (in so far as this relates to construction).</td>
</tr>
<tr>
<td>(c) an estimate, by type and quantity, of expected residues and emissions (water, air and soil pollution, noise, vibration, light, heat, radiation, etc.) resulting from the operation of the proposed development.</td>
<td>Sections 5.7, 5.8 and 5.10. Parts 15, 16 and 18.</td>
</tr>
<tr>
<td>2. An outline of the main alternatives studied by the applicant or appellant and an indication of the main reasons for his choice, taking into account the environmental effects.</td>
<td>Section 3.1</td>
</tr>
<tr>
<td>3. A description of the aspects of the environment likely to be significantly affected by the development, including, in particular, population, fauna, flora, soil, water, air, climatic factors, material assets, including the architectural and archaeological heritage, landscape and the inter-relationship between the above factors.</td>
<td>Existing situation and baseline sections of topics – Parts 4, 5 and 9-19.</td>
</tr>
<tr>
<td>4. A description of the likely significant effects of the development on the environment, which should cover the direct effects and any indirect, secondary, cumulative, short, medium and long term, permanent and temporary, positive and negative effects of the development resulting from:</td>
<td>Assessment of effects sections of topics - Parts 4, 5 and 9-19.</td>
</tr>
<tr>
<td>(a) the existence of the development;</td>
<td></td>
</tr>
<tr>
<td>(b) the use of natural resources;</td>
<td></td>
</tr>
<tr>
<td>(c) the emission of pollutants, the creation of nuisances and the elimination of waste.</td>
<td></td>
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<tr>
<td>and the description by the applicant of the forecasting methods used to assess the effects on the environment.</td>
<td>Methodology sections of topics - Parts 4, 5 and 9-19.</td>
</tr>
<tr>
<td>5. A description of the measures envisaged to prevent, reduce and where possible offset any significant adverse effects on the environment.</td>
<td>Section 3.3 and Further Mitigation sections of topics - Parts 4, 5 and 9-19.</td>
</tr>
<tr>
<td>6. A non-technical summary of the information provided under paragraphs 1 to 5 of the Part.</td>
<td>Separate stand alone document.</td>
</tr>
<tr>
<td>7. An indication of any difficulties (technical deficiencies or lack of know-how) encountered by the applicant in compiling the required information.</td>
<td>Section 1.3.52 and as indicated in the topic sections.</td>
</tr>
</tbody>
</table>

EIA Regulations: Schedule 4, Part II

| 1. A description of the development comprising information on the site, design and size of the development. | Development Specifications and section 3.2. |
1.3 Approach to the Environmental Impact Assessment

<p>| | |</p>
<table>
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<tr>
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<tbody>
<tr>
<td>2.</td>
<td>A description of the measures envisaged in order to avoid, reduce and, if possible, remedy significant adverse effects.</td>
</tr>
<tr>
<td>3.</td>
<td>The data required to identify and assess the main effects which the development is likely to have on the environment.</td>
</tr>
<tr>
<td>4.</td>
<td>An outline of the main alternatives studied by the applicant or appellant and an indication of the main reasons for his choice, taking into account the environmental effects.</td>
</tr>
<tr>
<td>5.</td>
<td>A non-technical summary of the information provided under paragraphs 1 to 4 of this Part.</td>
</tr>
</tbody>
</table>

**EIA Guidance**

1.3.6 Guidance on implementing the UK’s EIA Regulations is provided in DETR Circular 02/99 Environmental Impact Assessment and also in the DETR’s Environmental Impact Assessment: A Guide to the Procedures, 2000. This general guidance has been taken into account in undertaking the EIA. The DoE’s guidance of 1995, Preparation of Environmental Statements for Planning projects that Require Environmental Assessment, that includes guidance on specific topics has also been used.

1.3.7 Topic specific guidance is referred to in the assessment sections where available/appropriate.

**Scoping of the Environmental Impact Assessment**

1.3.8 In order to assist in identifying the environmental effects on which to focus the EIA, an informal scoping exercise was undertaken. This involved the preparation of a Consultation Draft Scoping Report in April 2003. The aims of this report were to:

1) set out the overall approach to the EIA;

2) identify the main possible effects that may arise from the proposed King’s Cross Central development (at the stages of construction and operation) to be focused on in the EIA;

3) for each of the relevant environmental topics, to identify the relevant study area, assessment methodology and potential mitigation measures to avoid, reduce or remedy any significant adverse effects on the environment, and also enhance any beneficial effects;

4) indicate the proposed contents and structure of the report of the EIA, the Environmental Statement; and

5) invite comments on the above.

1.3.9 The Consultation Draft Scoping Report took into account preliminary comments on scoping made by London Borough of Camden planning officers and the scope and findings of EIAs prepared for other recent development proposals on or near to the site (for example the Channel Tunnel Rail Link, Arsenal Football Club and Regents Quarter developments). In addition the scope of the EIA that accompanied previous
redevelopment proposals for the ‘Railway Lands’ submitted by the London Regeneration Consortium in 1989, was reviewed.

1.3.10 The identification of topics to include within the Environmental Statement has also drawn on:

- the policy objectives in the revised Chapter 13 (LBC, May 2003) of the adopted Camden Unitary Development Plan on the King’s Cross Opportunity Area (this chapter also forms Section 9 in the new Deposit Draft Unitary Development Plan);
- the responses made by the public during the consultation stages on the revised Chapter 13 of Camden’s Unitary Development Plan;
- the London Borough of Camden publications ‘King’s Cross – Towards an Integrated City’ (October 2001) and ‘King’s Cross – Camden’s Vision’ (June 2002);
- an analysis of public responses to the applicants’ ‘Framework’ consultation documents; and
- The Kings Cross Opportunity Area Planning and Development Brief December 2003 (adopted jointly by the London Boroughs of Camden and Islington).

1.3.11 Comments on the Consultation Draft Scoping Report were compiled by the London Boroughs of Camden and Islington and forwarded to RPS. A list of respondents is included in section 1.4.15. A report comprising a table identifying the EIA team responses to the matters raised was then prepared by RPS for consideration by the London Boroughs of Camden and Islington.

1.3.12 The London Borough of Camden have confirmed (letter of 8th December 2003) that:

“In our view, the report provides a comprehensive analysis of Camden’s informal scoping opinion and we are generally satisfied with your EIA Team Responses.”

1.3.13 The key issues that arose as a result of the scoping exercise, and how these issues have been addressed is shown in Appendix 8A.

1.3.14 The comments received on the Consultation Draft Scoping Report assisted in forming the terms of reference for the EIA and reference is made to these as appropriate in the assessment of individual topics.

**EIA Methodology**

1.3.15 This section describes the overall EIA methodology used in the preparation of the Environmental Statement. Methodologies for assessing specific effects on the environment differ from topic to topic and are described in topic chapters in Part 4, Part 5 and Parts 9 to 19. The description of the overall methodology is divided into three main parts:

- Baseline conditions – the reasons for the EIA baseline being the predicted site conditions in 2006/7, rather than the existing situation.
- Scheme definition – the proposals which are the subject of the EIA. This explains how the flexibility afforded by the submitted proposals has been addressed, the ‘worst case’ scenario, and definitions of the construction and operational stages.
- Assessment of effects – how the effects of the proposals have been predicted.
Baseline Conditions

1.3.16 The EIA Regulations require for inclusion in an Environmental Statement:

"The data required to identify and assess the main effects which the development is likely to have on the environment." (Schedule 4, Part II, 2)

1.3.17 The baseline conditions of the site and its environs form the basis of the assessment of effects on the environment that are likely to arise from the proposals, thus enabling the likely significant impacts to be determined.

1.3.18 The EIA process compares the site conditions, as they would be with the King's Cross Central development in place, with the site conditions at the start of the development programme. Most of the site would only be released for development upon completion and opening of the CTRL expected in 2007. It may be possible for some King's Cross Central site preparatory and off-site works to take place before then.

1.3.19 In this context, it would be inappropriate to use existing conditions (2003/4) as a baseline because we know that conditions will change significantly up to the proposed start of works in 2006/7 not least because of the ongoing CTRL works. The EIA is however 'grounded' in the current site conditions that can be surveyed (and checked) today and, for this reason, we describe the existing situation first, and then explain the changes that are anticipated to take place up to the 2006/7 baseline year. The Environmental Statement identifies any assumptions that underpin the 2006/7 baseline, and any uncertainties encountered in refining and describing the baseline conditions.

1.3.20 General information about the site in 2003/4, the baseline year of 2006/7 and what future conditions might be like in the absence of the proposals is provided in sections 2.1, 2.2 and 2.3 respectively. For each of the specialist topics there are sections entitled 'The Existing Situation' and 'Baseline 2006/7'. These describe the basis for determination of the baseline conditions for each topic.

Scheme Definition

1.3.21 The proposed development assessed by this EIA is that defined by the Development Specifications for the Main Site and the Triangle Site as described in Part 3.2. It includes mitigation measures designed into the schemes as described in Part 3.3. In addition to the Development Specifications, specific assumptions have been made concerning other aspects of the proposals (not specified within the Development Specifications), for assessment purposes. These are stated under each topic within Parts 4, 5 and 9-19. For example, environmental protection measures during construction are stated as sourced from the Code of Construction Practice reported in Part 4.

1.3.22 The EIA assesses two stages of the project:

- Construction - defined as all those works, activities and processes that would be involved in carrying out the proposed development, including excavation and other earthworks, the erection and dismantling of buildings and structures, demolition and other works.
- Operation - defined as the developed scheme upon completion and its use.
**Flexibility and the Use of Parameters**

1.3.23 It is expected that the King’s Cross Central development would be implemented over 12-15 years or longer. The development would evolve over time, according to market opportunities and other factors. The planning applications have thus been prepared so as to retain some flexibility over the form and content of the proposals.

1.3.24 A number of legal cases have clarified the requirements of EIA. These requirements are summarised in the “Note on Environmental Impact Assessment Directive for Local Planning Authorities (1999 EIA Regulations)” (ODPM, July 2002). This explains that, in the case of outline planning permissions:

“……an EIA application **must** be properly assessed for possible environmental effects **prior** to the grant of outline permission. It will not be possible to carry out an EIA at the reserved matters stage. The planning permission and the conditions attached to it must be designed to prevent the development from taking a form – and having effects – different from what was considered during the EIA.”

1.3.25 The ODPM guidance (2002) explains that the EIA legal requirements for outline planning applications have been clarified by the “Rochdale” cases involving the proposed long-term development of a business park. The judgement in the second of these cases confirmed that there is nothing to stop proposals retaining flexibility, providing this flexibility is recognised in the EIA and assessed. In practice, this means that developers must pay close attention to defining their proposals to a level that is sufficient to enable the likely significant environmental effects to be identified and assessed. In this case the EIA team has worked closely with the applicants to make sure that the proposals are the subject of a full, robust EIA, as reported in this Environmental Statement.

1.3.26 The second “Rochdale” judgement refers specifically to the evolution of a project over a number of years within clearly defined parameters and the need for the EIA to take account of the need for evolution within them. The Applicants have adopted this ‘parameters’ approach to ensure that the flexibility required for the project can be taken into account in the EIA. The approach involves the establishment of parameters that govern or define the range of development possibilities - and hence the likely environmental impacts - that could flow from the grant of planning permission. Many of the development parameters for the Main Site and the Triangle Site are shown on “parameter plans” that form part of the Development Specifications. As an example, parameters are set for maximum building heights within the various parts of the site, enabling the EIA team to determine and assess the likely changes in strategic views and the wider visual effects. Lists of parameter plans for the Main Site and the Triangle Site are provided in 3.2.15 and 3.2.33 respectively.

**Worst Case**

1.3.27 Since the phasing and the final form of the development cannot be fully defined at this stage, the EIA assesses the so-called ‘worst case’. This may be different for each topic considered in the EIA. Therefore, each topic identifies its own ‘worst case’ for assessment. This is based on the worst case development scenario i.e. the scenario permitted within the defined parameters of the proposals, that would lead to the worst levels of adverse environmental effects for that topic.
In assessing the worst case, assumptions may be made about additional aspects of the proposals to those specified in the Development Specifications. It is also appropriate to take into account controls which would be applied, both within and outside the planning system. One example was given at paragraph 1.1.13 above. In addition, factors such as emissions to air, discharges into water, and disposal of the waste produced by the project, would all be subject to controls under legislation dealing with environmental protection. In assessing the likely significant effects of a project it is appropriate to rely on the competent operation of those controls on the part of the responsible authority. The same approach has been adopted for the local planning authority's power to approve reserved matters.

This approach concurs with the purpose of EIA which is to identify and mitigate the "likely significant effects", not every conceivable effect, however minor or unlikely, of a major project.

**Assessment of Effects**

The way in which effects are assessed is described in general terms below, in relation to the following issues:

- Consideration of Alternatives
- Identification of Study Areas
- Topics Assessed
- Significance of Effects
- Mitigation Strategy
- Inter-relationships between Topics
- Other Developments and Cumulative Effects
- Dealing with Uncertainty

**Consideration of Alternatives**

The Regulations require an Environmental Statement to provide:

"An outline of the main alternatives studied by the applicant or appellant and an indication of the main reasons for his choice, taking into account the environmental effects." (Schedule 4, Part II, 4)

In this case, the reasons for and merits of comprehensive redevelopment of the former 'railway lands' at Kings Cross have been long established, as explained in Section 1.2 above. At the London wide scale, the King's Cross Railway lands was identified as a major development opportunity in LPAC's 1994 advice on strategic planning guidance for London, which then became incorporated into RPG3, 1996. The London Plan (GLA, 2004), which replaces RPG3, designates King's Cross as an Area of Opportunity for major, mixed use development. At the local level, the London Borough of Camden produced a Community Planning Brief for the site in 1988, expanding on policies within the adopted Borough Local Plan 1987. This was carried forward into an updated brief in 1994 and into the policy context of the UDP, which was prepared in the early 1990s and finally adopted in 2000. New 'Chapter 13' UDP policies for the KCOA were recently
adopted in May 2003 and a new Planning and Development Brief has been prepared (December 2003). These plans, policies and guidance have been publicly tested through the planning system, including an Examination in Public (of the London Plan) and a Local Public Inquiry (into the UDP review of Chapter 13, in 2002).

1.3.33 In this longstanding planning context, the consideration of alternative sites is inappropriate. The EIA does, however, refer to alternative land use and design ‘options’ within the King’s Cross Central project area, which have been considered.

1.3.34 The evolution of the proposals is addressed in section 3.1.

Identification of Study Areas

1.3.35 The environmental influence of the King’s Cross Central proposals is likely to extend beyond the planning application boundaries. The spatial extent of this influence depends upon the nature of the environmental topic under consideration, for example economic changes are likely to affect a wider area than changes in noise. The study area for each environmental topic is set out in the specific topic reports (Parts 4, 5 and 9-19).

Topics Assessed

1.3.36 As a result of the scoping process including comments from consultees (see Part 1.3.8 to 1.3.14), the following topics have been identified for inclusion in the EIA:

- Construction
- Cultural Heritage and Townscape
- Archaeology
- Transport
- Socio-economics
- Health
- Nature Conservation
- Water Resources
- Soils and Contamination
- Noise and Vibration
- Air Quality and Climate Change
- Microclimate
- Urban Services
- Inter-relationships between effects

1.3.37 The assessment of effects for each of these topics is described in Part 4 for construction effects and Part 5 for operational effects. More detailed information for each topic (for both the stages of construction and operation) is provided in the Specialist Reports in Parts 9 to 19 (with the exception of transport, for which the applicants have submitted a separate Transport Assessment). Each environmental topic addresses:
Part 1 – 1.3 Approach to the Environmental Impact Assessment

- Methodology and Assessment Criteria
- Consultations
- The Existing Situation
- Baseline 2006/7
- Proposals (including assumptions made about the proposals and definition of the worst case)
- Assessment of Effects (taking into account any mitigation measures which form part of the proposals and to which the Applicants are committed)
- Opportunities for Further Mitigation Measures
- Monitoring

Significance of Effects

1.3.38 The EIA process aims to focus attention on the topics which are likely to give rise to significant effects on the environment. The purpose of EIA is to identify and mitigate the ‘likely significant effects’, not every conceivable effect, however minor or unlikely, of a major project.

1.3.39 Assessment of the significance of effects reflects judgements as to the importance or sensitivity of the affected receptors or features, and the nature and magnitude of the predicted changes. For example, a major adverse effect on a heritage feature of low importance is of lesser significance than the same effect on a heritage feature of high importance. The nature of the predicted changes is also relevant i.e. whether they are short- or long-term, cumulative, beneficial or adverse, reversible or irreversible.

1.3.40 The EIA Regulations require the identification of the main effects which the development is likely to have on the environment. In practice this means that only the likely significant effects should be considered. There is no universally recognised definition of what constitutes ‘significant’. This differs according to the perspective of the stakeholder(s) and the topic under assessment. It is good practice to identify the degree of significance or importance. In this Environmental Statement, levels of significance that are considered to be material to planning considerations are stated as being of either:

- Major significance - effects of the development of greater than local scale;
- Moderate significance – effects of the development that may be judged to be important at a local scale (i.e. in the local planning context); or
- Minor significance - effects that are of low importance in the decision making process.

1.3.41 These levels of significance apply to both adverse and beneficial effects. A further category of ‘negligible’ is used to describe effects which are of such low importance that they are considered not to be material to the decision making process.

1.3.42 Some disciplines have further refined these definitions in relation to appropriate standards/guidelines for their particular topic. For each topic, the definition of significance adopted for that topic is set out in the ‘Methodology and Assessment Criteria’ section.
1.3.43 The terms 'negative' and 'positive' are sometimes used instead of 'adverse' and 'beneficial' in this Environmental Statement, as there are some topic specific methodologies where these terms are favoured.

**Mitigation Strategy**

1.3.44 The Regulations require an Environmental Statement to describe mitigation measures:

“A description of the measures envisaged in order to avoid, reduce and, if possible, remedy significant adverse effects.” (Schedule 4, Part II, 4)

1.3.45 An iterative approach has been adopted towards the design of the scheme, which has evolved alongside the EIA process. This has enabled many mitigation measures to be effectively designed into the scheme, reducing the need for further mitigation. The mitigation strategy is described further in section 3.3.

**Inter-relationships between Topics**

1.3.46 Inter-relationships between topics can arise, leading to environmental effects and these have been addressed in the EIA. For example, changes in traffic flows may lead to changes in local air quality and noise. These together with socio-economic changes, such as the provision of new homes and employment opportunities, may then have ‘knock-on’ implications for community health and the ‘quality of life’ of local people. Such inter-relationships are considered at 5.13.

**Other Developments and Cumulative Effects**

1.3.47 The EIA takes into account the effects of other developments in the area in the context of the King's Cross Central proposals. Where projects already have planning permission, or applications have been submitted and are considered likely to be approved in the near future, and construction is likely to be completed or underway by the start of construction of King’s Cross Central, they are considered to form part of the 2006/7 baseline for relevant topics. Where proposals have not been submitted, and there is thus uncertainty as to whether they would proceed, these have not been included in the baseline.

1.3.48 We do not consider that there is any likelihood of other major projects coming forward which, if permitted, have the potential for significant cumulative impacts with King’s Cross Central, other than the emerging proposals for the King’s Cross Station Enhancement. Network Rail is considering proposals for a new western concourse and other enhancements at King’s Cross Station within the ’Area for King’s Cross Station Enhancement’ shown on Main Site Parameter Plan KXC004.

1.3.49 The potential for cumulative effects to arise from King’s Cross Central and a potential King’s Cross Station Enhancement occur at both the construction and operational stages. Since the station enhancement proposals have not yet been submitted and do not have planning permission, the King’s Cross Central proposals are assessed without the station enhancement. However, the EIA also tests this assumption and considers how the effects of King’s Cross Central might be different, topic by topic, if the enhancement project did go ahead, including the potential interaction between the two projects. The basis for the assessment of cumulative effects during the construction stage are described below.

1.3.50 It is possible that construction of any Station Enhancement could take place at the same time as King’s Cross Central. There is a range of possible timescales for the King’s Cross
part 1 – 1.3 approach to the environmental impact assessment

station enhancement project depending upon, for example, the completion date for the ongoing london underground limited (lul) phase 2 works to construct a northern ticket hall and associated infrastructure (due to take 3 years and be complete by 2007 but currently under review) and the extent to which the king’s cross station enhancement works could be integrated with the lul works (as opposed to starting only when the lul works are complete).

1.3.51 the possible timescales, include the following:

a) construction could commence following completion of the lul phase 2 (northern ticket hall etc) works with construction of the station enhancement expected to last a maximum of 4 years; or

b) the proposals for king’s cross station enhancement could be combined with the lul phase 2 (northern ticket hall) into an integrated project, with construction of that integrated project likely to take less than the 7 years identified above for the two projects to take place one after the other.

1.3.52 it is considered unlikely that an integrated project ((b) above) would have greater overall construction effects (in terms of either magnitude or duration) than the two projects carried out in sequence, one after the other: if anything an integrated project is likely to have less construction effects in terms of magnitude and duration. this eia has therefore considered (a) above (construction of king’s cross station enhancement following completion of the lul works) and the potential for it to give rise to cumulative construction effects alongside king’s cross central.

1.3.53 there is also some potential for cumulative effects with the development of the linear land. since no proposals have yet been brought forward for this land, it has not been possible to assess any such effects. however, to the extent that this land may be used for purposes such as waste management, there is the potential for beneficial cumulative effects in so far as such uses would complement and enhance the sustainability of the kings cross central development. at this stage however, the eia has not assumed or relied upon any such beneficial (or other effects) in order to undertake a worst case assessment.

dealing with uncertainties

1.3.54 the eia deals with a number of uncertainties concerning:

- assumptions about the 2006/7 baseline (as discussed in section 2.2);
- how baseline conditions might evolve after 2006/7 i.e. the future baseline;
- other projects in the area that might have a cumulative effect with the lul phase 2 (northern ticket hall) and king’s cross central proposals. as explained above, the only relevant project identified is the emerging proposals for the king’s cross station enhancement;
- whether or not both the main site and the triangle site achieve planning permission. the environmental statement assesses the whole scheme i.e. assuming that the schemes for both the main site and the triangle site would go ahead. this reflects the applicants’ intention to develop the triangle site as part of the wider, phased, mixed use scheme. however, there is a possible scenario where the main site achieves planning permission and the triangle site does not. in that case
development of the Main Site might be taken forward alone. Therefore the Environmental Statement explains how the assessed effects would be different in the absence of development on the Triangle Site; and

- flexibility for the precise layout and configuration of new buildings within the parameters set by the Development Specifications. Therefore, the worst case scenario is identified and assessed for each topic.
1.4 Consultation

1.4.1 Public consultation has been undertaken to inform the development of the proposals and the EIA.

1.4.2 The Applicants have actively sought to engage with the public. In particular, opportunities for public consultation have been provided via three documents:

- Principles for a Human City, July 2001
- Parameters for regeneration, January 2002
- A Framework for Regeneration, September 2002

1.4.3 5,000 copies were made available of each of the Principles and Parameters documents (discussed further in Part 3.1 below).

1.4.4 The Framework document (also discussed further in Part 3.1) invited comments on the evolving proposals at that time and on the scope of the EIA and included tearout questionnaires. A summary Framework document with tear off slip was also published. 10,000 copies of the Framework document and its summary were made available to youth and community groups, schools, local residents, businesses and other organisations and individuals within Camden and Islington and elsewhere. The document was also posted on the King’s Cross Central website at www.argentstgeorge.co.uk and online questionnaires were provided. Also, comments were encouraged via letter, short video interviews and at a series of local workshop and other events managed by FLUID Design.

1.4.5 The Framework documents sought consultee views on environmental priorities and also social and economic priorities. Consultees were also asked to comment on whether the main topics listed for inclusion in the EIA were correct and whether there were any other specific issues that the EIA should address.

1.4.6 Eleven environmental priorities were listed in the Framework document and other consultation media which the public were asked to rank. Some seventy responses were received with all respondents identifying “well managed, attractive public spaces” as their first priority. Other popular choices included “promote walking/better pedestrian routes” and “a cleaner environment”. The preference for these measures could be a reflection of the demand for general improvements to environmental quality that would also include attention to cleanliness, improvements in air quality etc.

1.4.7 Twelve social and economic priorities were listed in the Framework document for public response and comment. The public response identified “community safety” as the main priority, marginally ahead of “affordable housing” and “better leisure and cultural facilities”. Respondents identified “better health services” as the least pressing of the issues listed.

1.4.8 Seventeen responses were received to the Framework question regarding identification of the “Main Issues” for the EIA. The majority of the respondents felt that the main issues had been addressed, although there were specific concerns raised over the construction process, and its impact on local communities. These centred on noise, dust, pollution, the effect of works on local roads, as well as the potential displacement of current antisocial behaviour into the surrounding area.
1.4.9 Some respondents suggested that a broader view of the environmental effects should be considered and that new technologies should be incorporated to minimise and mitigate impacts. Comments were also made regarding the long-term management of the King's Cross Central development, and the potential for job creation and training opportunities through its implementation.

1.4.10 Respondents were also requested to indicate specific issues under the identified topic headings that they thought the EIA should address. Townscape and construction received the most comments, as indicated by Table 1.4.1.

Table 1.4.1 Issues the EIA should address

<table>
<thead>
<tr>
<th>Topic</th>
<th>No. Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Townscape</td>
<td>12</td>
</tr>
<tr>
<td>Construction</td>
<td>12</td>
</tr>
<tr>
<td>Transport</td>
<td>11</td>
</tr>
<tr>
<td>Heritage</td>
<td>10</td>
</tr>
<tr>
<td>Health</td>
<td>10</td>
</tr>
<tr>
<td>Socio-Economic</td>
<td>9</td>
</tr>
<tr>
<td>Noise/Vibration</td>
<td>9</td>
</tr>
<tr>
<td>Nature Conservation</td>
<td>9</td>
</tr>
<tr>
<td>Air</td>
<td>8</td>
</tr>
<tr>
<td>Microclimate</td>
<td>8</td>
</tr>
<tr>
<td>Water</td>
<td>6</td>
</tr>
<tr>
<td>Soils/Contamination</td>
<td>4</td>
</tr>
</tbody>
</table>

1.4.11 Respondents on ‘townscape’ and ‘heritage’ drew attention to the need to balance old and new and to retain a sense of place. The ‘construction’ topic attracted comments about the possible effects of a long period of disturbance on local people and the potential for ‘clean’ methods of construction to reduce noise and dust; a code of construction practice was also suggested. For ‘transport’, there was a request for safe and reliable services and a ‘green’ transport strategy. The comments on ‘health’ and ‘socio-economic’ issues focused on the provision of facilities and jobs for local people and concerns over the displacement of crime.

1.4.12 The interim results of this consultation on Framework were reported in Framework Findings, published in June 2003 in collaboration with FLUID Design. This report was designed to provide an overview of comments on the proposals and ideas in the Framework document. A more detailed Statement of Community Engagement has now been published alongside the planning applications (together with a number of Strategy and other documents that respond directly to issues raised during consultation; where relevant, the content of these documents has been taken into account in undertaking this EIA).
1.4.13 Other public consultation has been initiated independently by the London Borough of Camden. An early phase of this consultation was referred to as ‘100 Groups’. This was an outreach exercise that aimed to talk to groups that had not been involved in the King's Cross development previously that was run mainly during 2002. In December 2002, the London Borough of Camden set up the King's Cross Development Forum to enable local people to have their say about the changes in the area. The group now has 161 members (all of whom are representatives of local communities and community groups) and an independent chairperson. It meets approximately every eight weeks and the meeting notes have been reviewed by the EIA team to identify environmental concerns as they arise.

1.4.14 The London Borough of Camden also works with the King’s Cross Community Trust on a programme to train black and ethnic minority community representatives in what is happening in the area. This programme has been running for three years. Furthermore, the London Borough of Camden works with existing networks and groups such as youth groups and services, local schools, groups supporting the older generation and the London Borough of Camden’s mobility forum. In total, London Borough of Camden estimate (pers comm 29.03.04) that they have met with over 3000 people in over 300 meetings (although these figures include some people who attend a number of meetings). The London Borough of Camden has recorded the top 20 issues most commonly raised at meetings. The issues listed are principally concerned with land uses and transport: the only direct reference to an environmental effect is that relating to double-glazing to reduce noise from construction work.

1.4.15 With specific reference to the EIA process, a Consultation Draft Scoping Report together with a summary document were published in April 2003. Both documents included a tear out questionnaire. These sought comments on the proposed approach and scope of the EIA. Responses were received from:

- Camden Primary Care Trust with the support of Islington Primary Care Trust
- Council of London Civic Forum
- English Heritage
- English Nature
- Environment Agency
- General Public (2 responses)
- Government Office for London
- Greater London Authority
- Judd Street residents Association (JSRA)
- King’s Cross Conservation Area Advisory Committee
- London Borough of Camden
- London Borough of Islington
- Maiden Lane
- Network Rail
• Somers Town and St Pancras Art (START)
• Transport for London

1.4.16 See section 1.3.8 and Appendix 8A for further information about the scoping process and the way in which the consultation responses have been used.
Note: This is based on the most up to date base available. There have been changes to the site and its immediate surroundings due to CTRL works.
2.1 The Site and its Surroundings in 2003/4

Site Description

2.1.1 An annotated aerial photograph of the site taken in November 2003 is shown in Figure 2.1.1.

2.1.2 The Main Site has an area of approximately 26.1ha and the Triangle Site, 1.1ha.

2.1.3 The King’s Cross Central site can, for the purposes of description, be divided into the sections to the south and to the north of the Regent’s Canal.

2.1.4 South of the canal the site comprises the area between King’s Cross and St Pancras Stations, including the Great Northern Hotel, and bounded by Euston Road in the south. This area is currently the location of the major improvement works to King’s Cross/St Pancras underground station by London Underground Ltd. To the north, the site widens to encompass the area between the St Pancras Station extension (currently under construction as part of the CTRL developments) and the above ground railway lines servicing King’s Cross Station. This area incorporates the remaining Stanley Buildings, the Culross Buildings, the remaining Gasholder No.8 and the King’s Cross Station car park. Much of this area is occupied by CTRL and LUL temporary construction sites and offices.

2.1.5 Goods Way crosses the site from west to east, as does the Regent’s Canal just to the north. The narrow strip of land between the road and the canal broadens at the east and west. At the east, a filling station occupies this area, whilst at the west is an area of vacant land adjacent to Camley Street Natural Park which itself extends along the canal to the north-west.

2.1.6 The section of the canal between Maiden Lane Bridge (which carries York Way) in the east, and the bend in the canal at the southern end of Camley Street Natural Park is included in the site. The section of the canal within the site is crossed by two bridges, one of which is a temporary structure for CTRL construction traffic. An area in the north of Camley Street Natural Park, together with the adjacent section of the canal immediately south of St Pancras Lock is also included in the site to provide for construction of a pedestrian and cycle link across the canal.

2.1.7 North of the canal is Wharf Road with the Fish and Coal Offices, beyond which is the complex of buildings including the Granary with its Transit Sheds, the Midland Goods Shed and its adjoining canopies, the Eastern and Western Coal Drops and the Western Goods Shed. Some of these buildings are disused, whilst a number remain in commercial use for storage, leisure, industrial and a variety of other activities.

2.1.8 Further to the north the site occupies the area between the construction alignment of the CTRL lines and that of the CTRL realignment for York Way. This northern area currently comprises major construction works for the CTRL embankment and the Thameslink tunnels, and includes temporary railway sidings, site offices and material stock-piles as well as working areas. There are also permanent bulk concrete batching facilities which are being relocated to the north and west of the CTRL alignment (outside the site boundary).
2.1.9 In the extreme north-east, King's Cross Central extends across York Way to encompass the area of land known as the Triangle Site. This part of the site lies between the York Way realignment, the Thameslink 2000 rail line and the East Coast Main Line.

Existing Land Uses

2.1.10 The majority of the land to the south of the Regent's Canal is currently used for CTRL and LUL construction purposes, for temporary roads and for car parking associated with King's Cross Station. The Great Northern Hotel, German Gymnasium, Stanley and Culross Buildings have been vacated and secured due to construction work on adjacent sites. A small area is occupied by a district gas governor facility. To the north of the gas governor stands the listed gas holder no.8, with the dismantled sections of a linked triplet of gas holders (also listed) stored alongside. Part of the site, between Goods Way and the Regent's Canal, is currently a filling station.

2.1.11 Immediately to the north of the Regent's Canal, the 'Goods Yard' comprises a collection of former railway and industrial buildings, some of which are presently occupied by a range of interim/short-term uses. The main Goods Yard buildings are used for a variety of manufacturing, storage, distribution and leisure uses including night-clubs. A number of buildings, including the Fish and Coal offices and the Midland Goods Shed offices, are disused/vacant.

2.1.12 The land to the east of the Midland Goods Shed and to the north of the main 'Goods Yard' buildings is currently used for CTRL construction purposes.

2.1.13 The ongoing, complex nature of the CTRL project makes it unrealistic and inappropriate to provide accurate 'existing' floorspace data, for March 2004. Instead, Table A of the Development Specification for the Main Site presents the Applicants best estimate of the land uses and floorspace that existed on the site in 2001, prior to the commencement of major CTRL construction works. This table indicates that, in 2001, a wide variety of uses, including storage and distribution (use class B8), business and employment (use class B1), general industry (use class B2), housing (use class C3) and assembly and leisure uses (use class D2) occupied some 85,000 sq.m across the site. Where buildings were disused/vacant in 2001, they are included in the table on the basis of their last known use.

2.1.14 The figures in the table exclude temporary portakabins; substations and other plant; and open-air storage areas.

2.1.15 The Triangle Site does not contain any buildings and consists of railway embankments, disused railway sidings and vacant land in between.

The Site’s Surroundings

2.1.16 Figure 2.1.2 shows the site’s surrounding land uses at ground level (as at November 2001). The area is typical of many inner city areas with a mix of uses and a mix of communities. To the west are the residential areas of Elm Village and Somers Town. The Maiden Lane and Agar Grove Estates lie to the north, with the Hillview Estate and other areas of King’s Cross to the south. To the east of the site, within Islington, are the neighbourhoods of Thornhill and the Bemerton, Barnsbury and the ‘Ten Estates’.

2.1.17 There are a number of primary schools in the area, but only three secondary schools: South Camden Community School is the only mixed school, with Maria Fidelis (Camden)
and Elizabeth Garratt Anderson (Islington) catering for girls only. There are a large number of community facilities in the area. Some, such as the British Library and the Almeida Theatre, have a London-wide or national significance. Others have a much more ‘local’ catchment, including many available to only specific sections of the local communities or particular tenants. The largest sport and leisure facilities in the local area are the Cally Road Pool and the Market Lane Tennis Centre.

2.1.18 Retail uses are clustered together on the Euston Road, Chalton Street, Camden High Street and Caledonian Road. These retail nodes comprise predominantly local retail and convenience stores, take-away food outlets, newsagents, off-licences and grocery shops. Camden High Street provides higher value retail facilities. Hotels tend to be located to the south of Euston Road. Small to Medium Enterprises, including offices, workshops and studios are focused along the Euston Road, Chalton Street, Caledonian Road, within Battlebridge Basin and the Acorn Production Estate.

2.1.19 The Regent's Canal represents the most significant recreational resource, both locally and within a wider context, forming part of a continuous pedestrian/cycle route and green corridor from Little Venice to Limehouse. St Pancras Gardens and Camley Street Natural Park also provide high quality open space. There is also a number of small parks and open spaces in the vicinity of the site. These vary in their range of facilities and overall quality.

Environmental Designations

2.1.20 A large part of the land within King's Cross Central falls within the King's Cross Conservation Area or the adjacent Regent's Canal Conservation Area, and many of the existing buildings are listed.

2.1.21 The planning application boundary for the Main Site includes parts of the Regent's Canal and Camley Street Natural Park. These areas have been included because they would be subject to new bridge crossings and other works.

2.1.22 The Regent's Canal lies within the Regent's Canal Conservation Area and is currently designated an Area of Special Character, Public Open Space and a Green Chain. The canal is further designated as a non-statutory Site of Metropolitan Importance for nature conservation.

2.1.23 Camley Street Natural Park is a statutory Local Nature Reserve and a non-statutory Site of Metropolitan Importance for nature conservation.

2.1.24 There are two Archaeological Priority Areas in the locality identified in the Camden Unitary Development Plan. These relate to the Medieval and Post-Medieval Hamlet of Battle Bridge, at King's Cross, and to the area of the existing St Pancras churchyard, and its former extent beneath and to the east of the railway lines running north from St Pancras station, as far as Camley Street. Both of these are entirely outside King's Cross Central except that the extreme western end of the area for the proposed bridge and pedestrian/cycleway over the Regent's Canal extends into the very eastern edge of the designated area related to St Pancras churchyard.

2.1.25 The whole of the Boroughs of both Camden and Islington are declared as Air Quality Management Areas for nitrogen dioxide and PM$_{10}$.
2.1.26 There are two designated Sites of Borough Importance Grade 1, for nature conservation, located partly within the site. The North London Link and King’s Cross Goods Yard, and Railside Land covering part of the Triangle Site. Much of the interest within the designated areas within King's Cross Central has however been lost as a result of the CTRL works.
2.2 The Site and its Surroundings in 2006/7 – The Baseline

Likely Changes to the Site and its Surroundings by 2006/7

2.2.1 The site and its surroundings are changing due to a number of developments that are under construction, planned or proposed, other initiatives and transport schemes, and this is expected to continue through to the Baseline Year of 2006/7. Key ongoing developments and transport schemes that could result in changes to the existing conditions of the site and its immediate environs by 2006/7 are identified and briefly described below. Appendix 8B identifies further initiatives and development schemes that might also lead to changes, although to a lesser degree e.g. they might be less likely to proceed, be further away and/or have a lesser influence on the baseline. Figure 2.2.1 identifies the locations of the main developments and transport schemes and also those identified in Appendix 8B.

2.2.2 This information is based on that available in March 2004. It has been compiled from a number of sources including communication with the London Boroughs of Camden and Islington, documents such as relevant development plans, and also websites of the London Boroughs of Camden and Islington and various developers.

CTRL Permanent Works and Temporary Haul Roads

2.2.3 The CTRL works is the principal factor which will result in changes to the site by 2007. The permanent works are expected to be complete by 2007. Current, temporary haul roads used for the CTRL works are assumed to be left in place.

London Underground Upgrade

2.2.4 This upgrade for King’s Cross/St Pancras underground stations is closely related to the CTRL project and includes two new ticket halls, refurbishment of the existing ticket hall, new entrances and improvements to the public realm. The works are due to be complete by 2007.

2.2.5 However, the ongoing LUL Phase 2 works (Northern Ticket Hall and associated infrastructure) are the subject of a current review that may affect the timing of their completion. It is possible, therefore, that the works to complete the project (scheduled to last 3 years) could still be underway in 2007, alongside the development of King’s Cross Central. The EIA has initially assumed that the LUL Phase 2 works are complete by 2007. It also assesses the possibility that these works could still be under construction in 2007. This latter scenario could postpone any development of the King’s Cross Station Enhancement, or the two sets of works may potentially be integrated (see below).

King’s Cross Station Enhancement

2.2.6 This would be a large-scale development and would require some land within the King’s Cross Central application site, both for the permanent works, and for construction access. As yet, no proposals for the enhancement have been submitted for planning approval.
2.2.7 The King’s Cross Central Applicants have worked with Network Rail to ensure that the station enhancement could proceed (if funding and permission for the station enhancement are achieved) and that a new western concourse would be well integrated into the wider proposals. Conversely, if necessary, each project could still be taken forward independently of the other, given the many uncertainties surrounding permission and other consents, timing, funding and other matters.

2.2.8 Since it is not certain whether the King’s Cross Station Enhancement will proceed, the King’s Cross Central proposals are assessed without the King’s Cross Station Enhancement. However, the EIA also tests this assumption and considers how the effects of King’s Cross Central might be different, topic by topic, if the enhancement project did go ahead, including the potential interaction between the two projects.

2.2.9 If the King’s Cross Station Enhancement proposals do go-ahead, there is a range of possible timescales, including the following:-

i) construction could commence following completion of the LUL Phase 2 (Northern Ticket Hall etc) works with construction of the Station Enhancement expected to last a maximum of 4 years; or

ii) the proposals for King’s Cross Station Enhancement could be combined with the LUL Phase 2 (Northern Ticket Hall) into an integrated project, with construction of that integrated project likely to take less than the 7 years identified above for the two projects to take place one after the other.

2.2.10 It is considered unlikely that an integrated project ((b) above) would have greater overall construction effects (in terms of either magnitude or duration) than the two projects carried out in sequence, one after the other: if anything an integrated project is likely to have less construction effects in terms of magnitude and duration. This EIA has therefore considered (a) above (construction of King’s Cross Station Enhancement following completion of the LUL works) and the potential for it to give rise to cumulative construction effects alongside King’s Cross Central.

St Pancras International and Domestic Station and Thameslink

2.2.11 The works to St Pancras station, the CTRL infrastructure, Thameslink Box and tunnels and associated site restoration are expected to be complete by 2007.

2.2.12 The £800 million Thameslink 2000 scheme would transform services using Thameslink through King’s Cross. It was expected to be complete by 2006, however, January 2003 saw the Government reject the plans to upgrade the cross-London route, following a Public Inquiry. Network Rail and the Strategic Rail Authority are now developing new plans, a process that is likely to put the project back by several years.

Relocation of Concrete Batching Plants

2.2.13 Three batching plants have been, or will be, relocated as part of the CTRL works. The new Castle Cement plant has already been constructed to the north west of the site and Tarmac have planning permission for a joint plant with Hanson to the north of the site. The latter is expected to be finished or near completion by 2006/7.
2.2.14 **Realignment of York Way**

The realignment of York Way is part of the CTRL works. Following the realignment, the Triangle Site, which forms part of the King’s Cross Central site, will be to the east of York Way (the Triangle Site is partly in Camden and partly in Islington). London and Continental Railways expect the realigned route to be opened before the end of 2004.

2.2.15 **The Regent Quarter**

This urban regeneration project by P & O Developments is located to the east of King’s Cross Station, on the opposite side of York Way. This site covers some 2.4ha and the development comprises residential units, business space, shops, bars, restaurants, art gallery, Premier Lodge Hotel, health club and other leisure facilities. There are four blocks. Block A (the Lighthouse Block) falls within Camden and Blocks B to D fall within Islington.

2.2.16 Construction work for this scheme is currently underway. For Block A, a Section 106 agreement is being negotiated and a start date has not been determined. Blocks B and C are anticipated by LBI to be complete by late 2004/early 2005. Block D is not yet complete and LBI consider it unlikely to proceed until the market is favourable. A planning application for a courtyard theatre in Block B (for mainly internal renovations) is anticipated.

2.2.17 **Arsenal Football Club**

A new stadium is being built for Arsenal Football Club together with mixed uses across three sites - Ashburton Grove, Lough Road and Highbury. At the Ashburton Grove site a new stadium is to be constructed together with residential and mixed uses. The Lough Road site involves a new waste and recycling centre and residential and mixed uses. At the Highbury site, the old stadium is being replaced by residential and mixed uses. The nearest site is located approximately 1km to the north-east of the King’s Cross Central site. (Note, the most northerly site, Highbury, is not shown on Figure 2.2.1).

2.2.18 The phasing of the Arsenal development is largely dependent on funding. However, the dates given below represent the most likely position at present. At Lough Road, construction commenced late in 2002 and completion is anticipated by 2005. For Ashburton Grove, funding has recently been secured for the stadium which is expected to be operational by the start of the 2006-7 season and the housing is expected to be complete by mid 2006. For Highbury, the start date is anticipated to be late 2006/early 2007 with completion within three years.

2.2.19 **Naish Court**

This ongoing development entails existing homes being demolished and 300 new homes being built by the Guinness Trust. It is part of a larger scheme for which there is outline planning permission, with Naish Court being one phase of this. The site for this development is between Bingfield Street and Copenhagen Street. It is located to the east of the King’s Cross Central site (parallel with the northern section). Demolition started in 2000. The affordable units, new library, shops and community centre facing onto Copenhagen Street are anticipated to be complete by late 2006. However, the private residential units above these are expected to be under construction in 2006 with completion in 2007/8.
**Former Playground Site Junction of Gifford Street and Rufford Street**

2.2.20 45 units of affordable housing are under construction for the Circle 33 housing association on a site to the east of the Triangle Site. LBI consider that completion is due by late 2004/early 2005.

**Former William of York School Site**

2.2.21 This site is approximately 0.52ha and is located on Carnoustie Drive, to the east of the Triangle Site. The school itself was demolished in 2000 and development is likely to entail high density residential units. An application has gone to appeal for non-determination and the hearing is set for July 2004.

**Cross River Transit/Cross River Tram**

2.2.22 This scheme entails a tram route running from King's Cross (potentially running along Goods Way) and Camden via Euston and Waterloo, to Peckham and Brixton although route choices have not yet been finalised and the funding is unconfirmed. It is unlikely that construction would commence before 2008-2010 (this is not shown on Figure 2.2.1).

**Bingfield Park**

2.2.23 Planning permission has been given to Greenspace (the LBI’s parks division) for new landscaping and hard surfacing (no buildings). There are some reserved matters outstanding and LBI expect the development to be complete by the end of 2004.

**King’s Place**

2.2.24 Parabola Land has submitted a planning application for King’s Place at 82-96 York Way. The site covers approximately 0.45ha and is located immediately to the east of the King’s Cross Central site, on the other side of York Way and to the south of the Regent’s Canal.

2.2.25 No decision has yet been made on the planning application. Plans are being reworked for the façade and the street level appearance and LBI are awaiting these. Development would entail demolition of the existing buildings and redevelopment of a new arts complex, landmark office building of eight/nine storeys, concert hall and conference facility, restaurant and café and sculpture gallery and studios. If permission is granted it is anticipated that construction would begin in 2005/6, once a significant pre-let has been secured.

**Restoration of St Pancras Chambers**

2.2.26 A planning application is anticipated in mid 2004 for restoration of the chambers to provide hotel and residential uses. If granted permission, the development is expected to be complete by 2008.
Assumptions made about the 2006/7 Baseline

2.2.27 A number of assumptions have been made about how these developments and those schemes and initiatives in Appendix 8B are likely to change the site and its surroundings by 2006/7. These assumptions are identified in Table 2.2.1 and used, where relevant, for the assessment of relevant topics and effects in Parts 4, 5 and 9-19. Generally, those proposed developments with planning permission are assumed to go ahead. For those without planning permission, assumptions are made on a case by case basis. Where it is uncertain as to whether a development might be under construction or complete, it is assumed to be still under construction since this would generally be expected to represent the worst case i.e. other developments in the area under construction at the same time as King’s Cross Central.
### Table 2.2.1 – King’s Cross Central Assumptions for Baseline Year 2006/7

<table>
<thead>
<tr>
<th>Scheme</th>
<th>Extant Planning Permission</th>
<th>Planning Application Submitted</th>
<th>Assumptions about 2006/7 baseline</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTRL</td>
<td>Yes (CTRL Act)</td>
<td>N/A</td>
<td>Permanent works built and operational. Temporary haul roads removed.</td>
<td>King’s Cross Central may sensibly retain all or some of the haul routes (subject to permission/approval)</td>
</tr>
<tr>
<td>London Underground proposals at St Pancras/King’s Cross</td>
<td>Yes (CTRL Act)</td>
<td>N/A</td>
<td>Main construction works to Northern Ticket Hall complete.</td>
<td>The EIA assumes initially that the main construction works for the NTH are complete. It also assesses the alternative scenario that some works are still under construction in 2007.</td>
</tr>
<tr>
<td>King’s Cross Station Enhancement</td>
<td>No</td>
<td>No</td>
<td>Not complete</td>
<td>The EIA assesses King’s Cross Central without King’s Cross Station Enhancement. It also considers the scenario in which King’s Cross Station Enhancement does proceed.</td>
</tr>
<tr>
<td>St Pancras International and Domestic Station, including Thameslink Box</td>
<td>Yes (CTRL Act)</td>
<td>N/A</td>
<td>Complete</td>
<td></td>
</tr>
<tr>
<td>Relocation of concrete batching plants</td>
<td>Yes (CTRL Act)</td>
<td>N/A</td>
<td>Castle cement complete. Tarmac and Hanson plants near completion.</td>
<td></td>
</tr>
<tr>
<td>Cross River Transit</td>
<td>No</td>
<td>N/A</td>
<td>Construction not commenced.</td>
<td></td>
</tr>
<tr>
<td>Realignment of York Way</td>
<td>(CTRL Act)</td>
<td>N/A</td>
<td>Realigned route open.</td>
<td></td>
</tr>
<tr>
<td>Regent Quarter (P&amp;O)</td>
<td>Yes</td>
<td>N/A</td>
<td>Blocks B (except for courtyard theatre) and C complete. Blocks A and D still under construction.</td>
<td></td>
</tr>
<tr>
<td>Arsenal FC</td>
<td>Yes</td>
<td>N/A</td>
<td>Ashburton Grove and Lough Road site complete. Highbury site under construction.</td>
<td></td>
</tr>
<tr>
<td>Naish Court</td>
<td>Yes</td>
<td>N/A</td>
<td>Under construction.</td>
<td></td>
</tr>
<tr>
<td>King’s Cross Canal Action Plan</td>
<td>N/A</td>
<td>N/A</td>
<td>Some enhancement works commenced.</td>
<td>Some projects may be implemented as part of, or alongside, the King’s Cross Central development.</td>
</tr>
<tr>
<td>The Swathe - King’s Cross Finsbury Park Priority Area</td>
<td>N/A</td>
<td>N/A</td>
<td>Some economic regeneration activities commenced.</td>
<td></td>
</tr>
<tr>
<td>Former Playground Site Junction of Gifford St and Rufford St</td>
<td>Yes</td>
<td>N/A</td>
<td>Complete</td>
<td></td>
</tr>
<tr>
<td>Former William of York School</td>
<td>Gone to appeal for non-determination</td>
<td>Yes</td>
<td>Under construction.</td>
<td></td>
</tr>
<tr>
<td>Bingfield Park</td>
<td>No</td>
<td>Yes</td>
<td>Complete.</td>
<td></td>
</tr>
<tr>
<td>King’s Place</td>
<td>No</td>
<td>Yes</td>
<td>Under construction.</td>
<td></td>
</tr>
</tbody>
</table>
### The Site and Its Surroundings in 2006/7 – The Baseline

#### Scheme Extant Planning Permission Planning Application Submitted Assumptions about 2006/7 baseline Comments

<table>
<thead>
<tr>
<th>Scheme</th>
<th>Extant Planning Permission</th>
<th>Planning Application Submitted</th>
<th>Assumptions about 2006/7 baseline</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Former Kings Cross Coach Station</td>
<td>No</td>
<td>No</td>
<td>Not under construction.</td>
<td></td>
</tr>
<tr>
<td>200 Pentonville Road</td>
<td>No</td>
<td>Yes</td>
<td>Complete.</td>
<td></td>
</tr>
<tr>
<td>Travel Lodge</td>
<td>Yes</td>
<td>N/A</td>
<td>Complete</td>
<td></td>
</tr>
<tr>
<td>Restoration of St Pancras Chambers</td>
<td>No</td>
<td>No – anticipated soon.</td>
<td>Under construction.</td>
<td></td>
</tr>
<tr>
<td>176-178 York Way</td>
<td>No</td>
<td>No</td>
<td>Not complete</td>
<td></td>
</tr>
<tr>
<td>Development of land behind the British Library</td>
<td>No</td>
<td>No</td>
<td>Not under construction</td>
<td></td>
</tr>
<tr>
<td>Euston Station</td>
<td>No</td>
<td>No</td>
<td>Not under construction.</td>
<td></td>
</tr>
<tr>
<td>Brunswick Centre</td>
<td>No</td>
<td>Yes</td>
<td>Under construction.</td>
<td></td>
</tr>
<tr>
<td>Camden Town Tube Station</td>
<td>No</td>
<td>Yes</td>
<td>Under construction.</td>
<td></td>
</tr>
<tr>
<td>Star Wharf</td>
<td>Yes</td>
<td>N/A</td>
<td>Under construction.</td>
<td></td>
</tr>
</tbody>
</table>

### The Site in 2006/7

2.2.28 Figure 2.2.2 shows the site and its immediate surroundings as it is anticipated to be in 2006/7 taking into account the assumed changes specified in Table 2.2.1.

### Design Year

2.2.29 It is not certain how long it would take to complete the overall construction of King’s Cross Central but for the purposes of the EIA, an end date (Design Year) of 2020 is assumed. This is based on a likely start date of 2006/2007 and the fastest likely construction programme. It is also a convenient year to use since certain relevant data is available predicting environmental conditions at 2020.
2.3 The Future Site Without the Development

The Future Site Without the Development

2.3.1 Predicting the future of the site without the proposals would involve making a number of assumptions on a highly subjective basis, about what may and may not happen in terms of land use development and other issues between 2006/7 and 2020 should the King’s Cross Central proposals not be permitted. The overall effect would be that comprehensive redevelopment of the site would, once again, be delayed.

2.3.2 In terms of what might happen within the King’s Cross Central site, it may be reasonable to assume that, at some point, further planning applications for redevelopment would be submitted. The site is earmarked for comprehensive redevelopment in Camden’s UDP, Islington’s UDP, adopted regional planning guidance and the London plan. Also, a joint Development Brief has been produced by the London Boroughs of Camden and Islington. It is therefore, likely that permission would be granted at some stage, for large-scale mixed-use development.

2.3.3 In the meantime, the landowners and developers might or might not promote temporary land uses across the project area, not least to provide security. Such temporary uses are generally short term, low value uses which take advantage of the low density and relative inaccessibility of the area and its status as ‘awaiting redevelopment’. These uses exclude housing, and do not form a basis for the long-term refurbishment of heritage buildings or the wider regeneration objectives set out in the planning policy documents discussed in Section 1.2.
The Baseline - Assumed Changes to the Site and its Surroundings by 2006/7
Figure 2.2.2
King’s Cross Central

Environmental Statement

Volume I: Part 3 The Proposals

May 2004
### 3.1 Evolution of the Proposals

#### Evolution of the Proposals

3.1.1 This section charts the evolution of the proposals since the year 2000, when Argent St George was selected as the landowners’ partner for King’s Cross Central. It also responds to the EIA Regulations which require an Environmental Statement to provide:

“An outline of the main alternatives studied by the applicant or appellant and an indication of the main reasons for his choice, taking into account the environmental effects.” (Para 2 of Part II of Schedule 4).

#### Site Selection

3.1.2 DETR Circular 02/99 Environmental Impact Assessment (paragraph 83) states that:

“the nature of certain developments and their location may make the consideration of alternative sites a material consideration… In such cases, the ES must record this consideration of alternative sites”.

3.1.3 In this case, the Applicants have not considered alternative sites. The nature of the development and its location means that the assessment of alternative sites is not a material or practical consideration.

3.1.4 The planning policy context of the proposals has been described in Part 1.2. The merits of, and reasons for, comprehensive redevelopment of the former King’s Cross ‘railway lands’ have long been established, at every level of the plan-led system:

- The London Borough of Camden published a ‘Community Planning Brief’ for the site in 1988, expanding on policies within the Borough Local Plan of 1987. An updated Community Planning Brief was prepared in 1994;

- The King’s Cross lands were identified as a major development opportunity in the former London Planning Advisory Committee (LPAC) advice on strategic planning guidance for London (1994);

- LPAC’s advice formed the basis for the adopted regional guidance for London, RPG3 (1996). RPG3 identifies King’s Cross as one of five key Central Area Margin Opportunity Sites;

- The London Plan (GLA, February 2004) which replaces RPG3 identifies King’s Cross as one of six Opportunity Areas in Central London (Policy 5B.4). The adopted Camden Unitary Development Plan (UDP) (March 2000) designates King’s Cross as an Opportunity Area for comprehensive redevelopment. The new UDP Chapter 13, adopted in April 2003 following a public local inquiry, sets out four strategic policies and eleven local policies for the King’s Cross Opportunity Area (KCOA);

- The KCOA designation is now carried forward into Camden’s Deposit Draft Replacement UDP, dated June 2003. The newly adopted Chapter 13 policies are included as Section 9 in the Deposit Draft, in which the KCOA is described as:
“one of the few remaining major development opportunities in inner London and... certainly the major one in Camden.” (Deposit Draft, para 9.3)

- The Triangle Site is designated as an Area of Opportunity within the adopted Islington UDP (June 2002), indicating the Council’s desire for investment in the plan period.

- Camden and Islington have recently adopted a Planning and Development Brief for the KCOA (December 2003). The Brief explains that:

  “The two Councils [Camden and Islington] wish to see major development and regeneration started, and completed, as soon as possible, to overcome the problems and uncertainties that have blighted this site in the recent past” (paragraph 1.1.3)

High Density, Mixed Use Development

3.1.5 These and other planning documents promote the notion of a high density, mixed use development, with historic buildings and structures integrated into the fabric of a new urban quarter:

3.1.6 In the London Plan, Policy 5B.4 states that:

  “…Taking account of other policies, developments will be expected to maximise residential and non-residential densities and to contain mixed uses…”

3.1.7 The London Plan refers to King’s Cross as having the best public transport accessibility in London, commenting that the central location and unique public transport accessibility afford particular scope for high density business development as well as housing (paragraph 5.37). The Plan states:

  “…In such a highly urbanised quarter, environmental quality is crucial. The development framework should draw upon the historic features of the site to create a truly sustainable business and residential community, reliant on minimal use of cars”(paragraph 5.37)

3.1.8 Camden adopted Policy SKC2 seeks development densities appropriate to the high accessibility and urban characteristics of the King’s Cross Opportunity Area and its environs and both the Camden and Islington UDPs seek mixed use development with policies in favour of offices, retail, commercial leisure, food and drink and hotels at King’s Cross.

3.1.9 The Planning and Development Brief looks to optimise the use of land within the Opportunity Area (para 2.2.3):

  “…factors such as the physical characteristics of the site, the location of the canal, the retained heritage buildings and other sensitive areas, the Strategic View corridors, transport provision, and the requirements of high quality design and sustainability mean that densities are likely to vary across the site. The highest densities are likely to be in the southern part of the site, closest to the transport interchange. Throughout the site, optimising the use of land will require imaginative site planning and design solutions.”
It is clear from these policy extracts that environmental issues have been taken fully into account in promoting and guiding the comprehensive redevelopment of the former King's Cross railway lands. Within the policy documents there are frequent references to sustainable development, to minimising environmental harm, to environmental quality and to enhancing features of historic importance and other environmental considerations.

In addition, Camden Council has carried out and published a sustainability appraisal of its policies and these have informed the new replacement UDP, Deposit Draft. The GLA has similarly published a sustainability appraisal of the Draft London Plan.

**Taking Environmental Issues into Account**

Thus site selection has taken place through the plan-led system, with environmental (and other) issues taken into account.

Similarly planning policy, at all levels, promotes high density, high quality sustainable mixed use development at the Opportunity Area and, again, environmental issues have informed these decisions.

Within the development proposals, the distribution of land uses for the Main Site, in particular, provides for some flexibility to adjust the balance of land uses over time. For example, the submitted floorspace details provide for office or hotel use within the Great Northern Hotel. Other options apply to other buildings and other development zones. The EIA considers the effects of different combinations and the Environmental Statement reports the worst case.

The EIA has also been used as a design tool, such that decisions about the location of land uses have been made taking environmental issues into account (see also Part 3.3 below). The Joint Brief promotes new homes across the Area and Triangle Site (paragraph 2.2.6) but recognises that some locations are likely to prove inappropriate for residential use because of environmental conditions (paragraph 2.9.14). It states that most of the site has good accessibility and is appropriate for business uses (paragraphs 2.2.4 and 2.4.5) and that retail activities should be located across the Area and Triangle Site (paragraph 2.5.2).

The submitted proposals respond to and reflect these conclusions and, as such, there are no individual land use or building proposals that would warrant consideration of alternative sites.

**Spatial Layout and Framework for Development**

The physical, social, economic and environmental ‘framework’ that underpins the proposals has evolved, over the last 3-4 years, alongside the local and strategic policy documents discussed above. Environmental issues have been taken into account at each stage.

The Applicants have taken a step-by-step approach to researching, testing and refining this framework, as explained in four key public consultation documents:
3.1.19 **Principles for a Human City** (July 2001) set out an objective to devise, and then deliver, over the next 15 or so years, a successful mixed use development that would bring local benefits and make a lasting contribution to London. The ten principles which underpinned this objective and against which the Applicants have tested emerging ideas are:

- a robust urban framework;
- a lasting new place;
- promote accessibility;
- a vibrant mix of uses;
- harness the value of heritage;
- work for King’s Cross, work for London;
- commit to long-term success;
- engage and inspire;
- secure delivery;
- communicate clearly and openly.

3.1.20 **Parameters for Regeneration** (January 2002) explained the results of some 18 months research into a range of topics and issues, to inform the development plans. These ‘parameters’ included:

- land ownership and boundaries;
- the Channel Tunnel Rail Link;
- planning policy expectations;
- high density, mixed use development;
- strategic views;
- adjoining neighbourhoods and local communities;
- heritage and environmental issues;
- transport infrastructure;
- services and utilities;
- viability.

3.1.21 **A Framework for Regeneration** (September 2002) set out the Applicants’ ‘work in progress’, for discussion, debate and comment. The document:

- set out the outstanding opportunity at King’s Cross Central;
- explained how the past and present development of King’s Cross presents a major challenge – a fragmented and disconnected city;
- described a framework of new public routes and spaces which the Applicants believed could:
- help join up the city;
- integrate King’s Cross Central with existing neighbourhoods and communities in Camden and Islington; and
- provide the template, over time, for the introduction of new buildings, land uses and activities;

- presented a range of development ideas, for each part of the proposed framework; and
- asked questions, at regular intervals, with response forms for consultees to tear out and complete.

3.1.22 Section 4 of the document explained the Applicants’ belief that three principles, in particular, should underpin the framework for King’s Cross Central:

- “Create a network of safe pedestrian routes and other connections, to join up different parts of the city and integrate King’s Cross Central with existing neighbourhoods and communities in Camden, Islington and Bloomsbury;

- Learn from the urban grain of Central London, its pattern of built development, to combine (a) streets, squares and other routes and spaces that are easy to use and understand with (b) opportunities to develop buildings that will be attractive to their users and occupiers and commercially and socially successful; and

- Embed the best historic buildings and other heritage features within the new development, within the fabric of the city.”

3.1.23 Figure 7 within the Framework document (reproduced as Figure 3.1.1 of this Environmental Statement) presented a series of four drawings that illustrated how the Applicants began applying these principles to King’s Cross.

3.1.24 Section 6 of the document presented information and ideas and asked questions, about sustainable development, heat and power, water resources, transport, social and economic integration and the scope for the EIA.

3.1.25 Framework Findings (June 2003) provided an interim report on the consultation response to ‘A Framework for Regeneration’. It presented an overview on what people had said and written about the September 2002 framework proposals and ideas, to inform ongoing discussions with the local planning authorities (Camden and Islington) and others. It explained, for example, that the Applicants consulted over 4,000 people between July 2001 and March 2003, including representatives of over 150 community, business, environmental and other organisations.

3.1.26 ‘Framework Findings’ was prepared in collaboration with consultation specialists FLUID, who helped to shape and manage the consultation process and analyse the results. FLUID are the authors of the ‘Statement of Community Engagement’ report submitted by the Applicants in support of the King’s Cross Central planning applications.

3.1.27 Figure 3.1.2 shows how the evolution of this thinking from ‘principles’, to ‘parameters’, ‘framework’ and then beyond, and the spatial layout and framework for the development, has both informed, and been informed by, the development of policies for King’s Cross within the planning system.
Five Stages in the Evolution of the Proposals

3.1.28 Figures 3.1.3 and 3.1.4 chart the five key stages in the evolution of the spatial layout and development proposals.

3.1.29 The five stages (Stages A-D on Figure 3.1.3 and Stage E on Figure 3.1.4) are:

- **Stage A**: (December 2000) demonstrates some of the early thinking that was undertaken, prior to the publication of ‘Principles For a Human City’ and prior to Camden’s review of its Chapter 13 planning policies;

- **Stage B**: (February 2002) shows how the masterplanning team began to apply the ten ‘principles for a human city’, taking full account of early Camden documents as well as the environmental and other information set out in ‘Parameters for Regeneration’;

- **Stage C**: (July 2002) demonstrates the emergence of new ideas, in response to informal consultation on ‘Stage B’ drawings and new information about, for example, the possible requirement for, and implications of, new low level platforms and a new tunnel, at King’s Cross Station (as later shown in pages 28 and 29 of the ‘Framework’ document) and the likely requirements of UDP and GLA policies;

- **Stage D**: (September 2002) shows this stage that is based on one of the key images from the ‘Framework’ consultation document;

- **Stage E**: (April 2004) shows the framework for the submitted proposals, which have been prepared with the benefit of the EIA and other assessment study findings and all the documents shown on Figure 3.1.2, including the Joint Development Brief adopted by Camden and Islington Councils.

3.1.30 Some of the principal changes that have occurred, between stages A and E, are discussed below. Overall, the stages illustrate how ideas have been tested and refined, over time, in the context of:

- the progression from ‘principles’, to ‘parameters’, through to ‘framework’ and ‘framework findings’, as explained above;

- increasing knowledge and awareness about the site, its opportunities, its constraints, particular characteristics and other parameters (including environmental parameters);

- an emerging planning policy consensus, in favour of high density, mixed use development at King’s Cross, as explained above;

- increasing clarity about Camden, Islington and GLA priorities;

- ongoing, informal consultations with the local planning authorities, English Heritage, the GLA, CABE and others;

- wider consultation response to the ideas in ‘A Framework for Regeneration’, as summarised in ‘Framework Findings’; and
Part 3 – 3.1 Evolution of the Proposals

The EIA process, which included the publication of a Consultation Draft Scoping Report in April 2003, for consultation with a range of statutory and non-statutory organisations.

3.1.31 Both the 'Framework' document and the Consultation Draft Scoping Report identified heritage, townscape, transport, socio-economics, health and construction as main or key topics for the EIA to consider. As explained below, the heritage, townscape and transport topics, in particular, have been central to the evolution of the spatial layout, from Stage A right through to Stage E. Socio-economic, health and construction topics have also been addressed particularly in mitigating possible adverse effects and in maximising opportunities to enhance beneficial effects.

The Southern Hub and Boulevard

3.1.32 Figures 3.1.3 to 3.1.4 chart the evaluation of different configurations for the southern hub and new boulevard. A strong north-south route between 'Station Square' and 'Granary Square' has been a strong feature of the proposals from the beginning, together with a re-alignment of Pancras Road.

3.1.33 The masterplanning team has considered different alignments for the boulevard, having regard to:

- the utility and flexibility of the development blocks either side;
- early SRA and Network Rail aspirations (later dropped after 'Framework' was published) for new low-level platforms into King’s Cross Station;
- the need to plan new development that would be compatible with a rational structural grid for those low-level platforms below;
- the technical requirements to either cross Goods Way at-grade, or grade-separated (see below) and the locational constraints that those different requirements impose; and
- the objective of drawing people into the heart of the ‘Goods Yard’ complex of heritage buildings.

3.1.34 The sequence of drawings also charts the evolution of thinking about the townscape and grain of Development Zones A and B and their relationship with the German Gym, Stanley Building, Great Northern Hotel and, if necessary, the existing Gas Governor.

3.1.35 This evolution has taken into account informal feedback on work in progress, at various stages, from English Heritage, CABE and others. For example, initial feedback at Stage B (February 2002) raised comments and concerns about:

- the need to fully integrate Railtrack’s (now Network Rail) proposals for a western concourse into the masterplanning of the area;
- the need to create a major new public space of outstanding quality, between the stations;
- the opportunity to consolidate a frayed urban fabric in this area; and
- the opportunity for existing buildings to remain and sit comfortably in their new surroundings.
3.1.36 At Stage C (July 2002), the Applicants and masterplanning team received updated feedback that:

- substantial progress has been made, in setting out the wider strategic parameters for the development of the southern area and co-ordinating the relevant land ownerships and influences in the wider area;
- the strength of the earlier framework has enabled the design team to revisit its analysis in a constructive way;
- there is a welcome change in emphasis from problem-solving to creating opportunities;
- there could be a more sophisticated approach to common servicing, deliveries and refuse collection than conventional on-street processes;
- streets should foster a sense of citizenship and be accessible 24 hours a day, even if the local authority does not maintain them;
- the masterplan should be explicit about the possibility for marker buildings.

3.1.37 Thereafter, Stage D marked the evaluation of a second north-south route, through Development Zone B and this has been carried through into the submitted proposals (Stage E), together with a new open space, Pancras Square. In addition, the submitted proposals:

- provide for the retention and refurbishment of the Great Northern Hotel, which was earlier stated to be ‘Under Review’; and
- would require the demolition of one Stanley Building and provide for the retention, refurbishment and re-use of the other. Both Stanley Buildings were earlier stated to be ‘Under Review’ (Figure 9 in the ‘Framework’ document).

3.1.38 Development Zone A has also changed over time, in response to the Boulevard, continuing, technical collaboration with Network Rail about the likely design approach for any new western concourse at King’s Cross Station, and feedback from consultees. Figures 3.1.3 to 3.1.4 chart the way the alignment, size and shape of Development Zone A has changed.

3.1.39 In addition, the intention until recently was to develop Zone A as a series of stand-alone buildings, with gaps or routes in between (see Stages A, B, C and D). This has now changed. It is now considered that a terrace, comprised of a number of buildings joined by party-walls, would produce a better townscape solution.

**Goods Way**

3.1.40 The masterplanning team has evaluated the pros and cons of taking Goods Way below the new Boulevard, or meeting it at-grade. The ‘Framework’ configuration (Stage D), in particular, retained the flexibility to do either. The masterplanning team have had to consider:

- the potential routing of Cross River Tram;
- technical and townscape constraints on levels and gradients;
- the status and capacity of Goods Way, within the highway network;
- the number of people that may be walking or cycling between 'Station Square' and 'Granary Square' and how best to safely accommodate those people.

3.1.41 The submitted proposals involve the Boulevard (and an additional route from Pancras Square) meeting Goods Way at grade, with traffic on Goods Way controlled via a single, signalised junction.

3.1.42 At earlier stages of the project, the masterplanning team also considered potential changes to the horizontal alignment of Goods Way, such that new buildings and activity could be accommodated between Goods Way and the Canal (see Stage B). The proposed solution (Stage E) is for a light-controlled at grade junction at Goods Way.

The Goods Yard

3.1.43 The intention has always been to re-establish the Goods Yard as the hub of the site, a hive of activity, the meeting point for transport modes, and a place for business, competition and enterprise.

3.1.44 In July 2001, 'Principles for a Human City' stated that:

"Overall, the spatial masterplan will build on the sense of place afforded by the historic environment, to create a new quarter for London. It will reflect, and benefit from, a proper assessment of the historic buildings, structures, surfaces and wider conservation areas. We will need to evaluate their character, value and significance, together with the potential for their integration within the development proposals…we must balance the need to conserve the historic environment with the economic, social and environmental benefits of development and regeneration."

(Harness the value of heritage)

3.1.45 Figures 3.1.3 to 3.1.4 chart the 'proper assessment' and 'evaluation' referred to in the 'Principles' document. The merits and de-merits of retaining or removing various buildings and structures have been considered carefully. The conclusion is that many of the historic buildings and structures are capable of being re-used in new ways.

3.1.46 These decisions have been made with the full benefit of the masterplanning work and consultation undertaken over the last 3-4 years. Consequently, there are significant changes between the 'Framework' document (Stage D) and the submitted proposals for the Goods Yard (Stage E) as shown in Table 3.1.1.
Table 3.1.1 Changes between the ‘Framework’ document and the Proposals for the Goods Yard

<table>
<thead>
<tr>
<th></th>
<th>Stage D/ Framework Document</th>
<th>Stage E/ Submitted Proposals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas holder no.8 guide frame</td>
<td>Under review</td>
<td>To be relocated to Development Zone N</td>
</tr>
<tr>
<td>Gas holder triplet guide frames</td>
<td>Under review</td>
<td>To be relocated to Development Zone N</td>
</tr>
<tr>
<td>Western Goods Shed</td>
<td>Under review</td>
<td>To be demolished, to make way for the triplet of Gasholder guide frames</td>
</tr>
<tr>
<td>Midland Goods Shed</td>
<td>Under review</td>
<td>To be retained and refurbished</td>
</tr>
<tr>
<td>East Handyside canopy</td>
<td>Under review</td>
<td>To be retained and refurbished (with the removal of one bay at the eastern end)</td>
</tr>
<tr>
<td>West Handyside canopy</td>
<td>Potential demolition</td>
<td>To be retained and refurbished (with the removal of one bay at the northern end)</td>
</tr>
<tr>
<td>Regeneration House</td>
<td>Under review</td>
<td>To be retained and refurbished</td>
</tr>
</tbody>
</table>

3.1.47
In addition, Stages D and E marked the introduction of new pavilion buildings in and around Granary Square, to enclose and animate the public realm.

New Development Areas to the North

3.1.48
The ‘Framework’ document explained that:

“To the north of the Granary complex and coal drops, there is an opportunity to develop a new mixed use district, with its own character and sense of place. Making the most of this opportunity means new buildings and public spaces that achieve both higher density development and high quality design.

It is also important to achieve a ‘critical mass’ of development: to create a reason for people to be there; to bring large numbers of people ‘through’ the central part of the site; bring the phasing of development forward as fast as possible; and, ultimately, make the place a success.”

3.1.49
Figures 3.1.3 to 3.1.4 chart how the Applicants and their masterplanning team have sought to respond to this opportunity and achieve the objectives set out.

3.1.50
Initial work (Stage A) focused on responding to the geometry and impact of two strong masterplanning influences: the new CTRL embankment and York Way. Later work (Stage B) concentrated on making the layout more outward-looking, the potential ‘place-making’ contribution of new streets and squares and the better integration of north and south.

3.1.51
Informal feedback on the Stage B work in progress raised comments and concerns about:

- the imposition of streets and squares in a formal grid across the site which may not provide an appropriate setting for the historic buildings and areas to the south or link effectively into the wider urban context, especially to the east;
the need for the proposals to take closer account of the area’s topography, industrial past and historic structures, in order to create a new piece of city with a unique and vibrant character;

- the gas holders, their close association with the character of the area and, their role in conferring distinctiveness to the overall project;

- the potential to use changes in level and other legacies from the past as design opportunities;

- the need to do more to overcome the various barriers that make it difficult to connect this site with its surroundings;

- the size of spaces proposed. There were comments that some seemed too large, so that it may not be possible to achieve the life and activity hoped for;

- the need to develop a strong character and identity within the development, based on the distinctive nature and history of the site, while at the same time making strong connections with its surroundings.

3.1.52 As a result, the Applicants modified their proposals. At Stage C, the layout was changed to:

- accommodate a new ‘Long Park’, to provide a strong focal point, contribute to place-making and combine the functions of the routes and spaces planned at Stage B, into a single entity;

- better reflect the layout of the Goods Yard grouping of heritage buildings to the south. The buildings reflect the way goods came in by train and railway lines fanned out across the site, to enable loading, unloading and servicing to take place. The layout of buildings shows clearly that the principal axis of movement was to and from the north-east;

- accommodate a ‘crescent’ of new buildings along the CTRL embankment.

3.1.53 The Applicants and masterplanning team received updated feedback at Stage C that:

- substantial progress had been made;

- the further development of ideas for the area to the north of the Regent’s Canal had begun to set the framework for a richer and more integrated townscape, with greater emphasis on connectivity to the wider area;

- the new proposals had a clearer focus and purpose;

- a greater diversity in the footprint and scale of buildings in the area immediately adjoining the canal would be welcome;

- exploiting the higher land to the north, giving views across the site, would add richness to the plans;

- the revised treatment of York Way, including the intention to create distinctive places along its length, is a considerable improvement;

- streets should foster a sense of citizenship and be accessible 24 hours a day, even if the local authority does not maintain them;
Part 3 – 3.1 Evolution of the Proposals

3.1.54 The Applicants have since made some further changes (see Stage E), in response to feedback on the ‘Framework’ proposals and ideas. The crescent has been modified to:

- widen Development Zone T. In this way, the proposals accommodate a multi-storey car park, provide greater flexibility in building forms, and provide a better destination for ‘Canal Street’, relative to the relocated guide frames;
- ‘open up’ the Long Park at the north end; and
- alter the way Canal Street meets York Way.

3.1.55 These changes have been made to better integrate the Main Site, Triangle Site development and existing urban areas to the east, in particular to simplify highway access arrangements for the Triangle Site, taking into account the engineering constraints imposed by new CTRL and Thameslink infrastructure.

The Triangle Site

3.1.56 The Triangle Site will be defined in 2007 by the re-aligned York Way to the West, the new Thameslink Line to the north and the existing East Coast Main Line to the east. The short southern edge of the site will be defined by Randell’s Road. The site has an unusual shape which represents both a constraint and an opportunity for development.

3.1.57 The Framework document (Stage D in the above analysis) presented three ideas for the Islington Triangle (as it was then referred to). These showed live/work units, sports space, cafes, community facilities, offices, flats, retail, a gym and other uses in various combinations.

3.1.58 The applicants reviewed these ideas taking into account:

- public consultation responses;
- evolving ideas on the Main Site; and
- the publication of two draft Briefs covering the Triangle Site in September 2003, leading to the preparation and adoption of the Joint Brief in December 2003/January 2004.

3.1.59 The submitted proposals respond to and reflect the Joint Brief.

3.1.60 First, it was necessary to find a technical solution for highway access which would rationalise CTRL arrangements and the need for a new access for the Triangle Site, and which would be consistent with proposals for the Main Site and other junctions off York Way. A single junction solution was developed, which utilises the cut and cover tunnel for the new Thameslink line, which has limited loading capacity.

3.1.61 Thereafter, key design objectives were to:

- develop the York Way frontage to an appropriate scale and ensure that the ground level offers publicly accessible uses that will animate the streetscape;
- develop the other perimeters of the site to create buffers from noise from adjacent railways;
- make the centre of the site an amenity and focal point;
orientate public entrances to respect and enhance east-west pedestrian movement;
create a focus for the long view up York Way; and
define a northern gateway to King’s Cross Central.

3.1.62 The result is a mixed use scheme which has variation in heights and massing, provides activity along York Way, and which deals with noise issues associated with the railway lines.

3.1.63 For example, Block C is adjacent to the East Coast Main Line and would contain predominantly, uses that are less sensitive to noise. This Block would also act as a barrier to noise from that line for the rest of the scheme.

3.1.64 The design ensures that the York Way frontage of the proposed scheme would have active uses, such as retailing.

3.1.65 Views from both north and south, and from the Main Site have been considered, and these have been addressed by using scale and height defining corners and by incorporating an area of public realm as the site is approached from the south.

3.1.66 An amenity space is proposed for the centre of the site, whilst a new area of public realm where the site meet’s Randell’s Road would provide a focus for pedestrian access.

Environmental Issues

3.1.67 As explained above, environmental issues have been taken into account, at every stage of project evolution. The Applicants and masterplanning team have sought and taken account of views from the EIA team and informal advice from the local planning authorities and their consultees. By way of example, the EIA’s Consultation Draft Scoping Report prepared in April 2003 set out a number of areas where environmental issues had influenced the ‘Framework’ proposals and ideas at that stage (Stage D):

- ideas for the protection and enhancement of the Regent’s Canal corridor and Camley Street Natural Park;
- a general presumption against residential uses on the ground floor, close to busy railway lines and roads;
- control of building heights within strategic view corridors;
- retention, refurbishment and re-use of heritage buildings;
- the creation of new civic spaces and routes to protect and enhance the setting of historic buildings;
- public access to the site and its historic buildings;
- the potential retention and re-use of the gas holder guide frames as landmark structures;
- opportunities within the site for public transport initiatives;
- creation of new links between north and south, including new bridges over the canal;
- public uses at street level to increase activity and reduce crime and the fear of crime.
3.1.68 Examples of the way in which the EIA process has continued to inform the submitted proposals include:

- locating residential uses away from the concrete batching plants;
- building height restrictions to safeguard Kenwood and Parliament Hill strategic views;
- creation/establishment of new local viewpoints;
- reuse of reclaimed and stored heritage structures and materials;
- pedestrian links to public transport;
- layout of streets and spaces to incorporate high quality bus access, cycle routes and other transport related measures;
- public uses of buildings located at street level to increase activity and also to reduce crime and the fear of crime;
- planting within the public realm to ameliorate wind speeds;
- avoidance of very tall buildings;

3.1.69 The submitted proposals (Stage E) also take into account the findings from approximately 450 written, video or workshop responses to the Framework proposals and ideas, as described in ‘Framework Findings’ (and discussed earlier at section 1.4). The principal findings were:

- on the whole, people were very supportive of the Framework proposals and ideas;
- making King’s Cross clean and safe is the major priority for local people, followed by community access to new facilities and services;
- some people expressed concern that the Applicants might not be able to ‘deliver’ the Framework proposals;
- many of the responses raised questions or concerns about the character of the place and, in particular, the implications for heritage buildings;
- there are strong interests in (and feelings about) the gas holders. Most people support their relocation and re-use.

3.1.70 The submitted proposals and supporting documents take account of these and other findings. For example:

- the submitted proposals aim to enhance the public realm, with new high quality routes and spaces. The Applicants have also submitted information, alongside the planning application (within a ‘Public Realm Strategy’), about the maintenance and management of these routes and spaces, responding to community aspirations for safety and cleanliness;

- the submitted proposals provide for up to 75,765 sq. m of community, health, education and cultural uses within the Main Site, with further scope within the Triangle Site, where the proposals provide for up to 3,500 square metres of uses within the D1 and D2 uses classes (see Part 3.2 below);
• the submitted proposals include the retention, relocation and refurbishment of many historic buildings and structures, including the listed gas holder guide frames;

• the Applicants have provided information, alongside their applications, about the construction and phased implementation of the proposals (within a ‘Code of Construction Practice’ and an ‘Implementation Strategy’), responding to local concerns about construction impacts and delivery.
3.2 Kings Cross Central Proposals

Introduction

3.2.1 This Environmental Statement incorporates the Development Specification documents for the Main Site and Triangle Site that provide a full description of the proposed King’s Cross Central development. These Development Specifications are submitted as part of the planning applications, as set out in the covering letter to the applications. To avoid duplication they are not reproduced within this Environmental Statement.

3.2.2 The EIA assesses the effects of the proposals as described in the Development Specifications for the Main Site and the Triangle Site. These are summarised below. The Development Specifications themselves should be referred to for a full description of the proposals as assessed by the EIA.

3.2.3 The approach to the construction process and possible temporary uses (prior to full build out) are also described below.

3.2.4 A number of relevant strategies are contained in other supporting documents and studies which are not formally part of the planning applications.

3.2.5 The applicants have also submitted a number of related applications for listed building and conservation area consent, to undertake demolition and other works that are necessary for the planning application proposals to proceed.

Summary of Development Specification: Main Site

General Description of Development

3.2.6 The Development Specification for the Main Site defines and describes the principal components of the proposed development. It explains that the outline planning application proposes a scheme for:

“Comprehensive, phased, mixed use development of former railway lands within the King’s Cross Opportunity Area, as set out in this Development Specification. The development comprises business and employment uses within the B1 use class; residential uses, serviced apartments and hotels; shopping, food and drink and professional services within the A1, A2 and A3 use classes; the full range of community, health, education, cultural, assembly and leisure facilities, within the D1 and D2 use classes; multi storey and other car parking; re-erection of the linked triplet of gas holder guide frames to enclose new residential and other development, on the site of the Western Goods Shed; reerection of the guide frame for gas holder no. 8, alongside the re-erected triplet, to enclose new play facilities and open space; relocation of an existing district gas governor; works of alteration to other existing buildings and structures, to facilitate their refurbishment for specified uses; new streets and other means of access and circulation; landscaping including open space; new bridge crossings and other works along the Regent’s Canal; the re-profiling of site levels; and other supporting infrastructure works and facilities.”
3.2.7 The overall total floorspace proposed for the site comprises:

i) Up to 238,545 sq. m. to the south of the Regent's Canal;

ii) Up to 479,730 sq. m. to the north of the Regent's Canal;

iii) Up to 718,275 sq. m. in total.

3.2.8 The land uses applied for are set out in Table 3.2.1. Whatever floorspace mix is eventually provided, within the various “up to” maxima applied for, these overall total floorspace limits would not be exceeded.
### Table 3.2.1 Total Floorspace proposed within the King's Cross Central Main Site (Table 1 of the Main Site Development Specification)

<table>
<thead>
<tr>
<th>Total Floorspace Applied for (sq. m.)</th>
<th>Business &amp; employment (B1)</th>
<th>Residential</th>
<th>Hotels(C1)/ Serviced apartments</th>
<th>Shopping/ food &amp; drink (A1/A2/A3)</th>
<th>Uses within D1 (see Note 4)</th>
<th>Cinemas</th>
<th>Uses within D2 (see Note 5)</th>
<th>Multi Storey Car Park</th>
<th>Other (see Note 6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>South of Regent's Canal</td>
<td>219,010</td>
<td>3,900</td>
<td>32,625</td>
<td>15,460</td>
<td>3,180</td>
<td>0</td>
<td>975</td>
<td>0</td>
<td>525</td>
</tr>
<tr>
<td></td>
<td>238,545</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>North of Regent's Canal</td>
<td>267,270</td>
<td>172,975</td>
<td>14,600</td>
<td>30,465</td>
<td>72,585</td>
<td>8,475</td>
<td>30,575</td>
<td>23,850</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>479,730</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>718,275</td>
<td>486,280</td>
<td>176,875</td>
<td>45,925</td>
<td>75,765</td>
<td>8,475</td>
<td>31,550</td>
<td>23,850</td>
<td>525</td>
</tr>
</tbody>
</table>

4 D1 uses include community, health, education and cultural uses such as museums.
5 D2 (Assembly and Leisure) uses include concert halls, dance halls, nightclubs, casinos, gymnasiums and other sports/recreation areas, including cinemas, which are also identified separately in Table 1. 31,550 sq.m. represents the maximum floorspace for all D2 uses, including cinemas.
6 ‘Other’ refers to service entrances and access to London Underground Ltd (LUL) facilities.
7 All floorspace figures given in Table 1 are given as gross external areas.
8 The floorspace figures in Table 1 exclude infrastructure and utility elements which would form part of the development and for which planning permission is sought, for example substations, transformers, waste storage and recycling facilities.
9 Other than the Multi Storey Car Park, the floorspace figures in Table 1 exclude parking.
10 The floorspace figures in Table 1 exclude new basement floorspace within buildings. New basement areas constructed within buildings as part of the development would (only) be used for plant, services and equipment, storage and parking.
11 The floorspace figures in Table 1 exclude rooftop plant.
12 The floorspace figures in Table 1 exclude the district gas governor (which would be relocated to development zone V).
3.2.9 The application seeks planning permission for up to 486,280 sq. m. of business and employment uses within use class B1. The Applicants consider that at least 400,000 sq. m. of business and employment space should be developed within the site, and ideally more (up to the maximum of 486,280 sq. m.), in order to establish an enterprise ‘cluster’ of offices (use class B1(a)) with the requisite critical mass to be successful.

3.2.10 The maximum residential floorspace could provide in the region of 2,300 new units. There would also be a minimum residential component of not be less than 1,600 new units.

3.2.11 The floorspace figures include the linked triplet of gasholder guide frames, which would be re-erected to enclose new residential development. The guide frame for gas holder no.8 would be re-erected alongside, as a free-standing structure, to enclose new play facilities and open space. For this reason, it is not included within the floorspace figures.

3.2.12 The floorspace figures also include various other, existing buildings and structures, for which the application includes works of alteration, to facilitate their refurbishment for specified new uses: the Great Northern Hotel; the German Gymnasium; the southern Stanley Building; the Fish and Coal offices and Wharf Road Arches; the Granary building, together with its East and West Transit Sheds; the Midland Goods Shed and adjoining Handyside Canopies; Regeneration House; the Eastern Coal Drops; and the Western Coal Drops.

3.2.13 The applicants have also submitted in parallel four applications for listed building consent and four applications for conservation area consent. These parallel applications seek consent to undertake demolition and other works that are necessary to deliver the comprehensive development of the site, as defined and described in the Main Site Development Specification (see paragraph 3.2.24 below).

**Parameter Plans**

3.2.14 The Development Specification includes 18 Parameter Plans which provide more detailed specifications for various items and features shown on the plans and may indicate any limits of deviation that apply.

3.2.15 Parameter Plans as part of the Development Specification are provided as follows:

- KXC001 Planning Application Area
- KXC002 Post-CTRL Site Layout
- KXC003 Post-CTRL Site Levels
- KXC004 Principal Public Realm Areas
- KXC005 Development Zones
- KXC006 The Regent’s Canal
- KXC007 Access and Circulation
- KXC008 Upper Floor Land Uses Along Street Elevations
- KXC009 Ground Floor Land Uses Along Street Frontages
- KXC010 Conservation Plans
3.2.16 These parameter plans need to be read together with section 4 of the Development Specification.

3.2.17 Two additional plans have been prepared to assist interpretation of the parameter plans and other information presented as part of the Development Specification and to provide information relevant to the Environmental Statement and other assessment documents. These are:

- Context 001 Off Site Utilities
- Context 002 Example of Selected Composite Layers

**Development Zones**

3.2.18 The site has been divided into 22 development zones that reflect the geographic layout of the proposed development. The development zones are shown on Figure 3.2.1 Parameter Plan KXC 005. They include the existing buildings and structures to be retained and refurbished, for specified new uses.

3.2.19 Table 3.2.2 provides a summary description of each development zone.
## Table 3.2.2– Summary Description of Development Zones

<table>
<thead>
<tr>
<th>Development Zone</th>
<th>Summary Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Mixed use new development. The principal land uses would be offices (B1) with shopping/food and drink (A1/A2/A3) below. Zone A could also include hotel/serviced apartment accommodation.</td>
</tr>
<tr>
<td>B</td>
<td>Mixed use new development. The principal land uses would be offices (B1) with shopping/food and drink (A1/A2/A3) below. Zone B could also include hotel/serviced apartment accommodation and some D1 uses.</td>
</tr>
<tr>
<td>C</td>
<td>The Great Northern Hotel. The application proposes works to facilitate a range of specified new uses: offices (B1); and/or hotel/serviced apartments. The Great Northern Hotel could also include some shopping/food and drink (A1/A2/A3).</td>
</tr>
<tr>
<td>D</td>
<td>The German Gymnasium. The application proposes works to facilitate a range of specified new uses, i.e. those within the A1/A2/A3, D1 and D2 use classes.</td>
</tr>
<tr>
<td>E</td>
<td>The southern Stanley Building. The application proposes works to facilitate a range of specified new uses, i.e. those within the B1 and D1 use classes.</td>
</tr>
<tr>
<td>F</td>
<td>New residential development alongside the Regent’s Canal, with shopping/food and drink (A1/A2/A3) below.</td>
</tr>
<tr>
<td>G</td>
<td>A new pavilion building to enclose and animate the public realm. The application provides for shopping/food and drink (A1/A2/A3) and uses within D1.</td>
</tr>
<tr>
<td>H</td>
<td>A new pavilion building to enclose and animate the public realm. The application provides for shopping/food and drink (A1/A2/A3) and uses within D1.</td>
</tr>
<tr>
<td>I</td>
<td>The Fish and Coal offices (and Wharf Road arches). The application proposes works to facilitate a range of specified new uses, i.e. business and employment (B1) and shopping/food and drink (A1/A2/A3).</td>
</tr>
<tr>
<td>J</td>
<td>New residential development alongside York Way, with business/employment (B1), shopping/food and drink (A1/A2/A3) and/or D1 uses below.</td>
</tr>
<tr>
<td>K</td>
<td>The Midland Goods Shed, Regeneration House and the adjacent Handyside Canopies. The application proposes works to facilitate a range of specified new uses, i.e. those within the D1, D2 and B1 use classes.</td>
</tr>
<tr>
<td>L</td>
<td>The Granary building, plus the flanking offices and Transit Sheds (East and West), plus new development within the footprint of the Assembly Shed. The application proposes works to facilitate a range of specified new uses: business and employment (B1), uses within D1 including higher education, a cinema and other land uses within D2; a supermarket and other shopping/food and drink (A1/A2/A3).</td>
</tr>
<tr>
<td>M</td>
<td>The Eastern and Western Coal Drops, together with their adjacent viaducts. The application proposes works to facilitate a range of specified new uses, i.e. those within the A1/A2/A3, D1 and D2 use classes.</td>
</tr>
<tr>
<td>N</td>
<td>The gas holders. The application proposes new residential development within the linked triplet of gas holder guide frames, with some shopping/food and drink (A1/A2/A3) and/or uses within D1 and/or D2. The guide frame for gas holder no. 8 would be re-erected as a free-standing structure, enclosing new play facilities and open space.</td>
</tr>
<tr>
<td>O</td>
<td>A new pavilion building to enclose and animate the public realm. The principal land use would be within use class D1. The building could also accommodate shopping/food and drink (A1/A2/A3) uses.</td>
</tr>
</tbody>
</table>
### Development Zone Summary Description

<table>
<thead>
<tr>
<th>Development Zone</th>
<th>Summary Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>Mixed use new development. The application provides for a range of land uses: residential; business and employment (B1); hotels/serviced apartments; a cinema and other uses within D2; a supermarket and other shopping/food and drink (A1/A2/A3). New local play/amenity space would be provided within the development zone for the benefit of residents and potentially others.</td>
</tr>
<tr>
<td>Q</td>
<td>Mixed use new development. The application provides for business and employment (B1) or residential development along Goods Street, with uses within D1/D2 behind.</td>
</tr>
<tr>
<td>R</td>
<td>Mixed use new development including both business and employment (B1) and residential land uses. The application also provides for uses within D1; a cinema and other uses within D2; and shopping/food and drink (A1/A2/A3). New local play/amenity space would be provided within the development zone for the benefit of residents and potentially others.</td>
</tr>
<tr>
<td>S</td>
<td>Mixed use new development including both business and employment (B1) and residential land uses. The application also provides for uses within D1; a cinema and other uses within D2; and shopping/food and drink. New local play/amenity space would be provided within the development zone for the benefit of residents and potentially others.</td>
</tr>
<tr>
<td>T</td>
<td>Mixed use new development. The principal land uses would be business and employment (B1) and a Multi Storey Car Park (MSCP), which may include an electrical sub-station, a city car club and other site services/facilities. The application also provides for residential and shopping/food and drink (A1/A2/A3) uses.</td>
</tr>
<tr>
<td>U</td>
<td>A new pavilion building to enclose and animate the public realm. The application provides for business and employment (B1) uses, uses within D1 and shopping/food and drink (A1/A2/A3).</td>
</tr>
<tr>
<td>V</td>
<td>Site for the district gas governor currently located within development zone B.</td>
</tr>
</tbody>
</table>

### The Public Realm

3.2.20 In addition to the built floorspace, the proposed development includes new streets, parks, squares and other principal public realm areas. These principal public realm areas are shown in Figure 3.2.2 Parameter Plan KXC 004.

3.2.21 The principal squares would be South Square, Station Square and Pancras Square south of the Regent’s Canal, and Granary Square and Market Square to the north of the canal. Long Park and new public realm around the re-erected gas holder guide frames would also be to the north of the canal. North Square and Canal Square would be smaller spaces to the north and south of the Canal respectively. There would be three new bridges over the canal.
Retained Buildings and Structures and Initial Conservation Plans

3.2.22 Figure 3.2.3 Parameter Plan KXC010 shows those building groups and structures that are the subject of initial Conservation Plans submitted in support of the application. The application seeks planning permission to undertake works of alteration to these buildings and structures, to facilitate their refurbishment for specified uses as part of the proposed comprehensive development.

3.2.23 The building groups and structures for which initial Conservation Plans have been prepared are:

i) the Western Coal Drops;

ii) the Eastern Coal Drops;

iii) the guide frames for the linked triplet of gas holders;

iv) the Granary Complex, including the Granary building itself; the Granary offices that flank it; the Transit Sheds on either side, the Midland Goods Shed, Regeneration House and the East and West Handyside Canopies (the Assembly Shed would be removed to facilitate new buildings and uses within its footprint);

v) the Fish and Coal offices and the associated Wharf Road Arches;

vi) the southern Stanley Building;

vii) the German Gymnasium; and

viii) the Great Northern Hotel.

Demolition and Relocation Proposals for Listed Building and Conservation Area Consent

3.2.24 Figure 3.2.4 Parameter Plan KXC011 identifies:

i) Those proposals for which the applicants have submitted parallel applications for conservation area consent:

(a) demolition of the Culross buildings;

(b) demolition of the Western Goods Shed so as to allow the re-erection of the (already dismantled) gas holder triplet guide frames;

(c) demolition of the Plimsoll Viaduct;

(d) demolition of various other buildings and structures, including the ‘Laser’ building between the Eastern Coal Drops and Western Transit Shed; the existing Exel bridge over the Regent’s Canal; the ‘bakery’ building and fence to the north of the Western Coal Drops; the existing filling station at the corner of Goods Way and York Way; the existing gas governor; existing substation, storage and security buildings; sections of wall around the former gas works site; sections of wall and fencing around the Granary; structures along the Regent’s Canal; a section of wall adjacent to Camley Street Natural Park; a number of telegraph poles; and structures associated with the existing King’s Cross Station car park.
Those proposals for which the applicants have submitted separate applications for listed building consent:

(a) demolition of the northern Stanley Building;
(b) dismantling of gas holder no. 8 so as to relocate and re-erect its guide frame within development zone N, to the west of the site proposed for the gas holder triplet (that site being the Western Goods Shed; see above);
(c) demolition of the most northerly bay (one bay only) of the East Handyside Canopy; the removal of the buttress wall that runs northward from the north east corner of the Canopy; and demolition of the most northerly bay (one bay only) of the West Handyside Canopy; and
(d) demolition of extensions to the Great Northern Hotel. The applicants seek to demolish the basement (3 offices) and ground floor extension (kitchens, toilet and office) on the south-western façade and the fire escape which crosses the extension; demolish the basement (storage) and ground floor extension (ladies toilets) on the northern façade; remove the railings along the south-western and northern sides of the hotel; cover the lightwell around the south-western and northern sides of the hotel; and renovate the affected façades so as to match, as closely as possible, the existing fabric of the hotel and the new paving surfaces around it.

Environmental Performance

3.2.25 All new buildings would be designed to achieve high BREEAM and EcoHomes ratings, with an aspiration for excellent (or equivalent assessment method and ratings).

3.2.26 At least 15% of the roof area of new buildings constructed within the development would be ‘green’ / ‘brown’ roofs (or equivalent systems).

3.2.27 The new drainage infrastructure provided within the Main Site would achieve a combined (storm and foul) flow to the existing combined sewers at least 10% less than the existing, maximum allowable discharge, calculated on the principle of equivalent discharge (2547 l/s). The new drainage infrastructure would be designed such that the combined peak discharge from the Main Site to the existing combined sewers would not exceed 2292 l/s.

Landscape Proposals

3.2.28 Landscape proposals for each of the principal public realm areas that are proposed as part of, and form the underlying ‘framework’ for, the comprehensive development of the site, are set out in a series of Landscape Proposals Plans, each of which defines and describes a series of landscape scheme components proposed as part of the planning application.

Off Site Works

3.2.29 The plan entitled Figure 3.2.5 CONTEXT1 shows connections to off-site utilities. The off-site works shown do not form part of the planning application. They would be carried out by statutory undertakers or their agents under Permitted Development Rights.

Summary of Development Specification: Triangle Site
General Description of Development

3.2.30 The Development Specification for the Triangle Site defines and describes the principal components of the proposed development. It explains that the application proposes a scheme for:

“Mixed use development of part of the former railway lands within the Camden Kings Cross Opportunity Area and an Islington Area of Opportunity, as set out in this Development Specification. The development comprises residential; shopping, food and drink and professional services within the A1, A2 and A3 use classes; a health and fitness centre (use class D2) incorporating medi-centre facilities, a crèche and community facilities (use class D1); amenity and open space; habitat area; recycling and other ancillary uses; parking; highway works to provide access; and other supporting infrastructure works and facilities.” (paragraph 3.1)

3.2.31 The overall total floorspace proposed within the development is 24,000m². The proposed development comprises three principal buildings, which would stand as separate structures at higher levels, but which would extend across the site at lower levels with a common basement level used for car parking. The floorspace applied for is as shown in Table 3.2.3.

Table 3.2.3 Floorspace Schedule for the Triangle Site (Annex A of Triangle Site Development Specification)

<table>
<thead>
<tr>
<th>Use</th>
<th>Total Floorspace Applied for (sq.m)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>up to 18,000</td>
<td>To provide up to a maximum of 250 dwellings in Blocks A and B.</td>
</tr>
<tr>
<td>Retail</td>
<td>up to 2,500</td>
<td>Within Block B and beneath amenity space. All units to have frontage to York Way.</td>
</tr>
<tr>
<td>D1/D2 uses</td>
<td>up to 3,500</td>
<td>The application seeks permission for specific uses within Block C including a sports hall; swimming pool; other indoor sports, fitness and recreation facilities including a gymnasium; medical/health facilities; crèche/day nursery facilities; and day centre/public hall facilities.</td>
</tr>
</tbody>
</table>

Total up to 24,000

1. All figures are gross external
2. The floorspace figures given exclude infrastructure and utility elements which would form part of the development and for which planning permission is sought, for example substations, transformers, waste storage and recycling facilities.
3. The floorspace figures exclude parking.
4. Up to 185 car parking spaces would be provided within the development. The overall maximum car parking/storage ratio for residential uses would be 0.5 spaces per unit (up to a maximum of 125 spaces). The remaining spaces (up to a maximum of 60 spaces) would serve the D1/D2 uses proposed. The proposed retail uses would have no dedicated parking at the completion of the development. However, in earlier phases, a proportion of the spaces applied for may be used for retail parking.
5. The floorspace figures exclude plant.
3.2.32 A range of supporting infrastructure works and facilities may be required to carry out the
development and permission is sought for these.

Parameter Plans

3.2.33 Seven Parameter Plans form part of the Development Specification. These are:

- TS001: Planning Application Area
- TS002: Post CTRL Layout and Site Levels
- TS003: Proposed Access
- TS004: Lower Ground Level
- TS005: Ground Level
- TS006: Garden Level
- TS007: Upper Levels

3.2.34 An additional plan has been prepared: Context 001 (see Figure 3.2.6). This is not a
Parameter Plan, and is designed to show the relationship of the Triangle Site with the
principal development zones on the Main Site. This plan indicates the locations of the
three main development blocks on the Triangle Site:

- Block A: mainly residential; bounded by the Thameslink 2000 Line;
- Block B: retail and residential; has its frontage to York Way;
- Block C: health and fitness, medi-centre and community uses; bounded by the East
  Coast Main Line.

3.2.35 There would be four principal levels, described in table 3.2.4 below:

Table 3.2.4: Summary of Levels for the Triangle Site

<table>
<thead>
<tr>
<th>Level</th>
<th>Notes</th>
<th>Parameter Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower Ground Level:</td>
<td>At street level in the north / underground towards the south. A shop unit would 'hold' the corner where the new site access meets York Way.</td>
<td>TS004</td>
</tr>
<tr>
<td>Parking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ground Level:</td>
<td>At street level for the majority of York Way. Entrance to retail, residential and health and fitness facilities at this level.</td>
<td>TS005</td>
</tr>
<tr>
<td>Retail</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Garden Level</td>
<td>Above street level. Access to dwellings and potentially to the health and fitness facilities at this level. Accessed from street level by ramps, steps and garden lift.</td>
<td>TS006</td>
</tr>
<tr>
<td>Upper levels</td>
<td>Majority of residential accommodation; upper levels of health and fitness facility.</td>
<td>TS007</td>
</tr>
</tbody>
</table>
Amenity Space and Public Realm

3.2.36 A central amenity space between the three ‘blocks’ would be provided as part of the development, for the use of residents and users of the health and fitness and related facilities. This space could comprise gardens, seating areas, play areas for children (as part of a crèche facility), and buffer space between the main garden and the lower residential dwellings.

3.2.37 Where the site fronts Randell’s Road, the buildings have been designed to step back from the highway to form a new area of public realm, where seating could be provided outside a retail unit. These proposed public realm enhancements would also provide a high quality entrance to the health and fitness and medi-centre facilities.

Other Uses

3.2.38 Other uses proposed for the site are either ancillary, or fall outside the traditional use classes order description of uses.

3.2.39 Ancillary areas are proposed within Block A at Ground Level and adjacent to Block C at lower ground and garden levels. These ancillary areas would be used for plant, to accommodate waste and recycling facilities, and for circulation.

3.2.40 The far corner of the site, up to the point where the rail lines converge, would be retained as a habitat area. The detailed design of this area would seek to provide habitat considered complementary to the adjoining railways.

3.2.41 Block B or Block C could incorporate a Centre Management Office.

3.2.42 Plant and other supporting facilities for the development could be accommodated either within the blocks and/or within the car parking areas.

Environmental Performance and Sustainability

3.2.43 All new buildings would be designed to achieve high BREEAM and EcoHomes ratings, with an aspiration for excellent (or equivalent assessment method and ratings).

3.2.44 The new drainage infrastructure provided within the Triangle Site would achieve a stormwater discharge to the existing sewers 10% less than the existing, maximum allowable discharge, calculated on the principle of equivalent discharge (74 l/s). The new drainage infrastructure would be designed such that the peak discharge from the Triangle Site to the existing sewers would not exceed 67 l/s. Foul water discharge would be to the York Way sewer.

Approach to the Construction Process

3.2.45 The main elements of King’s Cross Central construction are likely to consist of the following works, although not necessarily following the exact sequence:-

- initial site preparation, including setting up construction compounds and contractors’ parking, installing site hoardings and protection measures for listed buildings and other buildings of notable historic value;
- construction of temporary accesses to site;
• realignment of existing roads;
• construction of internal road system;
• onsite infrastructure works, including foul and storm sewers, manholes and chambers;
• demolition of existing structures (following documentation);
• earthworks, including removal of contaminated materials, excavation of ground and basements;
• construction of new buildings including piling, laying foundations, connection to services and addition of superstructure;
• refurbishment of existing buildings;
• land profiling, landscaping and public realm works;
• site completion, including removal of construction compounds.

3.2.46 Likely construction methods, equipment to be used and likely duration for construction of individual components are described in Chapter 4.

Construction Period

3.2.47 As explained in the Development Specifications, most of the site would only be released for development upon completion and opening of the CTRL, expected in 2007. Therefore construction is anticipated to commence at this time, although it may be possible for some site preparation and off-site works to take place before this.

3.2.48 The Development Specifications make no commitment to a particular programme of works or sequence of development and accordingly the assessment is based on the worst case for each environmental topic, as appropriate. The implementation parameters defined state that each major phase would include works and development across a number of zones across the site, including public realm works.

3.2.49 Given the scale of the proposed development it is anticipated that it would take 12 to 15 years or longer to complete. For the purposes of the EIA, a Design Year of 2020 has been taken to represent completion. In the event that development continues beyond this period of time, it is considered that the assessment of effects would still be valid for the following reasons:

• There would be no increase in the magnitude of adverse effect, they would simply be spread over a longer period.

• For beneficial effects, there may be delay in the timing of delivery but the benefit would still be provided.

• The adverse effects of a longer development period are no worse than short, intense periods of working and the worst case is a combination of the two. The Environmental Statement assumes a worst case as construction being carried out for the full duration of the construction period with several high peaks in the level of activity (see Part 4 – Construction Effects).

• Effects over 5 to 10 years in length are considered to be long term because effects beyond this period are perceived to be long term in any event. If construction continues beyond this, it is not considered to give rise to any changes to the assessment of significance of the effects.
3.2.50 Based on the Applicants’ experience of similar developments, it is likely that the first year would focus on the enabling works and therefore any construction of buildings would be minimal. Thereafter, the rate of construction would build up to the peak rate over 2 years. Wherever practicable, works would be undertaken during normal working hours, i.e. 0800 to 1800 on weekdays and 0800 to 1300 on Saturdays. Where this is not practicable, preference would be given to undertaking works during the evening rather than at night, and consideration would be given to additional weekend (day) working. For internal fit-out work, where there is demonstrably no disturbance, out of hours working would be proposed.

3.2.51 Activities likely to generate noise that would affect sensitive areas would only occur during normal working hours, other than in exceptional circumstances, (e.g. works in close proximity to an operational railway that could only safely take place during railway possessions). Where such activities have to occur outside normal hours, occupiers of nearby residential or other properties would be given adequate notification in advance of the time of the works and the likely duration where practicable. Further information is provided within Part 4.

Temporary Uses

3.2.52 There may or may not be opportunities for existing, or new, temporary uses to continue alongside the phased development, depending on construction sequencing and other factors. The outline planning applications include no specific proposals for any such uses, and any environmental impacts of possible, unknown, future interim uses requiring planning permission, or other consent, are not addressed in this Environmental Statement.

3.2.53 To the extent that some existing temporary uses may continue alongside the phased development of King’s Cross Central, any such uses would be generally short term and low value in nature. As is the case for the CTRL works, access would continue to be provided for any such uses as necessary. Any such uses would be discontinued as required for the progress of the development. As explained in the Development Specification for the Main Site (para 6.12): “Each major phase of development may include works and other development within a number of development zones across the site”. Thus the extent to which any such uses could in practice be able to continue is likely to be limited. Some or all may well be discontinued prior to 2006/7. Such uses form part of the existing situation and thus are taken into account in establishing the baseline for the assessment. For example the socio-economic assessment (Part 12) assumes as a worst case, the loss of the existing employment of 200 people.
3.3 Mitigation Strategy

Introduction
3.3.1 A description of mitigation measures is one of the requirements of the EIA Regulations. Part 2 of Schedule 4 includes the requirement for:

“A description of the measures envisaged in order to avoid, reduce and, if possible, remedy significant adverse effects.”

3.3.2 Mitigation measures thus aim to avoid, minimise, remedy or compensate for the potential or predicted adverse impacts of the project. In the context of development proposals they may include:

- selection and adjustment of layouts;
- modification of the methods or timing of construction;
- modification of design features such as building lines or landscape;
- minimisation of operational impacts through energy efficiency, pollution control and waste management;
- specific measures, perhaps outside the development site, to minimise particular impacts;
- measures to compensate for losses, e.g. of amenity or habitat features.

Adopted Mitigation
3.3.3 The purpose of mitigation measures is to limit the environmental effects of the development, not necessarily to exclude such effects entirely. The specialists in the EIA team have identified mitigation measures as part of the project evolution, and those that are in effect ‘built-in’ to the proposals are described in the individual specialist reports and relevant sections of Parts 4 and 5 of the Environmental Statement. This reflects good practice in the conduct of EIA whereby mitigation is ‘designed-in’ as part of the emerging proposals, rather than being left to a late stage and simply put forward as a series of recommendations to reduce predicted impacts.

3.3.4 The assessment of the impacts of the development takes into account the adopted mitigation, and, where appropriate, the impacts of the adopted mitigation measures themselves have been assessed. Only those measures to which there is a clear commitment have been taken into account in the assessment of effects.

Further Mitigation
3.3.5 In some cases further mitigation measures have been identified by the specialists which could further reduce the impacts of the proposals, or could provide environmental enhancement, but to which no firm commitment has yet been given, and which have thus not been relied upon in undertaking the EIA. Such further mitigation is identified in the specialist reports and relevant sections of Parts 4 and 5 of this Environmental Statement, but is not taken into account in the assessment of environmental effects.
The Application of Principles to the Scheme's Evolution
(from 'A Framework for Regeneration', 2002)

Figure 3.1.1

1 The Goods Yard

2 Between the Stations

3 A New Public Route

4 Extend the Network of Routes and Spaces

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Timeline of Documents
Figure No. 3.1.2
Scheme Evolution Stages A to D

Figure 3.1.3
Parameter Plan KXC 005:
Development Zones

Figure: 3.2.1
Context 001, Off Site Utilities,
Main Site

Figure: 3.2.5
King’s Cross Central

Environmental Statement

Volume 1: Part 4 Environmental Effects at the Construction Stage

Prepared for Argent St George, London and Continental Railways and Exel by RPS

May 2004
Part 4: Environmental Effects at the Construction Stage

Preamble

This part of the Environmental Statement addresses the environmental effects of King’s Cross Central at the construction stage i.e. all those works, activities and processes that would be involved in carrying out the proposed development, including excavation and other earthworks, the erection and dismantling of buildings and structures, demolition and other works. It summarises the construction effects described in more detail in the individual specialist reports for each topic which make up Parts 9 to 19 of this Environmental Statement. Environmental effects during the operational stage are addressed in Part 5 and in the individual specialist reports in Parts 9 to 19.

Should there be any inadvertent inconsistencies between the content of Part 4 and the Specialist Reports, the Specialist Reports take precedence and should be relied upon by the reader.
4 Construction Effects

4.1 Introduction

4.1.1 This part of the Environmental Statement provides an assessment of the effects that are likely to arise during construction of the King’s Cross Central development. It draws together the likely effects of construction from each of the specialist reports (Parts 9 to 19).

4.1.2 Environmental effects are inevitable during the construction of any development. They arise from activities which, for example, generate noise and vibration, emissions to air (including pollutants, odour and dust), traffic movements (particularly HGVs), and the potential for sedimentation and pollution of water resources.

4.1.3 Most of the proposed King’s Cross Central site is currently within the site of the Channel Tunnel Rail Link (CTRL) works, which is a large scale civil engineering project. It is important to recognise that the nature of the King’s Cross Central proposals are different to CTRL. While the King’s Cross Central proposals do include civil and infrastructure enabling works, the vast majority would comprise building works using well established construction techniques for minimising disruption in high density urban settings.

4.1.4 This chapter also considers the likely effects of waste production and disposal during construction.

4.2 Methodology and Assessment Criteria

4.2.1 This section describes the process adopted for assessing the construction effects of the proposed development.

4.2.2 The assessment takes account of the likely start date for construction works in 2006/7. It also recognises the scale and complexity of the development, the long-term, phased nature of the proposals, and the need for flexibility in the programme to respond to market forces.

4.2.3 The identification of sensitive receptors in the vicinity of the site has been based on information from land use reports and site visits, and from the specialist reports in this Environmental Statement. The main area considered is that within 100m of the site and local transport routes. In some locations this area is extended to consider the likely effects on other properties and resources in view of their particular sensitivity to construction activities.

4.2.4 There is no direct guidance relevant to this type of development on how to assess construction effects. Reference has been made, however, to the Highways Agency’s DMRB Guidelines which defines how ‘Disruption due to Construction’ should be assessed for road schemes. In the absence of any more directly relevant guidance, this has been used to define the main area of consideration (as defined above).
Those construction activities considered most likely to cause environmental effects are described in broad terms in the Proposals section of Part 3.2, and in further detail below. This provides details of the likely construction activities, the predicted construction period, the volumes of construction traffic and the off-site infrastructure works. The ‘worst case’ predicted volumes of construction traffic are provided in the Worst Case Scenario section.

The assessment draws on the assessments of construction effects described in specialist topic reports. The methodologies used are described in the specialist reports.

As explained in Part 1.3, in assessing the effects, it is appropriate to take into account controls which would be applied, not all of which may be within the planning system. Emissions to air, discharges into water and disposal of the waste produced by the project, would all be subject to controls under legislation dealing with environmental protection and it may be assumed that those controls would be implemented competently by the responsible authority.

The EIA team are satisfied that there is sufficient information on the construction proposals to allow a robust assessment of the potential environmental effects arising during construction of the proposed development.

**Definition of Significance**

The criteria used to define the significance of the effects, both adverse and beneficial, are:

- **Major**: effects of the development of greater than local scale
- **Moderate**: effects of the development that may be judged to be important at a local scale (i.e. in the local planning context)
- **Minor**: effects that are of low importance in the decision making process

All of the above are considered to be material to a planning judgement. A further category of ‘negligible’ is used to describe effects which are of such low importance that they are not material.

This assessment, in line with the other Parts of the Environmental Statement, has been undertaken with two initial assumptions, a) that the development would proceed as a whole, including both the Main Site and the Triangle Site and b) that the LUL Phase 2 (Northern Ticket Hall) works are complete by 2007 and the King’s Cross Station Enhancement (KXSE) will not proceed. Two alternative scenarios have also been considered at the end of the assessment section of this Chapter which assess the effects should either:

(a) the Triangle Site not proceed, or

(b) King’s Cross Central construction take place alongside completion of the LUL Phase 2 work (see para 4.5.5 below) and/or the King’s Cross Station Enhancement.
4.3 Consultations

4.3.1 Since publication of the ‘Principles for a Human City’ in July 2002, which set out the overall objectives for the King’s Cross Central development, extensive consultation has been undertaken by the Applicants with a wide range of interested parties. The publication of the ‘Parameters for Regeneration’ in June 2002 and ‘Framework for Regeneration’ in September 2002 both led to extensive consultations. The initial findings of the latter consultation have been published in ‘Framework Findings’ (July 2003). Among the key themes which emerged from these consultations is the need to create a clean and safe environment, and that the potential impact of construction is of significant concern to many.

4.3.2 The Applicants have also taken an active interest in how current construction projects are being managed in the King’s Cross area, and has attended meetings of the London Borough of Camden’s Construction Impacts Group. The monitoring of complaints from current construction processes by this Construction Impacts Group has provided an insight into the concerns of local residents.

4.3.3 A draft EIA Scoping Report was published in April 2003. This identified the main environmental topics to be focused on during the EIA and explained the methodologies that the EIA team proposed to adopt for each topic, including construction. The responses to the draft Scoping Report in relation to construction effects are summarised here.

4.3.4 The London Borough of Camden recommended that the study area should, at the very least, include the project area, and surrounding environs up to 100m, plus a wider area for construction transportation and ambient noise generation, in order to assess the worst case scenario. Also, mitigation measures should include an environmental management system and detailed environmental management plans to facilitate sound management of any environmental issues arising from construction.

4.3.5 Specific to the potential impact of construction, the London Borough of Camden recommended that the following issues be addressed:

- adverse effects of mud on the highway left by construction traffic;
- traffic safety and legibility for pedestrians and cyclists faced with changing construction routes;
- potential mitigation measures for nature conservation;
- waste management and sustainable construction.

4.3.6 The London Borough of Islington indicated specific concerns about the area of study for the assessment of construction traffic effects, and, with regards to archaeological impact, suggested that a programme of preservation by record may not be sufficient should any archaeological find of significance be uncovered. In relation to health, London Borough of Islington identified the need to consider the impact of noise and the time-scale of construction on the wider well being of the neighbouring population.

4.3.7 English Heritage recommended that specific reference needed to be made to protection of heritage resources during construction, including protection from potential vibration damage.
4.3.8 The Camden Primary Care Trust raised a number of concerns regarding the potential health and socio-economic effects of construction. Principally, these related to potential effects from increased construction-related employment, including the health and safety issues from exposure to dust and noise, from light pollution and 24-hour working practices, potential transport disruption/congestion, and the potential effects on health from a protracted exposure to construction activity.

4.3.9 Residents of Maiden Lane Estate raised concerns about potential noise caused by construction work, especially because there are many elderly and housebound residents in blocks most affected by the current CTRL construction activities.

4.3.10 Individual local residents also referred to the effects of prolonged construction activity in the area.

4.3.11 Subsequent to the consultations on the Scoping Report, there have been discussions with Camden about what should be considered to be the 'worst case' for construction, as it is recognised to be a complex issue. Camden's view is that the worst case would involve an extended period of construction with a fluctuation between higher and lower levels of intensity. This has been taken into account in the description of worst case defined in paragraph 4.6.37.

4.4 The Existing Situation

4.4.1 Much of the King's Cross Central site is currently used for CTRL and London Underground construction purposes. There are some buildings on the site, including, south of the Regent's Canal, the Great Northern Hotel, German Gymnasium, and the Stanley and Culross Buildings, which are boarded up/vacant.

4.4.2 Immediately to the north of the Regent's Canal, the historic 'Goods Yard' comprises a collection of former railway and industrial buildings, presently occupied by a range of interim/short-term uses. Part of the site at the junction of Goods Way and York Way is occupied by a filling station.

4.4.3 Table 4.1 below defines locations and resources which may be affected by construction activities in the vicinity of the site.
Table 4.1 Locations and Resources which may be affected by Construction Works

<table>
<thead>
<tr>
<th>Receptor</th>
<th>Details</th>
</tr>
</thead>
</table>
| **Local Residents**                | North - Maiden Lane and Agar Grove Estates  
                                    | South – Hillview Estate  
                                    | West – Residential areas of Elm Village, Somers Town and Coopers Lane Estate  
                                    | Residents of Narrowboats on the Regent Canal |
| **Businesses**                     | East  
                                    | - Business Premises along York Way, including Car Show room and small row of retail/bar/restaurant  
                                    | West  
                                    | - Light Industrial units (Agar Grove Industrial Estate)  
                                    | North  
                                    | - Light Industrial/SMEs (next to Maiden Lane Estate) |
| **Other sensitive uses** (e.g. hospitals) | St Pancras Hospital  
                                    | Schools  
                                    | Community Amenities |
| **Current Occupiers of Site**      | Petrol Station  
                                    | ‘Goods Yard’ interim/short term uses |
| **Transport Infrastructure**       | Network Rail  
                                    | - King’s Cross Station  
                                    | - St Pancras  
                                    | - Euston  
                                    | - Thameslink  
                                    | London Underground  
                                    | - King's Cross/St Pancras Underground Station  
                                    | Local Road Network  
                                    | Bus Network, including 17 bus routes operating in the study area  
                                    | Cycle Routes  
                                    | Pedestrians |
| **Water Resources**                | Regents Canal  
                                    | Major Aquifer underlying site (protected by clay)  
                                    | Pond in Camley Street Natural Park |
| **Ecological Resources**           | Camley Street Natural Park  
                                    | Regent’s Canal  
                                    | Habitats – Wasteland, Canals, Canalsides and Railsides, Waterways and Wetlands, Built Environment  
                                    | Species – Common Pipistrelle, Black redstart, House sparrow, Red-list birds, Amber-list birds, Amphibians, Odonata (Dragonflies and Damselflies), Terrestrial invertebrates |
### Part 4 – Environmental Effects at the Construction Stage

#### RPS JR4237B/Environmental Statement
May 2004 King’s Cross Central

<table>
<thead>
<tr>
<th>Heritage Resources</th>
<th>Buried archaeological sites and artefacts within the site.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Eight Listed Buildings within the site plus other buildings of importance/value</td>
</tr>
<tr>
<td></td>
<td>St Pancras and King’s Cross Stations (listed buildings)</td>
</tr>
<tr>
<td></td>
<td>Internal and external fittings and fixtures related to the buildings.</td>
</tr>
<tr>
<td></td>
<td>Sewers and former railway tunnels of mainly 19th century age.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Views</th>
<th>Strategic View corridors from Kenwood and Parliament Hill to St Paul’s Cathedral</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>7 ‘main’ local views and 6 ‘secondary’ local views (as identified in the joint King’s Cross Opportunity Area Planning and Development Brief). Additional view from Dartmouth Hill (LV7).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Utilities and Services</th>
<th>Existing infrastructure as defined in Urban Services specialist report</th>
</tr>
</thead>
</table>

### 4.5 Baseline 2006/7

4.5.1 The baseline conditions associated with each of these receptors are described in the respective specialist Parts of this Environmental Statement. The potential effects on these receptors from construction activities are considered below.

4.5.2 Construction of the CTRL scheme is expected to be complete by 2007. The proposed Main Site levels at completion of CTRL are illustrated on Parameter Plan KXC 003.

4.5.3 Between now and 2006/7, various developments in close proximity to the site may be completed. These would result in the creation of new ‘sensitive receptors’ within proximity of the site. In summary, the new receptors may include:-

- residential and commercial units at Regent Quarter (Blocks B and C);
- affordable housing units on playground site at junction of Gifford Street and Rufford Street, to the east of the Triangle Site;
- restoration of St Pancras Chambers, including hotel and residential uses; and
- affordable, key worker, student and private accommodation at 200 Pentonville Road.

4.5.4 Other Construction in the vicinity (defined as up to about 500m from site) during the project, based on known or likely planning applications, are as follows:-

- Cross River Transit. Unlikely that construction would commence before 2008-2010;
- Regents Quarter. Blocks A and D still under construction at 2006/7;
- Naish Court. Private residential units under construction at 2006, with completion in 2007/8;
- residential units on former William of York School site. Under construction at 2006/7;
- King’s Place. If permission granted, construction anticipated to begin in 2005/6;
- restoration of St Pancras Chambers. Under construction, expected to be complete by 2008;
These projects are not considered to have the potential for significant cumulative effects with King’s Cross Central in view of their scale and/or timing and location.

4.5.5 The ongoing LUL Phase 2 works (Northern Ticket Hall and associated infrastructure) are due to be complete by 2007 but are the subject of a current review that may affect the timing of their completion. It is possible, therefore, that the works to complete the project (scheduled to last 3 years) could still be underway in 2007, alongside the development of King’s Cross Central.

4.5.6 Network Rail is preparing proposals for ‘King’s Cross Station Enhancement’ for which, if proposals go-ahead, there is a range of possible timescales. Further details are provided in Part 2. In order to assess the potential worst case, the Environmental Statement has considered what the effects would be if the peak construction activity from King’s Cross Central coincided with the peak construction activity from LUL/King’s Cross Station Enhancement.

4.5.7 Further details of all the above projects are provided in Part 2.

4.5.8 As construction proceeds and sections of King’s Cross Central are completed, occupiers of completed parts of the development could be sensitive to environmental effects, e.g. noise and dust, from subsequent phases of the work.

4.6 Proposals

4.6.1 The approach to the construction process is outlined in Part 3.2, including a description of the main elements of construction and the predicted construction period. The following paragraphs provides further information on the likely construction methods and equipment to be used, and the off-site infrastructure works. Details of predicted ‘worst case’ volumes of construction traffic are provided under the Worst Case Scenario section below.

Site Investigations

4.6.2 Before construction commences site investigations would be required in a number of areas of the site. This would involve digging engineering trial pits using excavators and sinking bore holes using rotary drilling rigs. There would be a programme of archaeological evaluation associated with these site investigations.

Demolition techniques

4.6.3 Surveys for hazardous materials in buildings (such as asbestos) would be carried out and any such materials would be stripped out using careful ‘hand’ techniques before commencing bulk demolition. Measures such as transporting such materials in polythene bags would be taken to ensure that there is no release of hazardous materials.

4.6.4 Most buildings and structures to be demolished are close to heritage resources, public highway or buildings that would remain in use, so explosive and ‘wrecking ball’ techniques would not be appropriate. Bulk demolition would be carried out by large scale excavators using bucket and shear jaw attachments.

4.6.5 Various hand tools would be used for localised demolition including flame cutters, circular saws for cutting iron, and pneumatic drills for breaking out areas of masonry.
4.6.6 Concrete and some masonry would be crushed for reuse as hardcore or aggregate on site using mobile crushers. There would be a programme of salvage of historic construction and landscaping materials to provide for their potential use in refurbishment and new construction. Where practical, metals would be separated on site and trucked to recycling facilities. Materials that are not suitable for recycling and reuse would be trucked to appropriate landfill sites.

4.6.7 At all stages measures would be taken to avoid inadvertent egress of demolition materials and dust from the site including wetting down dusty material and installing well designed hoarding.

**Earthworks**

4.6.8 The worst case volume of earthworks is predicted to generate a surplus of 745,000m$^3$ that would need to be removed from site. The earthworks calculations have been based on an intense period of activity during the first 3 years, with basement work throughout the construction period, of at least 12-15 years overall (for details, refer to Part 16 Soils and Contamination Specialist Report).

4.6.9 The volume of spoil to be removed from site within any 12 month period is predicted, as ‘worst case’, to be 270,000m$^3$. This is based on two consecutive years of the highest volume being carried out in one year. The removal of 270,000m$^3$ represents, therefore, the highest possible intensity of earthworks operations.

4.6.10 Bulk excavation would be carried out using excavators and front end loaders. In dry conditions sprinklers would be employed to control dust generation.

4.6.11 Material to remain on site would be moved using large site trucks and where practical it would be placed in its final position. It would be built up in layers using front end loaders and heavy rollers, with final fill profiles being achieved using graders. Material that cannot be used immediately would be stored in stockpiles that would either be covered with tarpaulin or kept damp to avoid dust generation.

4.6.12 Material to be removed from site, including any contaminated material that could not be remediated in situ, would be trucked to properly certified landfill sites. The spoil material would be covered (or sealed if hazardous) during haulage.

**Basement construction**

4.6.13 Where buildings are constructed in parallel with the surrounding public realm, it might be possible to include basement excavation within the bulk earthworks activity. If this could be achieved then the site profiling would initially create a formation down to basement level. The basement structure would be built off this formation level as a free standing structure. The void around the basement walls would then be backfilled with stockpiled material to raise the surrounding levels up to that required by the public realm. This approach would avoid the need for contiguous, secant piled or bentonite stabilised retaining walls.

4.6.14 Near to external interfaces and as the site becomes more developed (and hence constrained) basement earth retaining structures would be formed in advance of excavation, which would require piling rigs. In most cases the basements are unlikely to be very deep so it is likely that most basements would be constructed bottom up rather than top down.
**Piling techniques**

4.6.15 The soil profile across most of the site is Made Ground, underlain by London Clay, underlain by Lambeth Group, underlain by chalk. In most cases pile formation would be augured into the London Clay and cast in reinforced concrete. This would employ mobile piling rigs, cranage and trucks to remove pile arisings, either for reuse on site or removal from site.

4.6.16 While it is generally to be avoided, percussive piling may be required near to some sensitive structures. For example, next to old railway structures (e.g. the Gasworks Tunnels) steel sleeves may need to be installed at upper levels to avoid unacceptable ground movements. Sheet piling may be required for any improvement works to the Regent’s Canal.

**Bridge construction**

4.6.17 The bridges over the Regent’s Canal would be designed to minimise disruption to navigation. Their construction would employ prefabricated or pre-cast elements, which would be brought to site on low loaders and placed using large cranes.

4.6.18 The road bridge (BR1) would also involve concrete placement to form abutment walls and to finish the bridge deck.

4.6.19 Bridge foundations would involve piling techniques described above.

**Building Superstructure**

4.6.20 Most of the new buildings would employ either fixed boom or luffing jib tower cranes though some of lower rise ‘pavilion’ buildings may only require occasional mobile cranage. Additional vertical circulation during construction would be provided by external hoists and curtain walling may be installed using wall climbers and gantries.

4.6.21 At the start and end of construction of most buildings, mobile cranes would be used to deliver plant and materials before tower cranes are in place and after they have been removed.

4.6.22 The development could consist of some 50 individual buildings comprising the full complement of building types. The majority of new buildings would be steel or concrete framed though some lower rise structures could be of masonry or even timber construction.

4.6.23 Floor slabs would typically be concrete placed in situ on either profiled metal decking (steel frame) or formwork tables (concrete frame) though some pre cast slabs may also be used. In all cases this would involve placing concrete at high level, which would typically be done using skips or concrete pumps.

4.6.24 The external envelope would either be constructed from external scaffold or arrive as large pre-fabricated panels hoisted in by crane.

4.6.25 Mechanical and electrical installations and internal finishes would be delivered to site in trucks and vans. Typically they would be trolled around the site and fixed using small tools.
Public Realm

4.6.26 Services under the public realm would be installed in trenches which would be dug using excavators. Various light weight plant including cutting and welding equipment would be used during installation. Power would typically be generated using small portable generators.

4.6.27 Overall site levels would be fine tuned using graders. Sub-base material would typically be placed in layers and rolled using heavy pneumatic or vibrating rollers. Vibrating plate compactors would also be used in areas where mobility is limited.

4.6.28 Some of the roads would be blacktop, constructed using tarmac laying machines to minimise noxious vapours.

4.6.29 Pedestrian surfaces in the public realm would typically be constructed from stone, brick, cobbled or concrete paving. These new surfaces would be integrated with historic surfaces that are to be retained, re-laid or re-used. During installation various small plant would be used including saw cutters, pneumatic drills, air compressors and small power generators. Concrete or mortar for these works may come to site pre-mixed or be mixed on site. Historic surfaces would be protected during installation of new ones.

4.6.30 Installing soft landscaping would involve using small scale excavators and front end loaders. Lifting equipment may also be required to plant semi mature trees.

Off-site Infrastructure

4.6.31 Improvements to off-site infrastructure would be required to provide the necessary utilities for the proposed development. The Urban Services Specialist Report, Part 11, explains the services and infrastructure that may be required. The principal potential requirements include:

- new power supplies to be provided potentially from City Road and from Longford Street substations, which includes the laying of new 132kV and 11kV buried cables along existing public roads;
- new water supply connections from an existing main at Royal College Street via new mains and via a main in Coach Road (underneath new St Pancras Station Platform Extension) and from a main in Caledonian Road via Copenhagen Street;
- new gas supply points from York Way via the junction at the northern end of the site and the junction at Copenhagen Street, east of the site;
- multiple points of connection of foul discharge from the site via new and existing connections to the existing and diverted combined public sewer network;
- new connections for telecommunications from either the BT Tower, Clerkenwell or Euston telephone exchanges requiring additional communications infrastructure within existing public roads.

4.6.32 It is anticipated that the Triangle Site would be served with direct connections from existing infrastructure or via new utility connections from the Main Site.

4.6.33 The off-site infrastructure works would be carried out by statutory undertakers or their agents under Permitted Development Rights.
Assumptions

4.6.34 The identification and assessment of construction effects of King’s Cross Central has taken into account normal or otherwise agreed control measures for the different environmental topics. The specific measures are defined under each topic below.

4.6.35 In general, the following assumptions have been made in undertaking the assessment of construction effects:-

- all construction work would be carried out in compliance with relevant environmental protection and health and safety legislation;
- off-site infrastructure works would be carried out by statutory undertakers or their agents under Permitted Development Rights. Any effects arising from these works would be controlled primarily through the regiments of the New Road and Street Works Act 1991 and any specific requirements of the Highway and/or Local Authority.

Worst Case Scenario

4.6.36 For each topic, the likely environmental effects of construction have been assessed on the basis of the ‘worst case’ scenario.

4.6.37 The ‘worst case’ scenarios to be assessed differ depending on the receptor. In general, it is considered that the ‘worst case’ is for construction to be carried out for the full duration of the construction period (i.e. at least 12-15 years), with several high peaks in the level of activity and works within a number of zones across the site at each stage. The ‘worst case’ in any one year is based on a floorspace take-up rate of 200,000 m²/annum, although it is understood that this would be an exceptional circumstance and in many years the take-up rate would be significantly lower than this.

4.6.38 In order to assess the likely environmental effects associated with construction traffic, the following ‘worst case’ has been considered.

Construction Traffic

4.6.39 The volumes of construction traffic would be significantly influenced by the take-up rates of the development. In order to predict volumes, the following ‘worst case’ assumptions have been made, based on the take-up rate set out above, the earthworks requirements, professional advice and the Applicants’ experience:-

- construction would be spread over 12-15 years with some years high intensity, and others with low activity;
- the floorspace take-up rate in any one year could be up to 200,000 m². However, due to the need for enabling works and build up period, this peak would not be achieved before the latter half of year 3;
- the ‘worst case’ volume of earthworks is described in the Earthworks section above. The calculations have been based on an intense period of activity during the first 3 years, with basement work throughout the remaining construction period. The worst case is then based on two consecutive years of the highest volume being carried out in one year, to identify the highest intensity of development that could be contemplated.
4.6.40 Based on these assumptions, the volumes of construction traffic have been predicted for 4 different elements; a) movement of earthworks material from site, b) movement of infrastructure materials to site, c) movement of construction materials to site, and d) movement of employees. These are set out below.

a) Movement of earthworks material from site

4.6.41 The worst case number of trucks associated with removal of excess material off site, based on the earthworks calculations described above, is illustrated in Figure 4.1. The worst case is a combination of years 2 and 3 being undertaken in one year, i.e. 31,500 trucks in any one year.

b) Movement of infrastructure materials to site

4.6.42 The worst case number of lorry movements associated with delivery of infrastructure materials (including road/paving build-up, kerbs, lighting poles, manholes/gullies, utility pipes and ducts, and associated backfill & bedding provisions, landscape build-up and trees/planting, and piling mats) to the site, based on the earthworks calculations as above, is illustrated in Figure 4.2. The worst case is a combination of years 1 and 2 being undertaken in one year, i.e. 8,300 trucks in any one year, approximately 85% of which are assumed to be HGVs.

c) Movement of construction materials and plant to site

4.6.43 The worst case number of lorry movements associated with delivery of construction materials and plant to the site, has been calculated based on the Applicants’ previous experience and the worst case take-up rate above. It includes a period for enabling works and build up to peak take-up rate during years 1 to 3. The maximum peak number in any one year, after year 3, is predicted to be 73,000 trucks, approximately 35% of which are assumed to be HGVs.

d) Movement of employees

4.6.44 The worst case number of construction employees has been calculated based on the Applicants’ experience and advice from the quantity surveyor. Again this includes a build up period during years 1 to 3. The peak number of construction employees on site during any one year after year 3, based on the take-up rate described above, is 3,000 employees. The transport assessment has assumed that up to 10% of these employees might travel by road.

4.6.45 Based on the assumptions used, it is unlikely that the worst case for HGV movements would ever be reached, and certainly not for any long period during construction. However, this has been used to assess the environmental impact in the worst case.
4.7 Assessment of Effects

4.7.1 The following sections set out the assessment of the likely effects of constructing the proposed King's Cross Central development.

Heritage and Townscape

4.7.2 There are potential temporary adverse effects on the built heritage during the construction process from accidental damage, vibration or groundworks close to buildings and structures. There is also the possibility of dilapidation to the existing buildings if they remain unused for long periods. Construction work may give rise to loss or damage to salvaged materials. Further details are provided in Part 9 – Heritage and Townscape Specialist Report.

Assumptions

4.7.3 It has been assumed that potential adverse effects of construction on townscape, views and heritage would be controlled through the implementation of:-

- appropriate measures to minimise visual intrusion e.g. providing a clean and tidy site with well maintained hoardings, lighting, signs and footways;
- appropriate protection measures to heritage features to be retained e.g. from risks from physical damage and vandalism/theft or indirect damage from water, dust, contamination, vibration etc.;
- archaeological watching briefs for buried and structural elements of the historic environment; and
- appropriate access for recording of features to be demolished or altered.

Worst Case

4.7.4 The worst case is as defined above, i.e. for construction to be carried out for many years with several high peaks in the level of activity.

Assessment of Effects

4.7.5 For the King’s Cross Central site, the extended period of construction is likely to produce a “building site” character to parts of the site for 12-15 years or longer. The exact timing would be dependent upon market opportunities and other forces. It is inevitable that the appearance of site huts, cranes, construction plant and vehicles etc. would convey the impression of construction in progress and an unfinished site. The construction process would also affect local views through the demolition of existing buildings (removing features but opening up new views), and the emergence of new buildings within the view. These effects would progressively diminish as the site was built out.
4.7.6 The consultation stage has shown that the public are concerned about the overall effects of construction including noise, dust etc (see assessment of these effects below). However there would also be positive effects on character and views, as the unused land was brought into beneficial use and occupation. After so many years of blight, the construction phase may be perceived by the local community as signalling an end to the period of uncertainty that has dogged the site.

4.7.7 The new occupiers of the site and visitors would also be affected by the construction works. However they would be aware of the long-term nature of the proposals and it is assumed that the effects on this group would be managed as a normal part of phased site operations and are unlikely to be significant.

4.7.8 There are potential temporary adverse effects on the built heritage during the construction process from accidental damage, vibration or groundworks close to buildings and structures. The control measures listed in the assumptions above will ensure that these effects are negligible and temporary.

4.7.9 The overall effect of the construction stage is considered to be ‘neutral’ over the period of development with adverse effects on views balanced by the improvement in the appearance of the site. Any adverse effects (on character and views) are likely to occur in the early stages of development when the main site establishment and infrastructure works are in progress.

**Archaeology**

4.7.10 Effects on archaeological resources are nearly always permanent and therefore long-term. These effects are considered in Chapter 5.2 and the Archaeological Specialist Report (Part 10).

4.7.11 Potential temporary effects during the construction phases would include:

- accidental damage from site works and storage; and
- vibration from site construction plant.

**Assumptions**

4.7.12 It assumed that the contractor would implement the following control measures to minimise the risks of damage to archaeological resources:

- there would be an archaeological consultant responsible to the developer for programming and integrating archaeological site works and ensuring that impacts of engineering works on areas of archaeological interest are controlled and limited;
- there would be an archaeological presence (Archaeological Watching Briefs\(^1\)) within appropriate areas at the times when temporary and permanent ground works encounter made ground (fill) from the 19\(^{th}\) century or earlier, and Fleet River Alluvium;

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\(^1\) An archaeological watching brief may be defined as a formal programme of observation, investigation and documentation conducted during any operation carried out for non-archaeological reasons within a specified area or site on land [or under water] where there is the possibility that archaeological deposits may be disturbed or destroyed. The programme will result in the preparation of a report and ordered archive.
• a strategy would be agreed with the engineering contractors to minimise the chance of accidental damage to archaeological resources, including for the protection of resources to be documented during construction, excavated prior to construction (if necessary), or retained in situ;

• engineering contractors would be required to notify the developer or his site representative of any encounter of heritage assets found in the made-ground and in the underlying alluvium/other superficial natural soils;

• there would be ‘structural’ archaeological watching briefs at times when new interventions and conservation were occurring to listed buildings and other notable historic buildings.

Assessment of Effects

4.7.13 On the assumption that the above measures are in place, any temporary effects of construction would be negligible i.e. no perceivable effects on known or predicted archaeological resources.

Transport

4.7.14 This section assesses the effects of transport during the construction period. The ‘environmental’ impacts of changes in traffic volumes on noise and on air quality are addressed in relevant sections below.

Assumptions

4.7.15 Routes for construction traffic involved in bringing materials to or from the site, particularly heavy vehicles, would be agreed with the relevant Boroughs and other necessary authorities prior to construction activity commencing. At this stage it is anticipated that such traffic would be required to use the strategic road network as far as practicable. The routes are likely to be very similar to those currently used for the CTRL works. Routes are therefore likely to include:

• use of the A12 between the site and the M11 and M25;

• use of the A12 between the site and the Blackwall Tunnel and locations south of the Thames; and

• use of the A12 and A13 between the site and the M25 and Dartford Crossing.

4.7.16 In the local area, the main access to the site for vehicles would be via A5200 York Way, A503 Seven Sisters Road and Pentonville Road for areas to the north and east. Construction traffic would shift to completed primary roads within the site as these become available for use. The western access to the site would be via the A501 Euston Road.

4.7.17 It is anticipated that construction materials traffic would be restricted to a limited number of roads in the area. This could, for instance, result in construction traffic being prohibited from local residential areas. In addition, the logistics and materials handling process would be managed in order to minimise the number of vehicles requiring to visit the site and to distribute vehicle movements evenly throughout the day where possible.
4.7.18 Movements of large or abnormal loads would be discussed in advance with the local Boroughs, other relevant highway authorities and the Police in order to ensure compliance with regulations and advance notification for local residents.

4.7.19 Where practicable, all existing public access routes and rights of way would be maintained during construction and properly signposted. Where this cannot be achieved, suitable alternative routing would be provided and would be signposted, and the alternative route would be illustrated on maps displayed at appropriate locations. All alterations to routes would be notified in advance with suitable signage. The Contractor would be required to ensure that public notices are issued to provide information on the dates and duration of any closure of routes. These would be appropriately distributed and would display the Helpline telephone number and web address of the development as well as a plan showing the alternative route.

4.7.20 All pedestrian routes would be clearly defined utilising temporary fencing and pedestrian route signage where necessary. Pedestrian crossover routes would have appropriate warning signs displayed e.g. give way signs, vehicle crossings etc. In the case of temporary footways, reasonable access would be provided for all people, including those with disabilities, wheelchairs and pushchairs.

**Worst Case**

4.7.21 Data provided in the Worst Case section above outlines the likely number of annual vehicle movements over the construction period as a ‘worst case’. This construction traffic data indicates that the highest number of annual vehicles would be associated with delivery of construction materials and plant to site. After Year 3 this could peak at 73,000 vehicles over a 12 month period as a ‘worst case’.

4.7.22 At the same time (after Years 1 to 3), the infrastructure materials to site could be up to 2,000 vehicles per annum, and the movements associated with removal of spoil could be up to 10,000 vehicles per annum. The total number of vehicles associated with these activities could therefore reach a maximum of 85,000 vehicles per annum as a ‘worst case’.

**Assessment of Effects**

4.7.23 Table 4.2 shows the likely maximum daily construction flows on local routes due to King’s Cross Central.

**Table 4.2 Construction Traffic Maximum Daily Flows (Both Directions over 12 hour week day period)**

<table>
<thead>
<tr>
<th>King’s Cross Central</th>
<th>HGV</th>
<th>LGV</th>
</tr>
</thead>
<tbody>
<tr>
<td>York Way</td>
<td>30%</td>
<td>89</td>
</tr>
<tr>
<td>Pancras Road</td>
<td>20%</td>
<td>59</td>
</tr>
<tr>
<td>Euston Road</td>
<td>20%</td>
<td>59</td>
</tr>
<tr>
<td>Grays Inn Road</td>
<td>10%</td>
<td>30</td>
</tr>
<tr>
<td>Pentonville Road</td>
<td>20%</td>
<td>59</td>
</tr>
</tbody>
</table>
4.7.24 The likely distribution of these vehicles is shown on Figure 4.3. This is based on similar distributions for the CTRL and LUL station works which are under construction at present.

4.7.25 The peak level of activity would therefore generate some 340 vehicle movements in each direction during a typical weekday, and 35 vehicle movements in a typical hour. This level of hourly construction traffic represents a very small percentage of typical hourly traffic flows surrounding the site and would not significantly affect highway capacity.

4.7.26 There would also be movements associated with construction personnel. There may be up to 3,000 personnel on site during any one year. Given the proximity of the site to mainline and LUL stations, it is envisaged that the vast majority of construction personnel would travel to the site by public transport or on foot or cycle.

4.7.27 Some public access routes and rights of way within the site and the immediate surroundings are likely to be disrupted during some construction works. Any disruption would be minimised by the measures identified above.

4.7.28 It is likely that the development would require bus routes to be temporarily moved, leading to some. Where this is necessary, the same approach as described above would be adopted, minimising the disruption to users of public transport.

4.7.29 Off-site infrastructure works would be carried out by statutory undertakers or their agents under Permitted Development Rights. Any effects arising from these works would be controlled primarily via the New Road and Street Works Act and any resulting specific requirements of the Highway and/or Local Authority.

**Socio-Economic**

4.7.30 The following summarises the assessment of socio-economic effects during construction. The full assessment is set out in Part 12, the Socio-Economic Specialist Report.

*Assumptions and Worst Case*

4.7.31 Construction employment generation has been estimated by comparing the scheme with other projects (Greenwich Meridian and Stratford City) and deriving an average job per floorspace ratio. The total net additional employment takes into account deadweight, displacement and multiplier effects. Assumptions made include:

- **Construction Deadweight Effects**

  It has been assumed that there are few deadweight effects (output which would have occurred without the development of King’s Cross Central) as there is no other major construction activity proposed for the area post 2006/2007. It is assumed that King’s Place, Regent Quarter and CTRL works will be complete or nearing completion by 2007.

- **Construction Displacement Effects**

  Displacement of construction workers from other projects occurs when skill resources are in short supply and the construction market is buoyant. Both of these issues are difficult to predict for 2007 and are largely subject to market cycles. However, it is estimated that there would be a ‘low’ level of displacement (defined as 25% by English Partnerships 2002) as labour would be released by the completion of
CTRL, Regent Quarter and other major development schemes as work on King’s Cross Central begins.

- **Construction Multiplier Employment Effects**

  English Partnerships (2002) have concluded that major construction projects can indirectly generate significant additional employment in businesses that benefit from local spending of construction workers, and sub-contracts, services and supplies needed by the contractors and consultants involved.

  The high accessibility of the site and the fluidity of the construction market in the south-east means that at King’s Cross these ‘multiplier’ employment effects are likely to be spread across London and possibly beyond. English Partnerships recommend that a multiplier of 1.5 is appropriate for calculating the scale of these effects across London (i.e. projects that are likely to have ‘regional’ impact).

**Assessment of Effects**

4.7.32 Overall, it is estimated that the total employment generated during the construction phase of King’s Cross Central, including the Triangle Site, would be 3005 full time equivalent (FTE) jobs across London. A high proportion of the employment opportunities could be taken by individuals from outside the Central Impact Zone and Wider Impact Zone (as defined in Part 12 the Socio-Economic Specialist Report). There are few residents in the Central Impact Zone and Wider Impact Zone currently employed in the construction industry, although recent attempts have been made to increase the proportion on CTRL, Regents Quarter and station developments. If successful, these schemes would be finishing around the time of construction beginning on King’s Cross Central possibly resulting in the transfer of local, trained labour, with benefits for both local people and the King’s Cross Central development.

4.7.33 The nature of construction work means that employment generated and skills need would fluctuate over the development period. Nevertheless, the length of the King’s Cross Central construction period means that there is the potential for the construction sector to become a long-term stable employment base within the local economy. The sector includes a range of occupation levels, including traditional unskilled, semi-skilled and skilled labouring, but also engineering, management and support functions including IT, personnel and others. The relatively high proportion of unskilled positions make it a good sector for low-skilled unemployed people to target.

4.7.34 Taking all these factors into account, and without any additional positive interventions, it is estimated that around 5% of the total workforce would be sourced from within the Central Impact Zone and 25% would be sourced from within the Wider Impact Zone. This gives rise to the estimates in Table 4.3 below.

**Table 4.3 Local Construction Employment (Full Time Equivalent)**

<table>
<thead>
<tr>
<th></th>
<th>Central Impact Zone (FTE)</th>
<th>Wider Impact Zone (FTE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct Local Employment</td>
<td>134</td>
<td>668</td>
</tr>
<tr>
<td>Total Local Employment</td>
<td>150</td>
<td>752</td>
</tr>
</tbody>
</table>
4.7.35 The creation of employment opportunities close to home can have a dramatic impact on household livelihood, including saving on travel and care costs. They can also enable parents and carers with commitments at home to access work through travel time savings and flexible hours. The savings made by locally employed residents would directly increase the potential for local spend and household investment in improved social conditions.

4.7.36 Some residents that do take advantage of the new job opportunities would also create other opportunities for local people in the jobs they have left. In the case of upgrades, former jobs may be more suited to lower skilled, less experienced people and may match needs of some of the unemployed population.

4.7.37 Overall, the construction phase of the development is likely to generate local employment and increased income for up to 900 local people (fulltime equivalent jobs) across the Central and Wider Impact Zones. This would be a Minor/Moderate Beneficial effect.

4.7.38 Construction activity on the site is unlikely to affect crime levels through displacement as very little criminal activity takes place on the site at present. In addition, the changing character of the area and the removal of many of the focal points for criminal activity brought about by King’s Cross Central and the Regent Quarter scheme and the completion of the Channel Tunnel Rail Link is likely to help reduce the attractiveness of the area for certain types of criminal activity (drug dealing and prostitution in particular). It is difficult to quantify the extent of this effect but a reduction in criminal activity is expected. No specific assessment of significance has been made for the construction phase alone in the Specialist Report (Part 12). Overall, however, it concludes that development is expected to have a Major Beneficial effect on crime and the fear of crime in King’s Cross.

Health

4.7.39 This section summarises the potential effects on the health of residents, users and the surrounding population during the construction phase. Much of the assessment process stems from other reports (Socio-Economic, Air Quality, Transport and Noise), supplemented by additional health focused research. The assessments of construction effects on Socio-Economic, Air Quality, Transport and Noise are included elsewhere in this Chapter. Further details of the methodology and assessment is set out in the Health Specialist Report (Part 13).

Assumptions

4.7.40 The proposals assessed and assumptions made during the assessment of the determinants of health are those forming the basis of the contributing chapters (socio-economic, air quality, noise and transport) and are set out in the relevant section of this Chapter.

Worst Case

4.7.41 The health assessment follows the ‘worst case’ approaches adopted for each of the other assessments (socio-economic, air quality, noise and transport).
Assessment of Effects

Unemployment

4.7.42 The socio-economic specialist report (Part 12) predicts job creation during construction, including local employment (as described in the Socio-Economic section above). Opportunities may arise for continuation of employment experience from other schemes, with the potential for a transfer of local, trained labour thereby achieving a greater proportion of local employment. Based on the linkages defined in the Health Specialist Report between employment and better health, there is potential for the benefits of employment to transfer to beneficial health effects. In comparison with the operational phase, the employment offered during the construction period is generally less secure (due to the nature of the industry). This may be a factor in preventing the benefits of employment transferring to beneficial health effects. The significance of effects on health is therefore predicted to be minor beneficial.

4.7.43 With local initiatives already targeting Black and Minority Ethnic employment, King’s Cross Central would help reduce the disproportionate levels of unemployment currently displayed locally. The health effects of the development associated with this determinant are expected to be equivalent to those for unemployment in general (i.e. minor beneficial), although the level of disadvantage currently experienced may mask this.

Crime

4.7.44 The Socio-economic Report considers the relationship between construction activity and crime (see above). Given the dynamic nature of the environments with the Kings Cross Central locality and the current presence of construction activity in the area, it is unlikely that the construction phase would generate a perceptible change in overall crime levels of the area. Very little criminal activity takes place on the site at present.

4.7.45 In the context of the 2006/7 baseline situation, when CTRL construction works are coming to an end, the effect of the Kings Cross Central works could be considered to be, at worst, negligible. However, the phasing of the works and subsequent release of accessibility through separate areas of the site would improve connectivity and safety, and thus effects of minor beneficial significance are predicted.

Social capital

4.7.46 The King’s Cross Central construction would have potential positive effects through (i) the beginning of long awaited development and removal of blight ii) the phased release of the site, progressively introducing the public realm and community facilities described above, bringing about continual improvements in connectivity, and (iii) community involvement, focus and awareness measures and accessibility of information with regard to the construction works.

4.7.47 It is likely that progressive provision of a range of social and community activities and facilities proposed in the development would have positive health effects, be it directly through social capital, or indirectly through reinforcement of positive effects on other determinants of health (such as crime and education). The significance of these effects is considered to be minor beneficial.
Air Quality

4.7.48 During construction, there is potential for dust effects to be experienced (see Air Quality section below for assessment of construction effects on air quality). The effects would be temporary and infrequent, and dependent on weather conditions, wind direction and the presence of a dust generating activity.

4.7.49 The significance of the changes in air quality indicators has been assessed according to the assessment criteria established within the Air Quality and Climate Change Specialist Report (Part 18). The resultant effect on health has been considered as analogous in magnitude to the effect on the indicator.

4.7.50 The impact on air quality indicators from construction activities would be moderate adverse. The ‘moderate’ significance judgement arises from the nature and length of construction operations, which automatically produce a moderate ranking.

4.7.51 The increase in nitrogen dioxide and PM10 concentrations due to construction traffic associated with the King’s Cross Central development would be very small (<1%). However, as these increases are predicted within an AQMA, the significance of construction traffic would be minor adverse.

4.7.52 The potential for construction workers to be adversely affected by contaminated dust has been assessed under Soils and Contamination below. Given the measures to be employed, the risk of effects upon the health of workers, visitors and occupiers of this site and of adjacent sites from contaminated dusts is assessed as negligible. Where parts of the site have been identified as potentially contaminated, the necessary precautions would be specified for dust control, spoil removal and disposal.

Road Traffic Accidents

4.7.53 It is expected that construction materials traffic would be restricted to the strategic road network, minimising any potential impact on local residential roads where clashes with pedestrian activity is a greater risk. Good site access management would be important to ensure that pedestrians are not put at risk at site entry and egress points. This would form part of the Construction Method Statements to be prepared prior to works commencing. Construction vehicles, their speed and parking arrangements would be controlled to remove accident risk factors from the vicinity of the site. Furthermore, given the phased nature of the works, this period would see gradual improvements in connectivity and the quality/safety of thoroughfares.

4.7.54 It is therefore predicted that construction traffic would have a negligible effect on the Road Traffic Accident Rate.

4.7.55 Comments on the Draft Scope for the Kings Cross Central EIA, prepared on behalf of Camden PCT (Ison, 2003c) referred to the potential for impact on public access and public transport services resulting in ‘discomfort, difficulty and inconvenience to vulnerable groups in the population’.

4.7.56 Where practicable, existing public access routes and rights of way would be maintained and properly signposted during construction. Where this is not possible the measures set out in the Transport section above would be adopted to minimise disturbance.

4.7.57 Some temporary diversion of bus routes would be necessary and some disruption would therefore arise. Where this is necessary, the same approach as described for pedestrian routes would be adopted, minimising the disruption to users of public transport.
It is therefore predicted that the significance of any disruption effects would be minor adverse due to their temporary nature, and the management measures that would be employed.

**Noise**

Noise and vibration would be generated by demolition and construction activities and by construction related traffic off site, and could potentially affect nearby sensitive locations (see details of construction effects in the Noise section below). However, all contractors would be required to adopt best practical means to minimise noise and vibration. For noise, the effects on health are assessed as being of comparable magnitude to the effects on the determinant. Therefore, the following effects have been assessed:

- noise effects from piling operations (assuming worst case scenario) of moderate adverse significance;
- construction traffic effects of minor adverse significance (along Goods Way);
- noise effects from other activities of negligible significance.

**Health Services**

During the construction phase, given the fact that primary care services are provided on a residential location basis rather than an employment location basis, the influx of construction workers onto the site is unlikely to result in a significant effect on the demand placed on primary care facilities in the area. Thus, any potential increased demand is more likely to fall on emergency/hospital services. However, the degree of effect is not well understood, although it is noted in Cambridgeshire Health Authority (2000) that ‘larger site developments tend to have better safety records than smaller sites’.

Without detailed information regarding emergency/hospital services capacity and operating plans it is not possible to make a prediction on the effect on health services during this phase. However, it should be noted that the development would immediately follow an extended period of construction works in the area (CTRL), which have had a very good safety record.

The Applicants would learn from the CTRL project and build on this example of best practice, and others, through the implementation of the KXC proposals. Any potential increase in demand on emergency/hospital services associated with the construction phase are likely to be minimal with effective site management and implementation of appropriate Health and Safety Plans.

**Nature Conservation**

Potential effects of construction on the nature conservation features may arise from activities associated with demolition works, vegetation clearance, soil removal, ground and excavation works, structural works and construction of buildings, structures and hard surfaces. The main potential effects would be associated with construction noise, lighting and incidents/accidents (e.g. spillages and emissions).
4.7.64 In the years preceding the commencement of the King’s Cross Central development works, the wildlife present will have been subject to the disturbance associated with the CTRL works and the construction of the new St Pancras Station and associated railway infrastructure. The King’s Cross Central development programme would follow on from this major construction activity and is not likely to give rise to significant additional disturbance, although the period of such disturbance would clearly be extended.

4.7.65 The ecological resources that may be sensitive to construction are identified in Table 4.1. Further details are provided in Part 14 – Nature Conservation Specialist Report.

4.7.66 The effects arising from permanent land-take, i.e. the area taken up by the development, occur during the construction phase. However, they are a permanent effect and therefore do not form part of the construction effects. Rather, they are addressed as operational effects in Part 5.

4.7.67 Given the robust nature of the vegetation in the vicinity of King’s Cross Central, there is no likelihood of significant effects from dust generation on vegetation as a result of the proposed construction operations.

**Assumptions**

4.7.68 In order to minimise the level of impact of construction on the identified species and habitats, it is assumed that the following measures would be implemented:

- Areas programmed for construction work would be cleared outside the bird breeding season (March-August inclusive) wherever practicable. If clearance during the breeding season cannot be avoided, birds would be deterred from breeding from March onwards in areas to be affected. Absence of breeding black redstarts would be confirmed by survey prior to work commencing.

- All works would be carried out taking full account of legislative requirements and Environment Agency guidance. Adequate measures would be in place with regard to handling and storage of potentially hazardous liquids, response to spillages, provisions for surface water drainage including interception of oil and sediment.

**Worst Case**

4.7.69 In considering the potential effects on nature conservation, the worst case would be for construction to occur in a number of areas of the site at the same time over the full timescale of the development.

**Assessment of Effects**

4.7.70 The following paragraphs describe the potential effects of construction of the King’s Cross Central Development on the ecological resources of the area. As a ‘worst case’, construction activities in each part of the site may take place over an extended period of time and may therefore be considered to be ‘long term.’ Partly for this reason, the assessment of significance has been undertaken considering the effects of construction, operations and permanent land-take together, for each part of the site and its nature conservation receptors, and these assessments are set out in Part 5.6 of the Environmental Statement (and in the Specialist Report, Part 14).
4.7.71 Camley Street Natural Park and Regents Canal are Sites of Metropolitan Importance for nature conservation. Camley Street is also a statutory Local Nature Reserve. The potential effects of construction on these two sites is described below.

4.7.72 Many of the significant works in the vicinity of Camley Street Natural Park are likely to form part of the first major phase of the work. These include relocation of the gas governor, realignment and other works along Goods Way, demolition of the Western Goods Shed, and relocation of dismantled guide frames for the linked triplet of the gasholders. The other significant element of works in the immediate vicinity would be the construction of bridge BR3 and the footpath/cycleway, which, subject to agreement with the London Borough of Camden and the London Wildlife Trust, may take place as part of the 2nd major phase.

4.7.73 The Regents Canal may be exposed to disturbance from the construction of bridges over the canal, improvement work to towpath, and the possible construction of new moorings. Also, construction in vicinity of canal has the potential for pollution, and potential disturbance due to noise and lighting. The main risk to the canal during the construction works would be from surface run-off from the working areas which could be contaminated or contain high levels of silt, and which could result in pollution of the canal. This would be controlled by the measures listed earlier in Part 4.

4.7.74 The King's Cross Central development would affect most of the canalside, with the exception of the canal frontage of Camley Street Natural Park. As shown on Parameter Plan KXC006, there would be improvement works to the towpath, possible construction of new moorings, and construction/provision of three new bridges. In addition to the works within the canal corridor, there would also be effects, such as through noise and lighting, as a result of construction works in the vicinity of the canal, primarily Zones F, G, I, M, N and V (see Parameter Plan KXC005). Works associated with the provision of public realm areas particularly Granary Square and Canal Square (Parameter Plan KXC004) are also likely to result in disturbance to the canal corridor.

4.7.75 Thus whilst significant elements of the work likely to give rise to disturbance to the canal are likely to be completed early in the programme, there is the potential that disturbance to the canal could occur over prolonged periods, or would be repeated at intervals throughout the work programme.

4.7.76 Other than the canal frontage of Camley Street Natural Park, the section of the canal within and adjacent to the King's Cross Central site offers little cover for breeding birds or other species which would be particularly susceptible to disturbance. Thus the effects of such construction disturbance are likely to be largely restricted to the western section of the canal.

4.7.77 The North London Link and King's Cross Goods Yard and the Railside Land in Islington are Sites of Borough Importance. The sites are currently subject to major disturbance and disruption as a result of the CTRL works, due for completion in 2007. Development of King's Cross Central would continue construction activity across the site for a further 12-15 or more years.

4.7.78 “Wasteland” habitats may develop and be lost in parts of the King’s Cross Central site as construction continues. Any such sites are likely to be subject to a relatively high degree of disturbance as a result of construction works or use of occupied areas of the site. Many of the species characteristic of such sites, such as plants and invertebrates are not sensitive to disturbance, and although limited in extent such sites may not be entirely
lacking in interest. One important species of such habitats, the black redstart, is also relatively tolerant of human activity (see below).

4.7.79 The construction effects on the canalsides and railsides habitats have already been discussed. It is unlikely that the new railside land associated with the CTRL will have developed any particular nature conservation interest by 2007, but such interest may subsequently develop depending on the future management of this land and the boundary with King’s Cross Central.

4.7.80 The construction effects on waterways and wetland habitats within the King’s Cross Central site are explained above. There is the potential that disturbance to the canal could occur over prolonged periods, or would be repeated at intervals throughout the work programme.

4.7.81 The key species of the King’s Cross Central site and the potential impact of construction, are described in detail in Part 14, the Nature Conservation Specialist Report and summarised below.

4.7.82 The common pipistrelle would potentially be affected due to disturbance of the canal and Camley Street Natural Park as a result of the construction works. However, given that night time working likely to cause disturbance would only occur under exceptional circumstances, significant effects on foraging bats would not be expected. The significance of the effects on bats is judged to be negligible.

4.7.83 There is history of black redstarts breeding in the area. Whilst black redstart is relatively tolerant of human activity, the high levels associated with an active development site would be likely to deter potential breeding birds. Areas of the site which are not being developed may be suitable depending on the nature of any interim uses. Assuming that any extensive areas of the site vacated by the CTRL contractors which remain vacant will be restored, reseeded and managed to maintain a tidy visual appearance, such areas are unlikely to be of value to black redstarts.

4.7.84 Red-list species recorded breeding from the site in 2001 were house sparrow (4 pairs), starling (10 pairs) and linnet (1 pair). House sparrow is also a London Biodiversity Action Plan and Camden Biodiversity Action Plan species.

4.7.85 Sparrow and starling are relatively tolerant of human activity. However the high levels of construction associated with an active development site would be likely to deter potential breeding birds. Areas of the site which are not being developed may be suitable depending on the nature of any interim uses.

4.7.86 Amber-list species recorded breeding at the site were lesser black-backed gull, herring gull, stock dove, dunnock, and blackbird. The effects of construction are likely to be similar to those for the red-list bird species.

4.7.87 Amphibians recorded from the site were smooth newt, common frog and common toad. The construction works are unlikely to have any adverse effects on the amphibian populations. The only risk during construction would be if pollution entered the canal and in turn reached the ponds which are directly linked to the canal. As explained elsewhere within Part 4, measures would be implemented throughout construction to prevent such pollution occurring.
4.7.88 The only species of Odonata recorded was the azure damselfly *Coenagrion puella* at the ponds at Camley Street Natural Park. The only risk during construction would be if pollution entered the canal and in turn reached the ponds which are directly linked to the canal. As explained above measures would be implemented throughout construction to prevent such pollution occurring.

4.7.89 Two Nationally Notable terrestrial invertebrates (a solitary bee *Hylaeus cornutus*, and a solitary wasp *Crossocerus distinguendus*) were recorded in ruderal vegetation in the Triangle Site. They were also recorded from Camley Street Natural Park, the likely breeding site. The Nationally Notable hoverfly *Pipizella virens* was also recorded from the park. Three Nationally Notable beetles (*Longoitarus parvulus*, *Podagrica fuscicornis* and *Hippodamia variegata*) were also recorded from the Triangle Site. As explained above, “wasteland” habitats may be created and be lost in parts of the site as construction continues and these may provide areas of temporary habitat for invertebrates. Invertebrates would not be sensitive to the relatively high levels of disturbance which may affect such sites.

**Water Resources**

4.7.90 The Regents Canal is identified in the table of locations and resources (Table 4.1) as the main watercourse crossing the site approximately west to east. There is also a pond in Camley Street Natural Park.

4.7.91 The site is underlain by London Clay, with Made Ground typically forming a layer about 1m to 2m thick, although it could be of greater depth locally. Within the Made Ground, there is a limited perched water table, which is probably not continuous across the site. The perched groundwater is contaminated as a result of previous industrial activities.

4.7.92 The site sits on a major aquifer located within the Upper Chalk, which is protected by a layer of London Clay. This aquifer is used for water supply throughout the region.

4.7.93 The following summarises the effects of construction on these resources. For further information, refer to Part 15, Water Resources Specialist Report.

**Assumptions**

4.7.94 The following assumptions have been made about the proposals in relation to construction:

- dust control measures would be used, including any demolition works would be regularly damped down and hoarding would be erected to minimise dust entering the canal;
- settlement tanks and interceptors would be provided and levels modified where necessary to minimise overland flow;
- discharge of construction run off into Regent’s Canal would prohibited;
- drainage systems would be designed and installed during construction work, and cut off trenches/de-watering mechanisms would be used across the site to manage surface water run off. Permanent road and roof drainage systems would be installed at an early stage of construction;
- storage tank/container facilities would be appropriately bunded within designated areas and sited as far as possible from any water course or surface drain;
spoil and other materials on site would be controlled to prevent spillages, particularly during September to March when flooding is more likely;

- if materials escape, remedial action would be taken as soon as possible and the appropriate absorbent material for containment would be employed;

- British Waterways requirements for works adjacent to the Regent’s Canal would be complied with British Waterways, 2003: Code of Practice for Works Affecting British Waterways.

Assessment of Effects

4.7.95 The surface water drainage system would be substantially replaced as part of the proposals. During construction, major earthworks would take place resulting in local low-spots across the site. Therefore temporary localised flooding could take place during a rainfall event. Based on the control measures that would be in place, the significance of any effects would be negligible.

4.7.96 Localised dewatering of perched water within the Made Ground or clay may be required for basement construction. The water may be of poor quality due to sediment loading or localised contamination of the ground. Discharge of this water into the canal or surface water network could have significant adverse effects. However, any water would be discharged to the combined sewers (after agreement with Thames Water) or tankered away to the appropriate point of disposal. Any effects on the canal or drainage system would therefore be negligible.

4.7.97 Construction works would result in areas of earthwork materials being exposed. During a rainfall event, sediment and other pollutants could potentially be washed into the Regent’s Canal directly impacting the water quality. However, the control measures in place would mean that the significance of any effects would be negligible.

4.7.98 Dust and debris could enter the canal during construction, particularly where demolition is taking place adjacent to the canal or works to the towpath are being undertaken. This would be prevented by appropriate construction techniques. Overall, the significance of any effects on water quality would be negligible.

4.7.99 Localised dewatering of the pockets of perched groundwater may be locally required. However, as the perched groundwater does not form part of an extensive or continuous aquifer, any dewatering within the site is not expected to have an adverse impact on the environment. The significance of these effects would therefore be negligible.

Soils and Contamination

4.7.100 This section summarises the effects of construction on soils and contamination. Part 16, Soils and Contamination Specialist Report provides the detailed assessment.

Remediation Strategy

4.7.101 All remediation works would be implemented in accordance with Part 11A of the Environmental Protection Act 1990 and Section 57 of the Environment Act 1995.
4.7.102 The following control measures would be in place to control potential effects on soils and contamination:-

- confirmation of the potential for residual ground contamination within any construction site would be completed prior to the start of any piling or excavation work, with the consideration of sources, pathways and receptors;
- sampling and testing of excavated spoil and piling arisings, in order to assess the suitability of materials for reuse on site against site specific criteria;
- stockpiling of contaminated materials would be avoided where practicable. Where it is necessary (e.g. for bioremediation), stockpiles would be located on areas of hardstanding or plastic sheeting to prevent contaminants infiltrating into the underlying ground;
- where remediation is required, on-site treatment, including bioremediation, would be carried out wherever practicable;
- any necessary licences would be obtained for the storage, treatment and disposal of waste;
- if a “hot spot” of unforeseen contamination is identified during the course of the work, the Construction Manager would instruct specific investigations in the areas in question. The construction manager would advise the Local Authority and liaise on the appropriate remediation methodology;
- special precautions would be taken if materials containing asbestos are encountered;
- imported landscaping material would be clean and validated by testing at source;
- all works would be carried out taking full account of the requirements of the Environment Agency’s “General Guide to the Prevention of Pollution of Controlled Waters” and other Environment Agency pollution prevention guidance;
- the handling and storage of potentially hazardous liquids on site, e.g. fuels and chemicals, would be controlled and best practice guidance from the Environment Agency would be applied. Storage tank/container facilities would be appropriately bunded within designated areas and sited as far as practicable from any watercourse or surface drain;
- a Spillage Response Plan would be developed and implemented, in consultation with the appropriate statutory bodies (including the HSE and local Fire/Civil Defence Authority, as well as the Environment Agency and the Local Authority Environmental Health Department). It would set out systems to ensure that pollution impacts upon people, flora, fauna, land, air and water are contained and minimised and that clean-up procedures and spill kits are in place to respond effectively if an incident is discovered;
- all oil interceptors and sediment settlement or other treatment facilities would be regularly inspected and maintained;
- adequate temporary site drainage would be provided, and installed during construction works. Levels would be modified where necessary to minimise overland flow. Cut off trenches, dewatering measures, settlement tanks and interceptors would be used across the site to manage surface water run off and prevent any contaminated water from entering the Regent’s Canal, either directly as surface run-off, or indirectly via the surface water drainage systems;
any water from the localised dewatering of perched water within the made ground or clay during basement construction would be discharged to the combined sewers (after agreement with Thames Water) because of its potential to be of poor quality due to sediment loading or localised contamination.

Assessment of Effects

4.7.103 Contaminated material presents a hazard to construction workers and other visitors to the site during the earthworks phases. Contact between contaminated fill and skin leading to potential ingestion, or inhalation of vapours and airborne contaminated particulates are all forms of potential harm to humans. All remediation works would be designed and implemented in accordance with Part IIA of the Environmental Protection Act 1990 and Section 57 of the Environment Act 1995. This would result in a negligible effect upon workers and visitors.

4.7.104 There would be potential for contaminated dust from working areas to be wind blown in the vicinity of the works. Mitigation measures would include dampening down dust during excavation and transportation and monitoring of PM$_{10}$ levels. Further details are provided in the Air Quality section below.

4.7.105 It is assessed that the effects upon the health of workers, visitors and occupiers of this site and of adjacent sites from contaminated dusts would be negligible.

4.7.106 The quality of the Regent's Canal is currently vulnerable to in situ mobile contaminants within the King's Cross Central site. Areas of contaminated material encountered during the construction phase would be validated by testing, excavated and treated for retention on site, or disposal offsite at a suitably licensed landfill site. The remediation of the site would reduce the risk of contamination to the canal in the future and be a moderate beneficial effect of the scheme.

4.7.107 There is a risk that contaminated material may become mobile during the works. Measures to prevent pollutants discharging into the canal are described in the Water Resources section above; the effects are considered to be negligible.

4.7.108 Ground investigations have shown that the near-surface soil profile comprises Made Ground over London Clay. Groundwater within the Made Ground is a local perched water table not likely to be continuous across the site. The quality of the perched water in the Made Ground is poor. Therefore, if discharges were made from dewatering operations during construction, and no prior treatment was carried out, the quality of the Regent's Canal could be affected. However, it is proposed that water from the localised dewatering of perched water would be discharged to the combined sewer and it is considered that dewatering would have a negligible effect upon the quality of water in the canal or sewers.

4.7.109 If contaminated materials are exposed at the surface of the construction works, rainwater run-off could also become contaminated before discharge to a drain or the canal. Measures to control contamination are described in the Water Resources section above and include interceptors and temporary bunding. The effect on the receiving sewer or the canal is considered to be negligible.

4.7.110 As explained above, the quality of the perched water within the Made Ground is poor. The proposed removal/treatment of the source of contamination would have a long-term, minor beneficial effect with respect to the quality of local perched groundwater.
4.7.111 As explained above, the site is located on a major aquifer below the London Clay consisting of Woolwich and Reading Beds, Thanet Sand and Chalk. No remediation activities are envisaged which would involve excavating through the London Clay into the major aquifer below. The potential to have an adverse effect on the major aquifer is therefore negligible. Existing boreholes are recorded within the site but all are historic. All would be built over by new building works as part of the development. As such, the development would have a moderate beneficial effect by removing sources of contamination and removing the pathway with hard cover.

4.7.112 Building foundations are likely to include piles founded in the London Clay strata. The London Clay prevents the flow of groundwater from the near surface soils to the deeper major aquifer. In theory, there may be potential for piling operations to breach the clay layer and potentially form a minor pathway for contaminant migration to the lower aquifer. The design of foundations would however take this into account such that the risk would, in practice, be negligible. Furthermore, near surface groundwater quality would be improved by the remediation works. Groundwater above the clay would therefore be cleaner in the long term. It is assessed that the overall effect of piling on the aquifer would be negligible, if not beneficial.

4.7.113 During construction, storage of fuels and other liquid chemicals would occur in some parts of the site. Inappropriate handling and storage procedures could result in spills and leaks of these chemicals impacting upon the perched groundwater and the Regent’s Canal. With control measures in place, however, storage of materials is assessed as having a negligible effect on the environment.

4.7.114 During the ecological surveys of the site, Japanese knotweed was found to be present. The presence of Japanese knotweed would need to be confirmed following completion of the CTRL works. Any arisings from areas containing remnants of such invasive/noxious weeds would be treated as controlled waste and disposed off-site at a landfill site that is licensed to receive such material. This is considered to have a beneficial effect on the environment.

**Noise and Vibration**

4.7.115 The King’s Cross Central development would give rise to noise and vibration during its construction due to activities on the site and also construction traffic on the local road network. Furthermore, due to the timescale of the development, noise and vibration may affect the earlier phases of the development during the construction of the subsequent phases. The following summarises the effects of construction related noise, as set out in Part 17, Noise and Vibration Specialist Report.

4.7.116 Noise from construction activities is normally assessed in terms of absolute levels and, due to its temporary nature and the need for the work to be carried out in the open, relatively high levels are normally found to be acceptable during daytime hours. At night, limits are based on sleep disturbance criteria. Further details on criteria are provided in Part 17, Noise and Vibration Specialist Report.
Assumptions

4.7.117 The following assumptions have been made about the proposals:

- contractors would be required to adopt ‘best practical means’ to minimise noise and vibration;
- construction noise and vibration would be controlled to acceptable limits through the relevant regulations i.e. the Control of Pollution Act;
- where noise and/or vibration levels during construction may exceed the relevant regulations, prior agreement would be sought under Section 61 of the Control of Pollution Act;
- percussive piling would generally be avoided, but may occur under the worst case. Where there is no alternative to percussive piling, all practical means would be employed to reduce noise;
- where necessary, demolition close to heritage resources or to roads would be carried out by large scale excavators using buckets and shear jaw attachments.

Worst Case

4.7.118 The increases in road traffic noise along the access routes to the site due to the additional construction traffic have been calculated. The changes in road traffic noise are based on the highest likely build out rate for the development, thus representing the worst case.

4.7.119 The extended construction period for the development necessarily means that earlier phases would be occupied while construction of later phases takes place nearby.

Assessment of Effects

4.7.120 During construction operations, noise and vibration would be generated by demolition and construction activities on the development site and could potentially affect nearby sensitive locations and future occupiers of the site. Noise and vibration could be generated off-site due to the additional road traffic generated by the construction activities. Off-site infrastructure works would also be required. These would be under the control of the appropriate statutory undertakers and would be carried out under the provisions of the New Roads and Street Works Act 1991.

4.7.121 The main buildings to be demolished are in close proximity to other heritage buildings to be retained. Where necessary, the demolition methods to be employed would be relatively quiet methods, such as large scale excavators using bucket and shear jaw attachments. This work would be carried out during daytime hours and is unlikely to be audible at residential locations outside the site.
4.7.122 Piling is the only construction process likely to be used that could cause high noise levels at locations outside of the site. Percussive piling would generally be avoided, but may occur under the worst case. Where there is no alternative to percussive piling, all practical means would be employed to reduce noise. Development zones Q and R are opposite a residential development on York Way and piles would have to be placed either side of the Gasworks tunnels. The piling to the west of the tunnels may need to be carried out at night, because the tunnel is in use during the daytime; however, the eastern tunnel is disused and piling could take place during daytime hours.

4.7.123 Where augered piling methods can be used it is likely that the noise at these residential properties would be below daytime baseline noise levels, but may be higher than night-time baseline noise levels due to road traffic.

4.7.124 Having regard to the criteria set out in the Noise Specialist Report, the impact would be negligible during daytime hours, but could cause a moderate adverse effect at night when working to the east of the tunnels. Working to the west of the tunnels is likely to result in noise levels below the night-time baseline traffic noise and the impact would therefore be negligible.

4.7.125 In the event that percussive piling is required then both day and night-time (if relevant) baseline noise levels could be exceeded at residential properties.

4.7.126 Percussive piling alongside the tunnels would cause a moderate adverse effect at night. There would also be a minor to moderate adverse impact during the daytime. In any such cases, appropriate controls would be agreed with the local planning authority under a Section 61 consent.

4.7.127 The impact of construction noise from other activities would be of negligible significance.

4.7.128 The increases in road traffic noise along the access routes to the site due to the additional construction traffic have been calculated using ‘worst case’ traffic estimates. The changes in road traffic noise are presented in Noise Specialist Report and indicate that increases in road traffic noise due to construction traffic would be generally small, with all of the increases on roads with residential properties being 1.6 dB or less. These increases would not be perceptible and are considered to be of negligible significance.

4.7.129 An increase of slightly more than 3 dB is predicted on Goods Way, and while there are no noise sensitive receptors on this road, there are a residential narrowboat moorings on the Regent’s Canal close to Goods Way. The predicted increase in noise levels is considered to be a minor adverse effect at these narrowboats.

4.7.130 Construction traffic would travel on the highway network beyond the roads identified in the Noise Specialist Report, but would remain on major roads and would be dissipated with distance from the site. Thus, the changes identified are considered to represent the worst case increases in road traffic noise.

Air Quality and Climate Change

4.7.131 This section summarises the effects of construction on Air Quality set out in Part 18, Air Quality and Climate Change Specialist Report. The heading of this section is “Air Quality and Climate Change” in order to be consistent with the structure of the Environmental Statement. However, the construction activities do not give rise to any significant effects on Climate Change, and so this section deals with air quality only.
4.7.132 The receptors potentially sensitive to the effects of changes in air quality, identified in Table 4.1, include local residents, businesses and other sensitive uses. The King’s Cross Central development would take place within an Air Quality Management Area (AQMA), designated by the London Borough of Camden, and partly within, but mainly adjacent to, an AQMA declared by the London Borough of Islington.

4.7.133 The principal effects are likely to arise from the effects of dust soiling and PM$_{10}$ concentrations from construction activities and changes in nitrogen dioxide due to emissions of vehicles during the construction phase.

4.7.134 Fine particles (PM$_{10}$) are present in vehicle exhaust emissions. Exposure to elevated concentrations of PM$_{10}$ can affect the health of sensitive individuals. They are associated with increases in mortality rates among individuals with existing heart and lung conditions, as well as hospital admissions for these conditions. Impaired lung function in both children and adults has also been identified. These effects are taken into account in the setting of the air quality standards to protect human health, although health effects can occur at concentrations below the standards. Approximately 15-45% of dust raised from construction sources, would be present in the PM$_{10}$ size fraction, i.e. <10 $\mu$m in diameter. In addition, there would be emissions of PM$_{10}$ from plant working on the site.

4.7.135 The principal source of dust is likely to be construction activity. Rates of dust deposition decline rapidly with distance from the source. This is due principally to the dispersion and dilution that takes place in the atmosphere, but is also contributed to by the rapid loss of particles larger than 30 $\mu$m, which only travel a few metres or tens of metres before being deposited. Effects arise when dust is deposited on surfaces, such as cars, windows and paintwork, in sufficient amounts to create a noticeable soiling. Large accumulations of dust can also affect vegetation by blocking stomata and reducing growth. Such accumulations are usually only significant very close to the source.

4.7.136 Dust is potentially generated during the demolition of buildings, especially if carried out during dry weather. Following demolition works, the main potential for dust is expected to arise from the predicted earth movements (as defined above) and from vehicles travelling over unpaved ground during dry weather. It is expected that paved haul roads used for the CTRL works would be retained and others built if required, which should minimise these effects. Mobile crushers would be used so that concrete and masonry could be re-used on site. These have the potential to generate significant quantities of dust, if appropriate mitigation measures are not in place. Cutting of stone and concrete can also generate dust.

Assumptions

4.7.137 The following measures would be in place to minimise effects on receptors in the area:-

Materials Storage and Handling

- materials handling and storage areas would be sited as far away as reasonably practicable from public/residential areas. These areas would be actively managed, and dry material would be stored inside enclosed shields/buildings or within a central storage area. Any storage areas that are not enclosed would be covered/sheeted. Prolonged storage of debris on site would be avoided;
- handling areas would be kept as clean as practicable to avoid nuisance from dust;
should a concrete batching plant be operated during the construction period, to allow concrete to be manufactured on site, the cement and other powdered cementitious materials would be delivered by road and transferred through a closed system of heavy duty hoses to storage silos, or delivered to inline covered bin storage areas. Alarms or sensors would also be installed to prevent overfilling or system failure;

- Monoflex sheeting would generally be added to the side of scaffolding to prevent dust blowing off completed floorplates;

- other dusty materials would dampened down using water sprays in dry weather.

**Construction Plant**

- site plant and equipment would be kept in good repair and maintained in accordance with the manufacturer’s specifications;

- where practicable, low emission fuels would be employed for construction plant. No plant would be left running when not in use;

- any fixed plant and equipment would be located away from sensitive receptors and residential areas near the site;

- fencing/enclosures would be erected around major construction plant items, including any onsite concrete batching plant;

- plant with dust arrestment equipment (such as particle traps) would be used where practicable.

**Vehicle Movements**

- all weather surfaces would be provided on heavily used haul roads and regularly cleaned;

- effective wheel cleaning would be undertaken of traffic leaving the construction sites onto site haul/public highway roads by the use of wheel washes. Road sweepers and vacuum sweepers would be used to maintain such roads in a clean condition;

- during prolonged dry periods or as directed by the site manager, haul roads would be dampened down;

- speeds would be restricted to 10 mph on haul roads across the site;

- all site vehicles would be kept in a good state of repair and maintenance;

- the use of low emission vehicles would be specified in construction contracts where practicable (e.g. specified EURO standard – EURO IV);

- all vehicles carrying dusty materials into or out of the site would be sheeted to prevent escape of materials.

**Site Control**

- site operations would be planned to take into account local topography, prevailing wind patterns and local sensitive receptors;

- burning of materials on site would be prohibited;

- loading and unloading would only be permitted on designated areas;
appropriately dust controls would be employed for the demolition work, including sheeting, use of enclosed rubble shutes, etc.;

- dust controls for ‘special operations’ would be specified, e.g. cutting or grinding of stone or metalwork, sandblasting or other similar cleaning, and crushing;

- where mobile concrete crushers are used during demolition, these would be sited as far away as possible from sensitive receptors, and authorisation would be required prior to use from the Local Authority in whose area the operating company’s registered office is situated;

- immediate clean up of spillages would be employed;

- completed earthworks would be sealed or planted as early as practicable;

- where parts of the site have been identified as potentially contaminated, any necessary precautions indicated by risk assessments would be specified for dust control, spoil removal and disposal.

4.7.138 Dust could also be generated during off-site infrastructure works. These works would be under the control of the appropriate statutory undertakers and would be carried out under the provisions of the New Roads and Street Works Act 1991.

Worst Case

4.7.139 The worst-case scenario for the effects of dust during construction is that operations would be carried out across the whole site, for the full duration of the construction period; and that all activities would be major in scale in relation to the potential for dust and PM$_{10}$ impacts.

4.7.140 To ensure that the worst-case for construction traffic has been assessed, it has been assumed that the maximum likely daily traffic flows would be in 2007, when vehicle emissions and thus pollutant concentrations will be highest. In future years the total concentrations will be lower.

Assessment of Effects

4.7.141 Taking into account the mitigation measures listed above, there is the possibility of increased soiling out to around 100 m from dust sources, while significant increases in PM$_{10}$ concentrations might occur up to about 50 m from the dust sources. On this basis, the following receptors could be at risk of dust soiling effects at some point during the construction period:

- around 150 residential properties in York Way, Rufford Street and Gifford Street

- residents of narrowboats on the Regent Canal;

- some of the new affordable housing units being built on the playground site at the junction of Rufford Street and Gifford Street;

- some business premises on York Way and the Agar Grove Industrial Estate and any parked cars or heritage buildings in this area. Whilst dust soiling could affect the appearance of heritage buildings, it is not expected that any damage would be experienced.
4.7.142 Around 30 of the properties on York Way at risk of experiencing dust effects may also be at risk of PM$_{10}$ effects, as may residents of the narrowboats on the Regent Canal.

4.7.143 Dwellings or premises built as part of the new development, occupied whilst construction work within the distances referred to in paragraph 4.7.141 above is ongoing may also suffer some occasional effects. If the proposed King's Place development to the east of the York Way is completed before the construction of Zones F and J, then occupiers of these premises could be at risk of dust soiling effects during the construction of these blocks.

4.7.144 Visitors to the site could also be temporarily be affected by these effects. The effects on people working on the site would be taken into consideration in the Contractor's Health and Safety Plans.

4.7.145 Although the Regent's Canal and Camley Street Natural Park are close enough to the site potentially to be affected by dust soiling they do not support habitats or species that are particularly sensitive to dust effects. Therefore it is unlikely that the construction phase of this development would have any significant air quality effects upon these receptors.

4.7.146 At present a register of complaints received about dust is maintained by the King's Cross Construction Impacts Group, which currently monitors the CTRL, London Underground Limited and P&O Developments construction works. The CTRL help-line received 14 complaints about dust in the area between January and August 2003. The works in relation to King's Cross Central are expected to be smaller in scale, from an air quality point of view, thus there should be fewer concerns.

4.7.147 Any dust incidents would be highly dependent on the weather, requiring dry conditions and winds blowing towards a receptor. This would also need to be combined with an activity creating dust close to the receptor. The combination of conditions to allow significant dust soiling at any off-site location should therefore be infrequent. The prevailing south-westerly winds would tend to blow dust away from Camley Street Natural Park and the Agar Grove Industrial Estate, but there would be a risk of more frequent effects for the residential premises on York Way.

4.7.148 In accordance with the criteria in the Air Quality Specialist Report (Part 18), the significance of adverse impacts of dust and PM$_{10}$ upon local air quality due to construction activities is judged to be moderate adverse. However, these would be not permanent and would be infrequent impacts, without any residual effect once the scheme (or the relevant phase of it) is complete. The 'moderate' significance judgement arises from the nature and length of construction operations, which automatically produce a moderate ranking in the assessment methodology adopted. That said, the measures outlined above represent best practice in terms of construction management.

4.7.149 There are parts of the site that are contaminated. The types and location of contamination and appropriate mitigation measures to be applied is provided in the Soils and Contamination Specialist Report (Part 16). Where parts of the site have been identified as potentially contaminated, the necessary precautions would be specified for dust control, spoil removal and disposal.

4.7.150 The potential effects of additional construction traffic are described in detail in the Air Quality Specialist Report (Part 18). As a worst case, it has been assumed that the maximum likely vehicle numbers would occur in 2007, when concentrations are likely to be highest. The results show that the increase in nitrogen dioxide and PM$_{10}$ concentrations due to construction traffic associated with the King's Cross Central
development would be very small (<1%). However, as these increases are predicted within an AQMA, the overall impact for construction traffic would be minor adverse.

Microclimate

4.7.151 During construction, temporary site compounds and associated structures would be erected. These would have no significant effects on microclimate.

Urban Services

4.7.152 The provision of utilities to service the proposed Kings Cross Central development would require both onsite and offsite infrastructure works (as illustrated in Parameter Plan KXC018 and additional plan CONTEXT 001). The impacts of these works on air quality, noise and transport are assessed in sections above. This section summarises the effects on the existing utility network from construction and infrastructure works.

Assumptions and Study Parameter

4.7.153 For onsite works, it is assumed that all control measures for construction works are in place as specified in the sections above. All activities related to the phasing and installation of on-site utilities would be co-ordinated. Works would be programmed at the appropriate times of year when utility demands are typically less.

4.7.154 All onsite and offsite utility works would be undertaken in accordance with the New Road and Street Works Act (NRSWA) 1991 for adopted highways and privately owned estate roads alike.

4.7.155 The NRSWA provides a legislative framework for street works activities by undertakers, including public utilities. The aim is to balance the respective statutory rights of highway authorities and undertakers to carry out works in the highway against the right of the users to expect the minimum disruption from street works. The obligations under the act include notification of the works, estimating the duration of the works with possible penalties for late completion, co-ordination of the works, the requirement to minimise inconvenience to road and pedestrian users and safety.

4.7.156 As part of the on-site infrastructure works, the potential for residual ground contamination within any construction site would be confirmed prior to the start of any excavation work. This would be maintained when trenching is carried out for installation of new utilities as part of the development.

Worst Case

4.7.157 There is no single “worst case” development scenario for urban services. Instead an individual worst case for each type of service has been assessed. The majority of impacts would be due to off-site works within the local area. Off site “worst case” works would include:

- new power supplies to be provided from City Road and from Longford Street substations (both operated and owned by EDF Energy), which includes the laying of new 132kV and 11kV buried cables along existing public roads;

- new water supply connections from an existing main at Royal College Street via new mains and via a main in Coach Road (underneath new St Pancras Station Platform Extension) and from a main in Caledonian Road via Copenhagen Street;
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- new gas supply points from York Way via the junction at the northern end of the site and the junction at Copenhagen Street, east of the site;
- multiple points of connection of foul discharge from the site via new and existing connections to the existing and diverted combined public sewer network;
- new connections for telecomms from either the BT Tower, Clerkenwell or Euston telephone exchanges requiring additional comms infrastructure within existing public roads; and
- direct connections to the Triangle Site from existing infrastructure or via new utility connections from the Main Site.

4.7.158 Within the site, existing tenants north of the canal would generally vacate the existing buildings. The phased implementation of the development and more particularly the phasing of utility supplies could affect utilities already installed as part of earlier phases of King’s Cross Central.

4.7.159 South of the Regent’s Canal primary utility routes would generally be installed in advance of building construction commencing, leaving only building connections and secondary distribution routes to be constructed. Co-ordination would be required with any existing utilities providing supplies to LUL or Network Rail facilities at the southern end of the site.

4.7.160 In addition to utility diversions required as a result of road re-alignment to Goods Way and Pancras Road, and utility works along York Way, further diversions and abandonment of existing utility supplies to buildings to be retained may be carried out. The most significant proposed diversionary works comprise:-
- diversion of the Camden Sewer;
- relocation of the district gas governor and extension of the associated large diameter low and medium pressure gas supply mains;
- abandonment of existing building utility connections; and
- general utility diversions along Goods Way and Pancras Road.

Assessment of Effects

4.7.161 The effects of undertaking the infrastructure works on the existing utility network have been assessed for each type of service.

4.7.162 For the provision of power supply to the site, the following ‘worst case’ effects have been assessed:-
- the installation of new power supply cables from Longford Street, including the burying of new 11kV cables along existing road corridors to the site (an indicative route is shown on CONTEXT 001). The construction of the off-site route is likely to have short-term duration and the impact on urban services is assessed as negligible in the local area;
- new 132kV cables from City Road, approximately 3km from the site, would be installed in new buried ducts routed along existing roads, as shown on Parameter Plan KXC 018 and CONTEXT 001 (Main Site Development Specification). A ducted route would allow short lengths of trench to be excavated and consequently reinstated in a short period of time in advance of cable laying. This approach would reduce the extent of trench open at any one time and therefore reduce the impact.
of the installation of the new power supply cables generally but arguably not on other utilities.

Existing utilities adjacent to the proposed excavations would be vulnerable to damage during excavation and backfilling works, which would still be required although the approach described would reduce the duration that the trench would remain open.

4.7.163 Taking into account the above, the off-site work has been assessed to have medium term duration and the impact on services in the area is assessed as negligible.

4.7.164 For the provision of on-site power distribution services, a 132/11kV main sub-station would be provided. The impact of installing and operating the 11kV distribution on site, in conjunction with the 132kV/11kV primary substation and new supplies to the site would have a negligible effect on the existing utilities network.

4.7.165 For the provision of gas services, the following effects have been assessed:

- the relocation of the district gas governor would require significant underground diversion and extension works to existing gas mains and other non-gas utilities along roads that are already congested with utilities. The work would be undertaken when gas demands are reduced during the summer months and also such that supplies were not interrupted, which would require the new station to be operable, at least in part, before decommissioning of the existing plant commenced. Based on this and the many utilities within the vicinity of the proposed site for relocation, the impact on existing and proposed utilities is assessed as negative, medium term and minor;

- the new connections to the local pressure gas network would not cause disruption to gas or other utility supply and therefore the impact is considered negligible;

- within the site, a low-pressure mains network would be located along the internal road corridors which would be provided with connections and metering points to buildings, as required. National Grid Transco has advised that the estimated time taken to install the primary on site services would be less than twelve months. The impact on the utility network of the gas supply to the site is considered to be negligible since it would not affect existing supplies and would be part of the planned infrastructure.

4.7.166 For the supply of potable water to King’s Cross Central, the “worst case” scheme would be via Thames Water mains. Local to the site the scheme would require new supplies to be provided via two new connections from existing large diameter Thames Water mains located to the west and east of the site. Taking into account the local works required, the impact of constructing the new water supplies to the site is considered to be short-term, negligible.

4.7.167 For the provision of foul drainage services, the following effects have been assessed:

- during any Camden Sewer Diversion, flows along the Camden Sewer would need to be briefly interrupted although the majority of new construction would be off-line and therefore not affect existing flows. This is assessed to have a minor adverse effect on the existing utility network, with short term duration;

- foul connections to existing pipes can generally be undertaken within the site boundary. The impact of these works during construction is considered to be short term and negligible since they would be unlikely to interrupt existing flows.
4.7.168 On the basis of the physical works required and the overall approach to storm and foul drainage discharge from the site, the impact of foul drainage construction works on the existing local network would be negligible.

4.7.169 For the provision of communication services, taking into account the presence of existing telecom ducting and the likelihood that in sections these ducts may need to be supplemented with new ducts, dependant on the number and congestion of cables, the impact of telecommunications work is considered to be short-term, local and negligible.

4.7.170 Within the site a combined multi-way duct bank would be provided but with multiple chambers to provide appropriate access and security. These duct routes would be located within the road/infrastructure corridors. The impact of telecommunications work within the site is considered to be negligible but would be long term since new supplies would be provided throughout the 15 year development period.

4.7.171 In general, for all services, the diverting of existing utilities in local roads, to allow new road connections from site to tie into the existing highway network, is assessed to have a minor adverse effect on the existing utility network, with medium term duration.

4.7.172 As phases of the development are built out, the on-site utility network would be expanded to suit. This may require connection to existing services within earlier phases and could cause ongoing minor disturbance to the residents and users of the site. This would be managed as a normal part of phased development operations. The measures identified above for off-site works would also be appropriate for use on-site, in most circumstances.

**Waste**

4.7.173 This section describes the characteristics of the King’s Cross Central development in relation to the handling of waste generated during the construction process.

4.7.174 Waste would be generated during construction, as is the case for any construction project. The types of wastes would include surplus spoil, demolition waste, damaged materials and offcuts, packaging etc. The volume of surplus spoil predicted as a ‘worst case’ to be produced during the construction of the proposed Kings Cross Central development is described in paragraph 4.6.41 above. The volumes of other wastes generated during the construction process and to be transported off site is included in the predicted figures for construction material movement in paragraph 4.6.43 above.

4.7.175 For the storage and disposal of all construction wastes, the waste management practices on site would comply with the relevant legislation for storage and disposal of all construction wastes, and the following measures would be in place:-

- raw material waste would be reduced through analysing design and construction techniques (e.g. pre-fabrication) where possible;
- concrete and masonry would be crushed for reuse for backfilling and other purposes;
- the Contractor(s) would liaise with suppliers to enable packaging material to be sent back for reuse;
- opportunities would be investigated to maximise the recycling potential of demolition and construction materials e.g. structural steelwork would be removed from site for recycling, plasterboard offcuts would be recycled where practicable;
- recyclable materials such as metals, timber, cardboard and office paper, would be put in colour coded bins, ready for collection by the appropriate contractor;
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- all wastes would be subject to controlled collection and storage on-site, to keep the construction site tidy, avoid unsightly accumulations of waste and minimise dust, pest infestation, odour and litter. Wastes would not be stored in areas of the site adjacent to sensitive environmental features or receptors;
- all residual waste would be removed from site by licensed carriers to suitable licensed disposal sites;
- waste transfer notes would be held by the Construction Manager and would fully describe the waste in terms of type, quantity and containment in accordance with the relevant regulations;
- buildings and materials potentially containing asbestos would be fully assessed in advance of demolition works commencing. In accordance with the relevant legislation, a licensed contractor would remove any identified asbestos;
- the contractors would obtain any necessary licences for the storage, treatment and disposal of waste and use registered waste carriers or seek registration as a waste carrier for the handling of contaminated materials;
- any arisings from areas containing remnants of invasive/noxious weeds would be treated as controlled waste and disposed of off-site at a landfill site that is licensed to receive such material. The disposal recommendations referred to within the relevant Environment Agency best practice guidance would be followed.

4.7.176 The environmental effects of these measures and waste operations are addressed within the relevant specialist topic assessments, summarised above.

Effects without Triangle Site

4.7.177 The following sets out the assessment of construction effects if the King’s Cross Central development were to proceed without the Triangle Site.

4.7.178 Based on the comparatively small scale of the Triangle Site proposals, there would be no material change in the assessment of significance for Heritage and Townscape, Nature Conservation, Socio-Economic, Health, Water Resources, and Soils and Contamination effects of the King’s Cross Central proposals.

Archaeology

4.7.179 There would be no effects on archaeology within this development area of the site. The topography here was considerably modified to create flat ground for railway sidings and tracks, and considerable earthworks were carried out associated with the construction of the railway features. Therefore, should the development proposals within the Triangle Site not be implemented, there would be no change to the overall assessment of archaeological effects.

Transport

4.7.180 It has been predicted that 15,000m$^3$ of earthworks would be required to be removed off site during construction of the Triangle Site (see Soils and Contamination Specialist Report Part 16). If the development of the Main Site were to proceed without the Triangle Site, this volume of spoil removal would not be required and therefore the number of construction vehicles would be reduced. In addition, the number of construction vehicles associated with material deliveries for constructing the buildings
and associated infrastructure would be reduced. However, this reduction would not create a significant change in the construction effect on the transport network.

4.7.181 Also, the number of construction employees would be reduced. However, as the scale of the Triangle Site is relatively small in comparison to the Main Site, this would not have a significant effect on the assessment.

4.7.182 The construction of the Triangle Site would include a new road and associated junction off York Way. This would not be required if the Triangle Site were not to proceed. However, other works along York Way as part of the Main Site proposals would still proceed. Thus, the impact on pedestrians or users of bus routes along York Way would not change.

*Noise and Vibration*

4.7.183 During construction of the Main Site and the Triangle Site road traffic noise is calculated to increase by up to 1.6 dB on some roads with residential properties. If the Triangle Site were not developed these increases in road traffic noise would be marginally smaller. Any difference would be imperceptible.

*Air Quality*

4.7.184 If the proposals for the Main Site were to go ahead without the Triangle Site, then the number of properties likely to be affected by construction impacts would be smaller. Without the Triangle Site development, the impact of construction activities on dust-soiling and PM$_{10}$ concentrations would remain moderate adverse. However, properties in Ruff Street and Gifford Street would be unlikely to be affected by the construction works. The significance of impacts on nitrogen dioxide and PM$_{10}$ concentrations due to construction traffic would be slightly less than that with the full King's Cross Central proposals but it would remain classified as minor adverse due to the site location within an AQMA.

*Microclimate*

4.7.185 As stated earlier, there would be no significant effect on microclimate during the construction stage, with or without the Triangle Site development.

*Urban Services*

4.7.186 The impact of removing the Triangle Site development would have a negligible effect on the quantum of utility demand, typically in the range of a 1-4% reduction. This would not have any material effect on the off site reinforcement works but would avoid the need for minor utility building connections from supplies in York Way or across York Way from the site, and also discharging foul flows to the local York Way combined sewer. It is considered that the removal (or delay) of these works would not affect the overall assessment findings.
Effects with LUL Phase 2 and King’s Cross Station Enhancement

4.7.187 The ongoing LUL Phase 2 works (Northern Ticket Hall and associated infrastructure) are due to be complete by 2007 but are the subject of a current review that may affect the timing of their completion. It is possible, therefore, that the works to complete the project (scheduled to last 3 years) could still be underway in 2007, alongside the development of King’s Cross Central.

4.7.188 If the King’s Cross Station Enhancement proposals go-ahead, there is a range of possible timescales, including the following:-

a) construction could commence following completion of the LUL Phase 2 (Northern Ticket Hall etc) works with construction of the Station Enhancement expected to last a maximum of 4 years; or

b) the proposals for King’s Cross Station Enhancement could be combined with the LUL Phase 2 (Northern Ticket Hall) into an integrated project, with construction of that integrated project likely to take less than the 7 years identified above for the two projects to take place one after the other.

4.7.189 It is considered unlikely that an integrated project ((b) above) would have greater overall construction effects (in terms of either magnitude or duration) than the two projects carried out in sequence, one after the other: if anything an integrated project is likely to have less construction effects in terms of magnitude and duration. The assessment of effects has therefore considered (a) above (construction of King’s Cross Station Enhancement following completion of the LUL works) and the potential for it to give rise to cumulative construction effects alongside King’s Cross Central. In order to assess the potential ‘worst case’, this assessment has considered what the effects would be if the peak construction activity from King’s Cross Central coincided with the peak construction activity from LUL/King’s Cross Station Enhancement.

Heritage and Townscape

4.7.190 The works associated with LUL Phase 2 would have no effect on heritage and townscape. The significance of the effects of the King’s Cross Station Enhancement occurring at the same time as King’s Cross Central would be no different to those assessed in paragraphs 4.7.2 to 4.7.9 above, assuming the same control measures are in place for the King’s Cross Station Enhancement works.

Archaeology

4.7.191 The timing of the works of LUL Phase 2 or King’s Cross Station Enhancement may result in watching briefs occurring near or at the same time as works for King’s Cross Central. In such cases mitigation may need to be coordinated.

Transport

4.7.192 Details of maximum (peak) construction traffic associated with the LUL Phase 2 and King’s Cross Station Enhancement projects has been obtained from published information and, in the case of King’s Cross Station Enhancement, from the Network Rail project team. The expected maximum traffic levels are summarised in Table 4.4 below. The King’s Cross Station Enhancement supporting information does not provide any estimates of LGV flows.
Table 4.4 LUL Phase 2 and King’s Cross Station Enhancement Construction Traffic Maximum Daily Flows (Both Directions over 12 hour week day period)

<table>
<thead>
<tr>
<th></th>
<th>LUL Phase 2</th>
<th></th>
<th>Kings Cross Station Expansion</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HGV</td>
<td>LGV</td>
<td>HGV</td>
<td>LGV</td>
</tr>
<tr>
<td>York Way</td>
<td>30%</td>
<td>38</td>
<td>86</td>
<td>84</td>
</tr>
<tr>
<td>Pancras Road</td>
<td>20%</td>
<td>25</td>
<td>58</td>
<td>56</td>
</tr>
<tr>
<td>Euston Road</td>
<td>20%</td>
<td>25</td>
<td>58</td>
<td>56</td>
</tr>
<tr>
<td>Grays Inn Road</td>
<td>10%</td>
<td>13</td>
<td>29</td>
<td>28</td>
</tr>
<tr>
<td>Pentonville Road</td>
<td>20%</td>
<td>25</td>
<td>58</td>
<td>56</td>
</tr>
</tbody>
</table>

4.7.193 The worst case would be for the construction of King’s Cross Station Enhancement and King’s Cross Central to peak together and in this case the maximum daily increase on York Way would be around 173 HGVs and around 200 LGVs (assuming the ratio of HGV/LGV would be the similar for King’s Cross Station Enhancement as for King’s Cross Central since no data is available for LGVs associated with King’s Cross Station Enhancement). This would be equivalent to 35-40 additional vehicles during any hour on York Way; this would not significantly affect the highway capacity of York Way.

4.7.194 It should be reiterated that this provides a ‘worst case’ assessment, based on the coincidence of maximum activity of the King’s Cross Central and King’s Cross Station Enhancement construction projects.

4.7.195 The disruption to users of public transport and pedestrians in the vicinity of the King’s Cross Central and King’s Cross Station Enhancement projects could be increased as a combined effect of concurrent construction schemes. However, the control measures that would be taken in any event could and would maintain satisfactory levels and standards of access.

Socio-Economic

4.7.196 Whilst the concurrent development of the LUL Phase 2/King’s Cross Station Enhancement proposals might have effects on other topics in the EIA, it is unlikely that it would significantly alter the socio-economic effects of King’s Cross Central. The only exception may be in the (beneficial) generation of construction jobs, but at this stage it is not possible to determine the scale of employment the station proposals might generate.

Health

4.7.197 Neither the LUL Phase 2 or King’s Cross Station Enhancement, constructed alongside King’s Cross Central, are likely to lead to any significant additional/cumulative effects on health.
Nature Conservation

4.7.198 The section of the King's Cross Central site in the vicinity of the site of the Northern Ticket Hall, and that proposed for the King's Cross Station Enhancement, is of negligible nature conservation interest, and in this respect there would be no cumulative construction impact on nature conservation interests should the proposals go forward concurrently.

4.7.199 It is possible that the LUL Phase 2 and/or King's Cross Station Enhancement may require working areas which would also be required for King's Cross Central, and there may be a need to locate these elsewhere. It is assumed that any such alternative construction sites would also be within the footprint of the King's Cross Central permanent works, and that there would be no additional nature conservation impacts as a result of any such relocation.

Water Resources

4.7.200 Subject to appropriate construction methods being implemented, the construction impacts of the development at King's Cross Central alongside the LUL Phase 2 and/or King's Cross Station Enhancement works would not be significantly different than those assessed above for the King's Cross Central site alone. This is based upon the assumption that the LUL Phase 2/King's Cross Station Enhancement works would be subject to similar environmental controls in terms of water quality and means of discharge. This is a reasonable assumption and means that the significance of any additional effects would be negligible.

4.7.201 In the event that the completion of the proposed LUL Phase 2 overlaps with commencement of the Kings Cross development, there would be some benefits for the protection and management of water resources, in that co-ordination of utilities might avoid the need for diversions to meet King's Cross Central requirements.

Soils and Contamination

4.7.202 The LUL Phase 2/King's Cross Station Enhancement building works would not have a significant impact on the environment from soils and contamination and therefore any additional effects if built at the same time as King's Cross Central would be negligible.

Noise and Vibration

4.7.203 The ‘cumulative’ additional traffic generated by King's Cross Central and the LUL Phase 2/King's Cross Station Enhancement being constructed at the same time would cause an increase in road traffic noise on York Way of 2.5 dB and this increase is considered to be a negligible impact.

4.7.204 Details of construction methods for the King's Cross Station Enhancement and LUL Phase 2 works are not yet available; however, with the exception of impulsive piling methods, construction activities would generally be below the daytime ambient noise levels due to road traffic at noise sensitive sites unless the workings are within 100m of the receptor. Consequently, the construction noise at any receptor would be governed by either the work on the King's Cross Central site or from these other developments and the cumulative effects would be no greater than the impact of the closest, dominant source. An exception could occur in the southern part of the main site, where construction of Development Zones A and B could take place at the same time as the...
King's Cross Station Enhancement and the LUL Phase 2 works; however, there are no noise sensitive receptors in the vicinity that could be exposed to these cumulative effects.

**Air Quality and Climate Change**

4.7.205 There is the potential for a combined impact on air quality, due to dust and construction traffic. However, this is only likely for the King's Cross Central works to the south of the Regent's Canal (development zones A, B, C, D and E). Work on development zone A is likely to follow development Zone B, in part because of the impact of the King's Cross Station Enhancement works. There may be sections of zones B, C, D and E that could be occupied by commercial operations, including hotels and serviced apartments, for a period of time before these works are complete and therefore could be affected by the combined impact of both schemes. There are no existing residential receptors that could be affected by cumulative dust effects and the impact upon dust soiling and PM$_{10}$ concentrations due to construction activities would remain moderate adverse.

4.7.206 The combined impact of construction traffic has been modelled (see Part 18 Air Quality Specialist Report). The resulting traffic represents a very small proportion of the existing traffic flow and the impact would not change the conclusions reported earlier i.e. the increases in nitrogen dioxide and PM$_{10}$ at the existing receptors, although slightly greater with concurrent projects, would remain very small. The overall impact due to construction traffic would continue to be classified as minor adverse, due to the site's location within an AQMA.

**Microclimate**

4.7.207 As stated earlier, there would be no significant effect on microclimate during the construction stage.

**Urban Services**

4.7.208 The concurrent construction of LUL Phase 2 works and/or King's Cross Station Enhancement would require significant levels of coordination of both above and below ground works. However utility supplies to the schemes are considered at this stage to be independent from each other. If the LUL Phase 2 and King's Cross Station Enhancement projects were to become one integrated project, the utility supplies would still be independent from King's Cross Central. Therefore, other than the physical coordination of the below ground utilities, the effect of LUL Phase 2 and Kings Cross Station Enhancement should not affect the King's Cross Central utility strategy or works. The worst case would be some diversionary works; the impact would be negligible.
4.8 Opportunities for Further Mitigation Measures

4.8.1 Appropriate control measures to minimise the impacts of construction have been assumed in the assessments set out above. In addition, the following further mitigation measures may be considered:

- publication of the site history and illustrative information about the construction process. This material could be presented in the form of a small permanent or temporary exhibition. Interpretative material could also be located on signs and plaques at viewpoints and places of interest to explain the heritage interest;
- programming the works such that those which are likely to have the greatest disturbance effect on the ecological resources take place as close together as practicable within the programme;
- reducing the number of vehicle movements on local roads during the construction phase by the use of the relocated concrete batching plant to the north of the site or on-site facilities;
- given the scale of the King’s Cross Central project and other projects programmed for construction at the same time (including Stratford City and Arsenal) there would be benefits in joint development of a local employment strategy that maximises local take-up at King’s Cross Central but has links into a much wider geographic area than the development site alone;
- consideration of how to retain people onsite for longer by moving them from one building to another as development progresses. As a result, the numbers of local people that could benefit could be far greater than the ‘full time equivalent’ (FTE) figures quoted in the assessment of socio-economic effects above;
- the noise impact of construction on any completed phases should be kept under review and noise mitigation provided as appropriate. Such measures could include screening of works, control of working hours and specification of access routes;
- for all urban services, coordinating all new work, diversion works and reinforcement along the same road, perhaps as part of a multi utility installation where appropriate. Wherever possible, the work should be carried out at the same time using common trenches, logically sequenced where trench sharing would not be feasible. Reducing the number of excavations would reduce the potential for accidental damage and interruptions to existing utilities;
- consideration by all utility companies of the use of economic alternatives where appropriate in order to mitigate the impact of the works proposed.
4.9 Monitoring

4.9.1 Specific environmental monitoring requirements through the construction phase are identified below.

Noise Monitoring

4.9.2 A baseline noise monitoring survey would be carried out prior to commencement of work on each construction site.

4.9.3 Monitoring would be carried out from time to time during construction, at established and agreed monitoring stations around the development. This would be reviewed periodically to ensure that there have been no exceedances of any action levels set and agreed.

4.9.4 The results of any noise monitoring would be made available to the Construction Impacts Group.²

Air Quality Monitoring

4.9.5 Monitoring would be undertaken throughout the construction period to enable proactive management of dust and PM₁₀ levels. Wind speed and direction would be included in the monitoring.

4.9.6 Dust complaints would be investigated at the earliest opportunity and appropriate action taken to control the source or remedy the effect as appropriate.

4.9.7 The Construction Impact Group would be given access to all records of dust monitoring undertaken as they become available.

4.10 Summary

4.10.1 Environmental effects are inevitable during the construction of any development. They arise from activities which, for example, generate noise and vibration, emissions to air (including pollutants, odour and dust), traffic movements (particularly HGVs), and the potential for sedimentation and pollution of water resources.

4.10.2 An assessment has been undertaken of the effects that are likely to arise during construction of the King's Cross Central development.

4.10.3 Most of the proposed King's Cross Central site is currently within the site of the Channel Tunnel Rail Link (CTRL) works, which is a large scale civil engineering project. It is important to recognise that the nature of the King's Cross Central proposals are different to CTRL. While the King's Cross Central proposals do include civil and infrastructure enabling works, the vast majority would comprise building works using well established construction techniques for minimising disruption in high density urban settings.

² The King's Cross Construction Impacts Group currently monitors the CTRL, London Underground Limited (LUL) and P&O Developments construction works, and would monitor the King's Cross Central development. The group, currently chaired by Sir Bob Reid, would include participants in other major developments in the King's Cross Area and representatives from the local authorities and other major agencies. It would continue to contribute significantly to achieving early and effective consultation with relevant agencies and keeping all interested parties apprised of progress and issues.
4.10.4 All construction work would be carried out in compliance with relevant environmental protection and health and safety legislation. Measures to control the potential effects of construction have been identified and agreed, based on current best practice. The likely construction effects have been assessed for each environmental topic, taking into account these agreed/built in mitigation measures. The following summarises the main findings of the assessment.

*Heritage and Townscape*

4.10.5 The extended period of construction would be likely to produce a “building site” character to parts of the site for 12-15 years or longer. The construction process would also affect local views through the demolition of existing buildings and the emergence of new buildings. There would also be positive effects on character and views as the unused land is brought into beneficial use and occupation. The overall effect is considered to be ‘neutral’.

*Archaeology*

4.10.6 Effects on archaeology are nearly always permanent. Consequently, archaeology is addressed principally within Part 5, which consider effects at the operational stage. Any temporary effects during construction (from accidental damage or vibration) would be controlled through construction best practice and therefore no perceivable effects on archaeological resources would occur.

*Transport*

4.10.7 The predicted levels of construction traffic (35 vehicle movements in each direction in a typical hour) represent a very small percentage of typical hourly flows surrounding the site and would not significantly affect the highway capacity. Some public rights of way and public transport routes within the site and the immediate surroundings are likely to be disrupted during some construction works. Any disruption would be kept to a minimum, for example through alternative routing, advance warning, notification and signposting.

*Socio-Economic*

4.10.8 The construction of King’s Cross Central would create opportunities for construction employment. It is predicted that the construction phase is likely to generate 3005 full time equivalent jobs with local employment and increased income for up to 900 local people (fulltime equivalent jobs). The nature of construction work means that the level of employment generated and skills needed would fluctuate over the development period. Nevertheless, the length of the King’s Cross Central construction period means that there is the potential for the construction sector to become a long-term stable employment base within the local economy.

4.10.9 Construction activity on the site is unlikely to affect crime levels through displacement. The changing character of the area and the removal of many of the focal points for criminal activity, brought about by King’s Cross Central (progressively) and other projects is likely to help reduce the attractiveness of the area for criminal activity such as drug dealing and prostitution, reducing crime and the fear of crime in King’s Cross.
Health

4.10.10 Beneficial effects on the health of the residents, users and the surrounding population during the construction phase may arise from increased levels of employment, reduced levels of crime, and improvements in social capital.

4.10.11 There is potential for dust and noise effects to be experienced, both from construction activities on the site, and due to construction traffic. The potential effects would be controlled. The assessment of significance is considered to be the same as set out in the air quality and noise sections below.

4.10.12 Any potential increases in demand for emergency/hospital services and are likely to be minimal with effective site management and implementation of appropriate Health and Safety Plans.

Nature Conservation

4.10.13 The main potential effects are associated with construction noise, lighting and incidents/accidents (e.g. spillages and emissions). In the years preceding the commencement of the King’s Cross Central development works, the wildlife present will have been subject to the extensive disturbance associated with the major construction activities of the area. The King’s Cross Central development programme would follow on and is not likely to give rise to significant additional disturbance, although the period of such disturbance would clearly be extended.

4.10.14 Many of the significant works in the vicinity of Camley Street Natural Park are likely to form part of the first major phase of the work, and may cause disturbance. The Regents Canal may be exposed to disturbance and pollution during construction of the bridges and other works within the vicinity of the canal. Measures would be taken to control these impacts.

4.10.15 The designated sites of North London Link and King’s Cross Goods Yard and the Railside Land in Islington are currently subject to major disturbance and disruption as a result of the CTRL works. Development of King’s Cross Central would continue construction activity across the site for a further 12-15 or more years.

4.10.16 “Wasteland” habitats may develop and be lost in parts of the King’s Cross Central site as construction continues. Any such sites are likely to be subject to a relatively high degree of disturbance as a result of construction works or use of occupied areas of the site.

4.10.17 The common pipistrelle bat would potentially be affected due to disturbance of the canal and Camley Street Natural Park as a result of the construction works. However, given that night time working likely to cause disturbance would only occur under exceptional circumstances, significant effects on foraging bats would not be expected.

4.10.18 The high levels associated with an active development site would be likely to deter black redstart and other breeding birds (including Red-list and Amber-list species). Areas of the site which are not being developed may be suitable depending on the nature of phased development and any interim uses.

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3 Red-list species are those which have undergone a 50% or more decline in UK breeding population or range over the previous 25 years, or a historical decline over the period 1800-1995, or are species of global conservation concern. Amber-list species are identified for several reasons, but particularly because they have undergone a 25-49% decline in the UK over the last 25 years.
4.10.19 The construction works are unlikely to have any adverse effects on amphibian populations (smooth newts, common frog and common toad).

4.10.20 The azure damselfly was recorded at the ponds at Camley Street Natural Park. The only risk during construction would be if pollution entered the canal and in turn reached the ponds. Measures would be taken during construction to prevent such pollution occurring.

4.10.21 Nationally Notable terrestrial invertebrates have been recorded on the site. “Wasteland” habitats may be created and be lost in parts of the site as construction continues and these may provide areas of temporary habitat for invertebrates. Invertebrates would not be sensitive to the relatively high levels of disturbance which may affect such sites.

4.10.22 The assessment of significance has been undertaken considering the effects of construction, operations and permanent land-take together, for each part of its site and nature conservation receptors, and these assessments are set out in Part 5.

Water Resources

4.10.23 Potential effects on water resources have been identified, including the potential for temporary, localised flooding; sediment loading or localised contamination of the ground due to localised dewatering of perched water; the washing of sediment and other pollutants into the canal from areas of exposed earthworks materials; and dust and debris entering the canal. However, measures would be taken to control these risks/operations (for example damping down on surfaces and wheel washing to control dust and use of interceptors to control run-off. Any effects would be negligible.

Soils and Contamination

4.10.24 There is a risk that contaminated material may become mobile during the construction works, or that contaminated dust from working areas be wind blown in the vicinity of the works. Inappropriate handling and storage of fuels and other liquid chemicals could result in spills and leaks impacting upon the perched water table and the Regent's Canal. Measures to control mobile materials, contaminated dust and the prevention and control of spills would be in place and therefore construction activities are likely to have a negligible impact.

Noise and Vibration

4.10.25 The King's Cross Central development would give rise to noise and vibration during its construction due to activities on the site and also construction traffic on the local road network.

4.10.26 Piling is the only construction process likely to be used that could cause high noise levels at locations outside of the site. The levels of effects would be dependent on the type of piling used. The impact of augered piling would be negligible during daytime hours, but could cause a moderate adverse effect at night when working to the east of the Gasworks tunnels.
4.10.27 In the event that percussive piling is required, then both day and nighttime (if relevant) noise levels could be exceeded at residential properties to the east of York Way. Percussive piling alongside the Gasworks tunnels would cause a moderate adverse effect at night. There would also be a minor to moderate adverse impact during the daytime. In any such cases, appropriate controls would be agreed with the local planning authority.

4.10.28 Increases in road traffic noise due to construction traffic would be small, with all of the increases on roads with residential properties being not perceptible and of negligible significance. An increase of slightly more than 3 dB is predicted on Goods Way, and while there are no noise sensitive receptors on this road, there are a number of residential narrowboat moorings on Regent’s Canal close to Goods Way. The predicted increase in noise levels is considered to be a minor adverse effect at these narrowboats.

**Air Quality**

4.10.29 The principal effects are likely to arise from the effects of dust soiling and particulate (PM$_{10}$) concentrations from construction activities and changes in nitrogen dioxide due to emissions of vehicles during the construction phase.

4.10.30 Around 150 residential properties in York Way, Rufford Street and Gifford Street, residents of narrowboats on the Regent Canal, some of the new affordable housing units at the junction of Rufford Street and Gifford Street, some business premises on York Way and the Agar Grove Industrial Estate and parked cars and heritage buildings in this area could be at risk of dust soiling effects at some point during the construction period. Around 30 of the properties on York Way at risk of experiencing dust effects may also be at risk of PM$_{10}$ effects, as may residents of the narrowboats on the Regent Canal.

4.10.31 Dwellings or premises built and occupied as part of the new development may also suffer some occasional effects.

4.10.32 Measures outlined to control dust emissions represent best practice in terms of construction management and would minimise the impact of dust on the receptors identified. Any dust incidents would be highly dependent on the weather, and would need to be combined with an activity creating dust close to the receptor. This combination of appropriate conditions should be infrequent for an individual location. Due to the south-westerly prevailing wind, there would be a risk of more frequent effects for the residential premises identified on York Way.

4.10.33 The potential effects of additional construction traffic have been assessed and the results show that the increase in nitrogen dioxide and PM$_{10}$ concentrations due to construction traffic associated with the King’s Cross Central development would be very small (<1%).

**Urban Services**

4.10.34 The effects on the existing utility network from construction and infrastructure works have been assessed.

4.10.35 For onsite works, control measures would be in place and all activities related to the phasing and installation of on-site utilities would be co-ordinated. Works would be programmed at the appropriate times of year when utility demands are typically less.

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4 Fine Particles (less than 10 µm in diameter, known as PM$_{10}$) are recognised as significant causes of pollution. Owing to their small size, they can be carried from sites even in light winds and may therefore have an adverse effect on the environment and on the health of local residents, as well as those working on the site.
4.10.36 The relocation of the district gas governor would require significant underground diversion and extension works to existing gas mains and other non-gas utilities along roads that are already congested with utilities. The impact on existing and proposed utilities is assessed as negative, medium term and minor.

4.10.37 During any Camden Sewer Diversion, flows along the Camden Sewer would need to be briefly interrupted although the majority of new construction would be off-line and therefore not affect existing flows. There would be a minor adverse effect on the existing utility network, with short term duration.

4.10.38 In general, the diverting of existing utilities in local roads, to allow new road connections from site to tie into the existing highway network, is assessed to have a minor adverse effect on the existing utility network, with medium term duration.

4.10.39 Off-site infrastructure works would be carried out by statutory undertakers or their agents under Permitted Development Rights and controlled via the New Road and Street Works Act and any requirements of the Highway and/or Local Authority.

**Waste**

4.10.40 Waste would be generated during construction. Waste management practices on site would comply with the relevant legislation for storage and disposal of all construction wastes, and control measures would be in place to reduce the volume of waste where feasible. The environmental effects of these measures and waste operations are addressed within the relevant topic assessments summarised above.

**Effects without the Triangle Site**

4.10.41 If the development were to proceed without the Triangle Site, the scale of the construction works and number of construction vehicles would reduce, and therefore the impacts on noise and air quality and health would also reduce, but it would not be a significant change.

**Effects with LUL Phase 2 and King’s Cross Station Enhancement**

4.10.42 The ongoing LUL Phase 2 works (Northern Ticket Hall and associated infrastructure) are due to be complete by 2007 but are the subject of a current review that may affect the timing of their completion. It is possible, therefore, that the works to complete the project (scheduled to last 3 years) could still be underway in 2007, alongside the development of King’s Cross Central.

4.10.43 If the King’s Cross Station Enhancement proposals go-ahead, there is a range of possible timescales, including the following:-

a) construction could commence following completion of the LUL Phase 2 (Northern Ticket Hall etc) works with construction of the Station Enhancement expected to last a maximum of 4 years; or

b) the proposals for King’s Cross Station Enhancement could be combined with the LUL Phase 2 (Northern Ticket Hall) into an integrated project, with construction of that integrated project likely to take less than the 7 years identified above for the two projects to take place one after the other.
It is considered unlikely that an integrated project would have greater overall construction effects (in terms of either magnitude or duration) than the two projects carried out in sequence, one after the other: if anything an integrated project is likely to have less construction effects in terms of magnitude and duration. The assessment of effects has therefore considered (construction of King’s Cross Station Enhancement following completion of the LUL works) and the potential for it to give rise to cumulative construction effects alongside King’s Cross Central. The potential ‘worst case’ would be if the peak construction activity from King’s Cross Central coincided with the peak construction activity from LUL/King’s Cross Station Enhancement.

The level of construction traffic has been assessed under these circumstances, and the assessment confirms that the additional vehicles would not significantly affect the highway capacity of York Way.

The disruption to users of public transport and pedestrians in the vicinity of the King’s Cross Central and King’s Cross Station Enhancement projects would be increased as a combined effect of several concurrent schemes. However, the control measures that would be taken in any event could and would maintain satisfactory levels and standards of access.

Construction of Development Zones A and B could take place at the same time as the King’s Cross Station Enhancement and the LUL Phase 2 works; however, there are no noise sensitive receptors in the vicinity that could be exposed to these cumulative effects.

There are no existing residential receptors that could be affected by cumulative dust effects and the impact upon dust soiling and PM$_{10}$ concentrations due to construction activities would remain of moderate adverse significance.

The combined or ‘cumulative’ impact of construction traffic on air quality and noise would remain the same as for the assessment for King’s Cross Central (only).

**Overall Summary of Construction Effects**

Table 3 provides an overall summary of the likely effects at the construction stage, taking account of ‘built in’ mitigation measures.

The effects are generally regarded as long-term because of the extended period of the construction programme, although in reality it is likely that some of the effects would be intermittent e.g. noise effects from piling.

For nature conservation, the assessment of significance has been undertaken considering the effects of construction, operations and permanent land-take together, for each part of the site and its nature conservation receptors; these assessments are set out in the ‘Operational Effects’ section below.
## Table 4.5: Summary of King’s Cross Central Construction Effects

<table>
<thead>
<tr>
<th>Summary of Effects</th>
<th>Type</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cultural heritage and townscape 'Building site' site character. Demolition and</td>
<td>neutral</td>
<td>n/a</td>
</tr>
<tr>
<td>building work would also affect local views. Beneficial effects on character and</td>
<td>overall</td>
<td></td>
</tr>
<tr>
<td>views as land is progressively brought into beneficial use and occupation.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Archaeology Potential accidental damage to buried archaeology and potential vibration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>effects would be controlled through construction best practice.</td>
<td>adverse</td>
<td>negligible</td>
</tr>
<tr>
<td>Transport Construction traffic levels would not significantly affect highway</td>
<td></td>
<td></td>
</tr>
<tr>
<td>capacity. Disruption to rights of way and public transport routes would be</td>
<td></td>
<td></td>
</tr>
<tr>
<td>controlled through construction best practice.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Socio-economic Construction employment would benefit local people and others.</td>
<td>beneficial</td>
<td>minor/moderate</td>
</tr>
<tr>
<td>The changing character of the area would reduce its attractiveness for criminal</td>
<td></td>
<td>(construction employment)</td>
</tr>
<tr>
<td>activity.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health Beneficial effects from increased levels of employment, reduced levels of</td>
<td>Beneficial</td>
<td>minor</td>
</tr>
<tr>
<td>crime and improvements in social capital.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adverse effects from disruption to pedestrian routes and public transport (see</td>
<td>adverse</td>
<td>minor</td>
</tr>
<tr>
<td>'Transport' above)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adverse noise and air quality effects (see below)</td>
<td>adverse</td>
<td>(see below)</td>
</tr>
<tr>
<td>Nature Conservation Disturbance effects to habitats and species from construction</td>
<td>Included in summary of summary of King’s Cross Central Effects</td>
<td></td>
</tr>
<tr>
<td>noise and lighting and pollution from spillages/emissions. Measures would be</td>
<td></td>
<td></td>
</tr>
<tr>
<td>taken to control these impacts.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water Resources Potential for localised flooding, sedimentation and pollution of</td>
<td>adverse</td>
<td>negligible</td>
</tr>
<tr>
<td>ground and water courses. Measures would be taken to control these impacts.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soils and Contamination Potential for the movement of contaminated material (e.g.</td>
<td>adverse</td>
<td>negligible</td>
</tr>
<tr>
<td>dust) and the spillage of pollutants. Measures would be taken to control these</td>
<td></td>
<td></td>
</tr>
<tr>
<td>impacts.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noise and Vibration Impact of piling operations in the vicinity of the Gasworks</td>
<td>Potential for moderate adverse effects during the night (and minor-moderate adverse effects during the day) at residential properties to the east of York Way.</td>
<td></td>
</tr>
<tr>
<td>tunnels. The level of effects would depend upon the timing of works and the type of piling used (e.g. augered or percussive). Augered piling would have negligible effects during day-time hours.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increases in road traffic noise from construction traffic.</td>
<td></td>
<td>Generally negligible. Minor adverse effects at narrowboats close to Goods Way.</td>
</tr>
</tbody>
</table>
## Summary of Effects

<table>
<thead>
<tr>
<th>Summary of Effects</th>
<th>Type</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Quality and Climate Change</td>
<td>adverse</td>
<td>Moderate (because within AQMA)</td>
</tr>
<tr>
<td>Adverse impacts of dust and PM$_{10}$ upon local air quality due to construction activities in an Air Quality Management Area (AQMA).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increase in nitrogen dioxide and PM$_{10}$ concentrations due to construction traffic (&lt;1%).</td>
<td>adverse</td>
<td>minor (because within AQMA)</td>
</tr>
<tr>
<td>Urban services</td>
<td>adverse</td>
<td>minor</td>
</tr>
<tr>
<td>Disruption to the existing utility network and waste services from construction and infrastructure works, including any Camden sewer diversion.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effects without the Triangle Site</td>
<td>as for the Main Site and Triangle Site together (no significant change to findings above)</td>
<td></td>
</tr>
<tr>
<td>Relatively small reduction in construction works and their environmental effects.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effects with Kings Cross Station Enhancement and LUL Phase 2</td>
<td>as for the Main Site and Triangle Site together (no significant change to findings above)</td>
<td></td>
</tr>
<tr>
<td>Relatively small increase in construction works and their environmental effects.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4.11 References


CIRIA, 2000, *Environmental Good Practice on Site*

CIRIA, 2000, *Environmental management in construction*

BRE, 2003, *Control of dust from construction and demolition activities*

Highways Agency et al. 2000, *Design Manual for Roads and Bridges (DMRB), Volume 11*
Predicted Number of Trucks Required for Movement of Earthworks Offsite

Figure 4.1
Predicted Number of Trucks Required for Import of Infrastructure Materials

Figure 4.2
Figure 4.3

Likely Construction Routes and % of Traffic

Not to Scale

Figure 4.3
King’s Cross Central

Environmental Statement

Volume 1: Part 5 Environmental Effects at the Operational Stage

Prepared for Argent St George, London and Continental Railways and Exel by RPS

May 2004
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Part 5: Environmental Effects at the Operational Stage

Preamble

This part of the Environmental Statement addresses the environmental effects of King’s Cross Central at the operational stage i.e. the developed scheme upon completion and in use. It summarises the operational effects described in more detail in the individual specialist reports for each topic which make up Parts 9 to 19 of this Environmental Statement. Environmental effects during construction are addressed in Part 4 and in the individual specialist reports in Parts 9 to 19.

Should there be any inadvertent inconsistencies between the content of Part 5 and the Specialist Reports, the Specialist Reports take precedence and should be relied upon by the reader.
5.1 Cultural Heritage and Townscape

Introduction

5.1.1 Heritage issues are inextricably linked to considerations of townscape and views. To reflect the importance of these relationships, the topics have been assessed in conjunction with one another, and are presented together in the Cultural Heritage and Townscape Specialist Report (Part 9). The assessment is summarised in this section.

5.1.2 Effects of construction on cultural heritage and townscape are addressed in Part 4 of this Environmental Statement. Archaeology is considered in Part 10.

Methodology and Assessment Criteria

5.1.3 The assessment describes the site as it is now (2003/4) and predicts what it will be like in 2006/7, when development would start on site. For heritage and townscape the important questions for the EIA are:

i) Would the proposals enhance or worsen the baseline situation? - How do they compare with what would exist in 2006/7?

ii) Would the proposed development diminish, conserve or enhance the status and significance of the existing buildings, many of which are listed?

iii) How would the proposed new land uses affect the character of the Conservation Areas given the history of mixed uses in the area?

iv) How would the proposals affect views of the main landmarks?

The Assessment Process

5.1.4 The assessment of the potential effects on heritage and townscape is based on professional experience and judgement in accordance with the Guidelines for Landscape and Visual Impact Assessment (2002).
Extent of the Study Area

5.1.5 The geographical extent of the Cultural Heritage and Townscape assessment has been considered at two levels:

- **Strategic Level** – The site falls within two designated Strategic View corridors. These Strategic Views are Parliament Hill and Kenwood, respectively some 3km and 4.3km to the north-west of the site, to St Paul's Cathedral which lies some 2.5km to the south-east (see Figure 5.1.1).

- **Local Level** – The heritage resource and townscape character is assessed in detail for the area within the two application red-line boundaries and zones which abut them. Similarly, local townscape views are gained from adjacent routes and spaces towards the development such as Euston Road, Pentonville Road/Gray's Inn Road, Wharfdale Road, York Way and from the adjacent Regent's Canal and Islington Conservation Areas toward King's Cross Central (see Figure 5.1.2).

5.1.6 The assessment of visual impact has focussed on changes to views identified in scoping as important i.e. strategic views, views from Conservation Areas and (existing and proposed) local views of landmarks. No assessment has been made of the wider visual impact of the proposals on the basis that (in a dense built-up area) the development would not give rise to significant effects beyond the immediate surroundings of the site.

Baseline and Design Year

5.1.7 This assessment has been approached by recording conditions at 2003/4 (the time of survey), and then considering CTRL works and any other works which will take place up to 2006/7 (the baseline year), based on what is known about the CTRL project and, indeed, other major developments in the vicinity. It is assumed that the King’s Cross Central development is likely to be complete sometime after 2020.
Evaluation

5.1.8 The evaluation stage applies judgement about the importance of the physical heritage resources, townscape and views, and their sensitivity to the proposed development. It takes into account the professional opinion of the assessors, local designations and the views of consultees.

Nature of the Effects

5.1.9 The effects of the development can be characterised by their scale, nature and duration.

Magnitude/ Scale

5.1.10 Magnitude of effects has been described within the assessment on a scale of:

- Large
- Medium
- Small
- Negligible

Nature of Effects

5.1.11 Effects can be negative (adverse) or positive (beneficial), direct, indirect, secondary or cumulative and be either permanent or temporary (short, medium or long term).

5.1.12 The following general principles have been used in the assessment of effects on heritage buildings:

<table>
<thead>
<tr>
<th>Proposed Change</th>
<th>Effects</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retention</td>
<td>Neutral</td>
<td>No change to baseline</td>
</tr>
<tr>
<td>Relocation (buildings, structures and materials)</td>
<td>Neutral</td>
<td>The loss of context would be mitigated by re-use if the relocation site was appropriate</td>
</tr>
<tr>
<td></td>
<td>Adverse</td>
<td>The loss of context would result in an adverse effect if the relocation site was inappropriate</td>
</tr>
<tr>
<td></td>
<td>Beneficial</td>
<td>Improvement if relocation restores historic group relationship e.g. gasholders</td>
</tr>
<tr>
<td>Refurbishment and re-use</td>
<td>Neutral or Beneficial</td>
<td>Interventions to buildings may include some loss to structure or features in preparation for re-use. The changes would be controlled through the planning process and the overall effects are assumed to be generally neutral. Most refurbishments/re-use are likely to be beneficial overall and provide an improvements to the baseline</td>
</tr>
<tr>
<td>Demolition</td>
<td>Adverse</td>
<td>Loss of resource</td>
</tr>
</tbody>
</table>
5.1.13 The assessment of effects on the character and appearance of the Conservation Areas and the setting of Listed buildings needs careful consideration. Conventional methodologies are designed to deal with the introduction of new development into well-established settings. For King’s Cross Central the character of the area has already been changed substantially by the CTRL works and further change will take place before 2006/7.

5.1.14 It is inevitable that the character and appearance of the area would then experience further changes as a result of redevelopment. Change to character is not automatically perceived to be an adverse effect of proposed development; it is treated as a benefit where:

a) positive and varied land uses would replace the (baseline) underused nature of the site in 2006/7;

and

b) the heritage resources are integrated into the development in a way that enhances their status through improvements to their setting and their increased accessibility within the public realm.

5.1.15 Changes to appearance are assessed by comparing the baseline and proposed views; the loss of views of landmarks is considered to be an adverse effect; however the creation of new views can be a positive effect, particularly where they include views of heritage buildings and landmarks. Effects on setting are assessed as a combination of character and appearance.

Duration

5.1.16 The duration of effect has been considered in terms of whether it is permanent, temporary or reversible. Temporary or reversible effects may in turn be described as short term, medium term and long term and generally relate to the duration of construction works and operations. These have been taken as:

- Short term; less than 12 months.
- Medium term; 1 to 5 years.
- Long term more; than 5 years.

Assessment of Significance

5.1.17 For the purposes of the King’s Cross Central assessment, the significance of the cultural heritage and townscape effects is based on two aspects:

- The receptor – its character, importance or value, and its sensitivity to change
- The effects – arising from the implementation of the proposed development in terms of magnitude/scale, nature and duration of effect.
Levels of Significance

5.1.18 The following levels of significance have been identified:

- **Major:** effects of the development of greater than local scale
- **Moderate:** effects of the development that may be judged to be important at a local scale (i.e. in the local planning context)
- **Minor:** effects that are of low importance in the decision making process

5.1.19 These levels of significance apply to both adverse and beneficial effects. A further category of ‘negligible’ is used to describe effects which are of such low importance that they are not material to decision making.

Consultations

5.1.20 The evolving King's Cross Central proposals and environmental studies have been subject to comprehensive consultations. Consultees have included:

- English Heritage
- London Borough of Camden
- London Borough of Islington
- Greater London Authority
- Commission for Architecture and the Built Environment (CABE)

The Results of Consultation

Establishment of Importance

5.1.21 Consultation has been particularly helpful in establishing the value that the consultees place on the heritage resources within and adjacent to the site. This has emphasised:

- the contribution of Listed buildings to the character of the area.
- the collective value attributed to groupings of heritage buildings.
- the high value created by the relative intactness of the Goods Yard Complex, and its associated spaces and routes.
- the importance attached to the re-erection of the gasholders
- the need to consider the effect on historic surfaces and street furniture

Input to the design process

5.1.22 Part 3 of the Environmental Statement sets out the evolution of the development proposals and explains how they have been influenced by informal consultation over the last 3-4 years. It describes the effect of this process on the proposed arrangement of new buildings, the approach to individual heritage buildings/structures, the design of the public realm, the protection of strategic views, and the creation of new views and vistas within the development.
The Existing Situation

5.1.23 The description of the townscape and heritage in 2003/4 provides the basis for predicting the baseline in 2006/7.

Heritage

5.1.24 Heritage resources within the King’s Cross Central site are varied and include:

- The Regent’s Canal including the water body, the towpath, locks, basins, and above-ground fixtures and related functions.
- Industrial archaeology; buildings and other structures of many types and functions, principally of 19th and 20th century age and of a commercial/industrial character, comprising an assemblage related to the former Great Northern Railway Company, Midland Railway Company and Imperial Gaslight and Coke Works.
- Buildings of a social and cultural interest. Only those of the late 19th century survive and include industrial housing and the German Gymnasmium.
- Internal and external fittings and fixtures related to the operation of the buildings.
- Sewers and former railway tunnels of mainly 19th century age.
- Historic surface features and street furniture including setts, kerbs, and tracks.
- Landscape, spaces and views between and around the buildings.
- Longer views into and out of the site.

Designations

Conservation Areas

5.1.25 The King’s Cross Central site includes parts of the King’s Cross and Regent’s Canal Conservation Areas, (see Figure 5.1.3).

5.1.26 There are also Conservation Areas in Islington to the east of the site from which views may be gained toward King’s Cross Central. These include CA21 King’s Cross, CA17 Regent’s Canal West and parts of CA14 Keystone Crescent Conservation Areas. Figure 5.1.3 shows the boundaries of the Conservation Areas and the location of the Listed buildings (note that the extension to St Pancras Station will be automatically included in the listing once it has been constructed).

Listed Buildings and Other Buildings

5.1.27 Table 5.1.1 identifies Listed Buildings within the King’s Cross Central project area or those with a common boundary (see also Figure 5.1.4).
Table 5.1.1 : Building Ages

<table>
<thead>
<tr>
<th>Building Ref. No. (see Figure 9.67)</th>
<th>Listed status</th>
<th>Date of original construction</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pre-1862</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>34 Midland Goods Shed +</td>
<td>Grade II</td>
<td>1850 and later</td>
</tr>
<tr>
<td>33 Regeneration House</td>
<td>Not listed</td>
<td>1850</td>
</tr>
<tr>
<td>31, 28 Eastern and Western Transit Sheds +</td>
<td>Grade II</td>
<td>1850</td>
</tr>
<tr>
<td>30 Train Assembly Shed +</td>
<td>Grade II</td>
<td>1850 and later</td>
</tr>
<tr>
<td>27 Eastern Coal Drops</td>
<td>Grade II (the viaduct is unlisted)</td>
<td>1851</td>
</tr>
<tr>
<td>29 The Granary</td>
<td>Grade II</td>
<td>1851/2</td>
</tr>
<tr>
<td>20 Coal and Fish Offices</td>
<td>Not listed</td>
<td>1851 to 1860's</td>
</tr>
<tr>
<td>10 King's Cross Station</td>
<td>Grade I</td>
<td>1852</td>
</tr>
<tr>
<td>9 Great Northern Hotel</td>
<td>Grade II</td>
<td>1854</td>
</tr>
<tr>
<td><strong>salvaged</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Six cast iron St Pancras Parish octagonal marker posts (stored for re-use)</td>
<td>Grade II</td>
<td>1854</td>
</tr>
<tr>
<td><strong>salvaged</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Two groups of four cast iron markers (stored for re-use)</td>
<td>Unlisted</td>
<td></td>
</tr>
<tr>
<td>25 Western Coal Drops</td>
<td>Not listed</td>
<td>1859/60, altered 1897/8</td>
</tr>
<tr>
<td><strong>Pre-1871</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14 Stanley Buildings</td>
<td>Grade II</td>
<td>1864/5</td>
</tr>
<tr>
<td>13 German Gymnasium</td>
<td>Grade II</td>
<td>1864/5</td>
</tr>
<tr>
<td>26 The Plimsoll Viaduct</td>
<td>Not listed</td>
<td>1865/6 but later renewed</td>
</tr>
<tr>
<td>6* and 7* St Pancras Station and St Pancras Chambers</td>
<td>Grade I</td>
<td>1865-8 and 1868-76</td>
</tr>
<tr>
<td>29 Flanking Offices to the Granary +</td>
<td>Grade II</td>
<td>Circa 1870</td>
</tr>
<tr>
<td>-* Steam Locomotive Water Point</td>
<td>Grade II</td>
<td>1867 relocated in 2001</td>
</tr>
<tr>
<td><strong>Pre-1894</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17 Dismantled Gasholder ‘Triplet’ Guide frames (stored within the site for re-use)</td>
<td>Grade II</td>
<td>1880</td>
</tr>
<tr>
<td>16 Gasholder No. 8</td>
<td>Grade II</td>
<td>1883</td>
</tr>
<tr>
<td>35 East Handyside Canopy +</td>
<td>Grade II</td>
<td>1888 incorporating 1850 arcade</td>
</tr>
<tr>
<td>32 West Handyside Canopy +</td>
<td>Grade II</td>
<td>1888</td>
</tr>
<tr>
<td>15 Culross Buildings</td>
<td>Not listed</td>
<td>1891/2</td>
</tr>
<tr>
<td><strong>Post-1894</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24 Western Goods Shed</td>
<td>Not listed</td>
<td>1897/9</td>
</tr>
<tr>
<td>-* Lock Keeper’s Cottage</td>
<td>Grade II</td>
<td>1898 and 1930's</td>
</tr>
</tbody>
</table>

* Within the curtilage of the listed Granary  * Outside the red line boundaries

5.1.28 Historic buildings within the Conservation Areas that are unlisted include:-

- The Culross Buildings.
- The Coal and Fish Offices.
- The Western Goods Shed.
- The Western Coal Drops and its viaduct.
Eastern Coal Drops viaduct.
- The Plimsoll Viaduct.
- Regeneration House.
- Perimeter wall and roadway over the Wharf Road viaduct and stables.
- Maiden Lane Bridge.
- St Pancras Lock.

5.1.29 Modern buildings on the site include:-
- the filling station.
- The new gas governor.
- Buildings (and bridge across the Regent’s Canal) associated with the CTRL works.

Building Groups

5.1.30 The buildings (Listed and unlisted) fall into four main groups, resulting from their locations:
- Group 1 - Two mainline stations and their hotels, St Pancras Chambers and the Great Northern Hotel.
- Group 2 - Other buildings/structures between the canal and the stations comprising:
  - German Gymnasium
  - Stanley Buildings
  - Culross Buildings
- Group 4 - Goods Yard Complex north of the canal.

In addition to the main spatial groupings there is a strong functional relationship between King’s Cross Station, St Pancras Station, and the Goods Yard.

5.1.31 The 19th century spaces around buildings are substantially intact north of the canal and the hard landscaping significantly relates the buildings to each other. South of the canal the context of the surviving buildings has been substantially degraded by the recent activities of the CTRL but salvaged materials await opportunities for reinstatement.

Open Spaces

5.1.32 The principal areas of open land within the King’s Cross area include both publicly accessible and private open space.
5.1.33 The station forecourt and concourses form public open space to the south of the King’s Cross Central site, together with other streets and footpaths generally within the area. The Regent’s Canal, which bisects the site, also forms a strategic linear public open space, with daytime access to the towpath and licensed use of the waterbody.

5.1.34 The spaces to the north of the canal, including the former Granary Basin and the Eastern and Western Coal Drops area, are in private ownership. The Regent’s Canal provides a public boundary to the former basin area to the north.

5.1.35 The Coal Drops area includes the Plimsoll viaduct and offers multi-level open space.

5.1.36 Camley Street Natural Park may also be considered to be private open space since it is subject to access restrictions.

5.1.37 The CTRL site clearance has created a number of new open spaces including areas around the German Gymnasium and Stanley Buildings to the north of the Great Northern Hotel, the area around Gasholder No. 8, and land to the north of the Goods Yard Complex. Other than public roads and paths within or adjacent to some of these areas, most of this land will be in private ownership and occupation, prior to any King’s Cross Central redevelopment. Parts of the area between the two stations e.g. Clarence Passage (between the German Gym and the Stanley Buildings) may be opened up for access, keeping the buildings hoarded and secure.

Building Materials

5.1.38 The heritage resources within King’s Cross Central used the common building materials of their time, not aiming to be innovative or creating grand pieces of architecture, but generating robust simple structures that satisfied their principally industrial and commercial functions.

Historic Surfaces and Materials

5.1.39 The English Heritage ‘Inventory of Architectural and Industrial Features’ records features including urban landscape materials at November 1988. Whilst some of the areas identified in the English Heritage Inventory have been disturbed or removed by the CTRL works, the majority of the traditional hard landscaping materials are retained within the Goods Yard and contribute to the character of the King’s Cross Central site.

Trees

5.1.40 A tree survey was conducted in January 2004. Existing trees within the King’s Cross Central site occur principally along the Regent’s Canal. Trees within the northernmost part of the Camley Street Natural Park have also been surveyed where they may be affected by the construction of a pedestrian and cycle bridge between Wharf Road and Camley Street. Trees within the remainder of Camley Street Natural Park were excluded from the survey. There are also isolated groups of trees to the rear of the Great Northern Hotel (adjacent to Pancras Road), and along the southern edge of Battle Bridge Road to the north of Culross Buildings.
Lighting

5.1.41 The principal highways through and around the site are illuminated by street lighting. Other external lighting is provided by the stations (illuminated canopies and platforms) security lighting within the CTRL works and the filling station. The tracks outside King’s Cross Station are lit by high mast lighting.

5.1.42 The clock of St Pancras Chambers is floodlit and, with the Post Office Tower to the west, is a notable landmark at night. The south elevation of King’s Cross Station is also floodlit.

Views

5.1.43 Two categories of views have been considered, longer distance strategic views, and local views within and around the site.

Strategic Views

5.1.44 The King’s Cross Central site falls within two of the RPG3 Annex 3 Strategic View corridors from Kenwood to St Paul’s Cathedral and from Parliament Hill to the Cathedral. This Strategic View policy is in line to be superceded by the London Plan (see Policy 4B.15). However, it remains valid until proposed Supplementary Planning Guidance is implemented. Paragraph 4.64 of the London Plan states:

“The management of protected views as listed in Table 4B.2 will not become operational until the Supplementary Planning Guidance is published and the existing Strategic View directions are withdrawn by The First Secretary of State”.

Views from Conservation Areas

5.1.45 Views from adjacent conservation areas are likely to be affected by the major changes proposed for King’s Cross Central and are therefore considered. Conservation areas in close proximity to the King’s Cross Central Site are illustrated on Figure 5.1.3.

Local Views

5.1.46 The joint Development Brief identifies a number of local views which it divides into ‘main views’ and ‘secondary views’. These include the principal views from Conservation Areas. Locations of the views are shown on Figure 5.1.2.

5.1.47 The Islington UDP identifies strategic views of St Paul’s Cathedral, local views of St Paul’s Cathedral and a local view of St Pancras Station and Hotel that are to be safeguarded. One local view corridor LV7 (View from Dartmouth Park Hill to St Paul’s Cathedral) crosses the north eastern corner of the Triangle Site but would not be affected by the proposals. Similarly there would be no effect on Local View LV8 (Pentonville Road to St Pancras Station and Hotel Buildings).

5.1.48 Landmarks within and adjacent to the site include:

- the towers of St Pancras Chambers;
- the southern facade of The Granary and offices;
- the single Gasholder (Number 8);
- the south façade and north train shed elevation (“country” end) of King’s Cross Station;
the historic and new train sheds of St Pancras.

**Overall Character of the Site at 2003**

5.1.49 The main characteristics of the site are its robust urban landscape, the unique Victorian heritage of industrial development and the importance of the two mainline stations. Other features of note are the seclusion of the canal and the relative intactness of the Goods Yard area.

5.1.50 There are a variety of mixed uses within the Goods Yard site but land uses are generally dominated by the stations and the CTRL works.

**Baseline 2006/7**

**Development between 2003/4 and 2006/7**

5.1.51 The site will continue to undergo significant change up to the completion of the CTRL works in 2006/7. A number of other major development and infrastructure projects and initiatives are also proposed to be implemented in whole or in part before 2006/7. These proposals would influence the environmental baseline and context within which the King’s Cross Central proposals would be developed and are described in Part 3 of this Environmental Statement.

**Description of the Site in 2006/7**

**Topography**

5.1.52 The post-CTRL layout site levels are shown on Parameter Plans KXC002 and KXC003 respectively. South of the canal the site will slope upwards from the south and west starting at 17m AOD at Euston Road and St Pancras station, rising to 24.2m AOD at Goods Way opposite the Granary. Levels north of Regent’s Canal will rise more gently from 24.1m AOD to 27.5m at the CTRL embankment. In the Triangle Site levels will vary between 23.1m to 29.1m AOD.

**Vegetation**

5.1.53 The permanent earthworks associated with CTRL (the CTRL embankment) would be soiled and grassed/planted. Temporary earthworks are also likely to be landscaped and maintained until the land is required for permanent development.

5.1.54 There would continue to be trees within the site at 2006/7. The existing maintenance regime appears sparse and therefore poor quality specimens that are displaying signs of environmental stress may deteriorate further by 2006/7.
Land Use and Access

5.1.55 Figure 5.1.5 shows how the site is likely to look in 2006/7, with the CTRL, LUL and Regent Quarter works complete. Land uses within the site boundary, prior to the commencement of any King's Cross Central development, will include:

- the Station forecourt for St Pancras / King’s Cross;
- public roads and footways;
- private land awaiting development;
- Regent’s Canal and towpath;
- Camley Street Natural Park;
- storage and other uses within the Goods Yard Complex.

Buildings

5.1.56 Figure 5.1.2 shows the buildings that would be present in 2006/2007. They include Listed buildings and unlisted buildings and structures that have been judged to make a positive contribution to the Conservation Areas. Table 5.1.2 lists the buildings which are anticipated to be in use 2006/7.

Table 5.1.2 Usage of Buildings

<table>
<thead>
<tr>
<th>Building Ref.</th>
<th>Building</th>
<th>In use at 2006/7 (Yes/No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>St Pancras Station</td>
<td>Y</td>
</tr>
<tr>
<td>7</td>
<td>St Pancras Chambers</td>
<td>Y</td>
</tr>
<tr>
<td>9</td>
<td>Great Northern Hotel</td>
<td>N</td>
</tr>
<tr>
<td>10</td>
<td>King’s Cross Station</td>
<td>Y</td>
</tr>
<tr>
<td>13</td>
<td>German Gymnasium</td>
<td>N</td>
</tr>
<tr>
<td>14</td>
<td>Stanley Buildings</td>
<td>N</td>
</tr>
<tr>
<td>15</td>
<td>Culross Buildings</td>
<td>N</td>
</tr>
<tr>
<td>16</td>
<td>Gasholder No.8</td>
<td>N</td>
</tr>
<tr>
<td>17</td>
<td>Gasholder Triplet</td>
<td>N</td>
</tr>
<tr>
<td>20</td>
<td>Coal and Fish Offices</td>
<td>N</td>
</tr>
<tr>
<td>24</td>
<td>Western Goods Shed</td>
<td>Assumed Y</td>
</tr>
<tr>
<td>25</td>
<td>Western Coal Drops and Viaduct</td>
<td>Assumed Y</td>
</tr>
<tr>
<td>26</td>
<td>Plmsoill Viaduct</td>
<td>N</td>
</tr>
<tr>
<td>27</td>
<td>Eastern Coal Drops and Viaduct</td>
<td>assumed Y</td>
</tr>
<tr>
<td>28</td>
<td>Western Transit Shed*</td>
<td>Y</td>
</tr>
<tr>
<td>29</td>
<td>The Granary</td>
<td>Y</td>
</tr>
<tr>
<td>29</td>
<td>Flanking Offices</td>
<td>assumed N</td>
</tr>
<tr>
<td>30</td>
<td>Train Assembly Shed*</td>
<td>Y</td>
</tr>
<tr>
<td>31</td>
<td>Eastern Transit Shed*</td>
<td>Y</td>
</tr>
<tr>
<td>32</td>
<td>West Handyside Canopy*</td>
<td>assumed Y</td>
</tr>
<tr>
<td>33</td>
<td>Regeneration House</td>
<td>Y</td>
</tr>
<tr>
<td>34</td>
<td>Midland Goods Shed*</td>
<td>assumed Y</td>
</tr>
<tr>
<td>35</td>
<td>East Handyside Canopy*</td>
<td>assumed Y</td>
</tr>
</tbody>
</table>

*Within the curtilage of the Listed Granary

Lighting

5.1.57 On completion of the CTRL works it is assumed that the existing external lighting would remain as it is now and that any temporary lighting for construction would be removed.
Views

5.1.58 The changes outside the King's Cross Central site, as described above, would not affect the existing Strategic Views, therefore the 2003/4 situation would continue at 2006/7.

5.1.59 Views from adjacent conservation areas would remain generally as at 2003/4. However, ongoing redevelopment of the Regent Quarter site, south of Wharfdale Road would influence the context of views from conservation areas CA14 Keystone Crescent and CA21 King's Cross (Islington). Other development along York Way may also change the nature of views.

5.1.60 Main and secondary local views at 2003, as identified in the joint Development Brief (page 54) would generally be maintained at 2006/7.

Character

5.1.61 Between the Regent's Canal and the stations, demolition and site clearance have removed virtually all evidence of the historic mixed-use development pattern and the small-scale urban grain. Realignment of Goods Way and Pancras Road has further changed the appearance and character of the area. In these locations the archaeological heritage has also been significantly removed. The large-scale northern extension of St Pancras station dominates the western boundary of the area. As a result of these changes the remaining smaller-scale buildings (Gasholder No. 8, Culross Buildings, Stanley Buildings and the German Gymnasium) appear exposed and isolated in their new temporary setting. This will become more apparent once the existing site huts and storage areas have been removed and reinstated.

Evaluation

Introduction

5.1.62 When assessing the value of the built heritage resources at King's Cross Central, the following factors have been taken into account:

Architectural and Historic Interest

- Designation/Listed status (and the reasons for designation/ listing).
- Age and historical context (e.g. aspects related to social, economic and cultural history including associations with people and events).
- Plan form and function.
- Architectural design and decoration.
- Craftsmanship
- Structural features and techniques.
- Functional equipment.
- Rarity and Representativeness.
- Condition.
- Integrity (and degree of intactness/survival of fixtures).
**Group Value**

- Context – location, historic unity, and relationship to other heritage resources on and around the site.

**Buildings and Spaces**

5.1.63 A detailed assessment of each individual building and space is included within a building assessment report presented at Appendix 9E. The assessment evaluates each building against the criteria set out above and attributes a value within the following categories:

- No cultural / heritage value
- Very low
- Low
- Moderate
- High
- Very high

5.1.64 Assessment criteria for the open spaces, using the same scale of significance defined above, are as follows:

- Remnants of historic street pattern.
- Presence of historic building materials.
- Functional relationships related to historic uses.
- Scenic quality.
- Quality of enclosure.

5.1.65 The results of the building and open space assessments are presented in Tables 5.1.3 and 5.1.4. Building locations are shown on Figure 5.1.4. Values attributed to individual buildings and spaces are in accord with values attributed by English Heritage in their response to the Draft Historic Character Assessment (see Appendix 9A).
## Table 5.1.3: Summary of built heritage value

<table>
<thead>
<tr>
<th>Building Ref. No.</th>
<th>Buildings</th>
<th>Designation Status</th>
<th>Predicted Value at 2006/7*</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>St Pancras Station (including St Pancras Chambers)</td>
<td>Grade I</td>
<td>Very High</td>
</tr>
<tr>
<td>9</td>
<td>Great Northern Hotel</td>
<td>Grade II</td>
<td>Very High</td>
</tr>
<tr>
<td>10</td>
<td>King’s Cross Station</td>
<td>Grade I</td>
<td>Very High</td>
</tr>
<tr>
<td>13</td>
<td>German Gymnasium</td>
<td>Grade II</td>
<td>Very High</td>
</tr>
<tr>
<td>14</td>
<td>Stanley Buildings</td>
<td>Grade II</td>
<td>High</td>
</tr>
<tr>
<td>15</td>
<td>Culross Buildings</td>
<td>Not Listed</td>
<td>High</td>
</tr>
<tr>
<td>16</td>
<td>Gasholder Number 8</td>
<td>Grade II</td>
<td>High</td>
</tr>
<tr>
<td>20</td>
<td>Coal and Fish Offices</td>
<td>Not Listed</td>
<td>High</td>
</tr>
<tr>
<td>21</td>
<td>Regent’s Canal and all related features</td>
<td>Lock Keeper’s Cottage Grade II</td>
<td>Very High</td>
</tr>
<tr>
<td>24</td>
<td>Western Goods Shed</td>
<td>Not Listed</td>
<td>High</td>
</tr>
<tr>
<td>25</td>
<td>Western Coal Drops and Western Viaduct</td>
<td>Not Listed</td>
<td>High</td>
</tr>
<tr>
<td>26</td>
<td>Plimsoll Viaduct</td>
<td>Not Listed</td>
<td>Moderate</td>
</tr>
<tr>
<td>27</td>
<td>Eastern Coal Drops and Eastern Viaduct (viaduct not listed)</td>
<td>Grade II</td>
<td>Very High</td>
</tr>
<tr>
<td>28</td>
<td>Western Transit Shed +</td>
<td>Grade II</td>
<td>High</td>
</tr>
<tr>
<td>29</td>
<td>The Granary</td>
<td>Grade II</td>
<td>Very High</td>
</tr>
<tr>
<td>29</td>
<td>Flanking Offices to the Granary +</td>
<td>Grade II</td>
<td>High</td>
</tr>
<tr>
<td>30</td>
<td>Train Assembly Shed +</td>
<td>Grade II</td>
<td>Moderate</td>
</tr>
<tr>
<td>31</td>
<td>Eastern Transit Shed +</td>
<td>Grade II</td>
<td>High</td>
</tr>
<tr>
<td>32</td>
<td>West Handyside Canopy +</td>
<td>Grade II</td>
<td>High</td>
</tr>
<tr>
<td>33</td>
<td>Regeneration House</td>
<td>Not Listed</td>
<td>High</td>
</tr>
<tr>
<td>34</td>
<td>Midland Goods Shed +</td>
<td>Grade II</td>
<td>High</td>
</tr>
<tr>
<td>35</td>
<td>Eastern Handyside Canopy +</td>
<td>Grade II</td>
<td>High</td>
</tr>
<tr>
<td>-</td>
<td>‘Recent’ 2 storey offices adjacent to Regeneration House</td>
<td>Not Listed</td>
<td>Negative value</td>
</tr>
<tr>
<td>-</td>
<td>Relocated Water Point</td>
<td>Grade II</td>
<td>High</td>
</tr>
<tr>
<td>-</td>
<td>Wharf Road south side brick wall</td>
<td>Not Listed</td>
<td>High</td>
</tr>
<tr>
<td>51</td>
<td>Petrol filling station</td>
<td>Not Listed</td>
<td>Negative value</td>
</tr>
<tr>
<td>52</td>
<td>King’s Cross signal control building</td>
<td>Not Listed</td>
<td>Negative value</td>
</tr>
<tr>
<td>53</td>
<td>Gas governor</td>
<td>Not Listed</td>
<td>Negative value</td>
</tr>
<tr>
<td>54</td>
<td>Miscellaneous/ storage buildings in front of Granary</td>
<td>Not Listed</td>
<td>Negative value</td>
</tr>
<tr>
<td>-</td>
<td>Dismantled gasholder triplet</td>
<td>Grade II</td>
<td>Very High</td>
</tr>
<tr>
<td>-</td>
<td>Cast iron parish markers</td>
<td>Not Listed</td>
<td>High</td>
</tr>
</tbody>
</table>

*Assumes CTRL completed

* As extensions of the Granary and Transit Sheds
### Table 5.1.4: Summary of open space value

<table>
<thead>
<tr>
<th>Open Spaces</th>
<th>Predicted Value at 2006/7*</th>
</tr>
</thead>
<tbody>
<tr>
<td>York Way to East Handyside Canopy</td>
<td>Low</td>
</tr>
<tr>
<td>South of Midland Goods Shed and Regeneration House</td>
<td>Moderate</td>
</tr>
<tr>
<td>In front of the Granary (formerly the Granary [canal] Basin)</td>
<td>Very High</td>
</tr>
<tr>
<td>Between Midland Goods Shed and Eastern Transit Shed</td>
<td>Moderate</td>
</tr>
<tr>
<td>North of Coal and Fish Offices</td>
<td>High</td>
</tr>
<tr>
<td>Between the Eastern and Western Coal Drops</td>
<td>High</td>
</tr>
<tr>
<td>SE corner and south of Western Goods Shed</td>
<td>Moderate-High</td>
</tr>
<tr>
<td>Immediately west of Western Goods Shed</td>
<td>Moderate</td>
</tr>
<tr>
<td>Immediately north of Granary, Transit and Train Assembly Sheds and Viaducts</td>
<td>Moderate</td>
</tr>
<tr>
<td>North part of site at ground level</td>
<td>Very Low</td>
</tr>
<tr>
<td>Regent’s Canal bank</td>
<td>Very High</td>
</tr>
<tr>
<td>Camley Street Natural Park</td>
<td>Very High</td>
</tr>
<tr>
<td>Former Gas Works area</td>
<td>Moderate</td>
</tr>
<tr>
<td>Battle Bridge Road to north of Culross Buildings</td>
<td>Moderate</td>
</tr>
<tr>
<td>Old Milk Dock Area</td>
<td>Low</td>
</tr>
<tr>
<td>Landscape south of German Gym and Stanley Buildings (after CTRL works)</td>
<td>High</td>
</tr>
<tr>
<td>Landscape immediately in front (north) of Great Northern Hotel (after CTRL works)</td>
<td>High</td>
</tr>
<tr>
<td>Landscape to the rear (south) of Great Northern Hotel and including up to King’s Cross Station and St Pancras Station</td>
<td>Very High</td>
</tr>
</tbody>
</table>

### Group Value

5.1.66 The King’s Cross Central industrial landscape is a major heritage resource when assessed against national and international criteria. The buildings of King’s Cross Central have a value as individual structures, related to their historical or architectural importance and their contribution to the character and appearance of the Conservation Areas. The buildings also have group value where, together, they have a common history (in its broadest sense), or architectural unity, or contribute to townscape through their visual or physical relationship, such as the definition of spaces or framing of views. Table 5.1.5 defines and evaluates four groupings:

- **Group 1** - The two mainline stations and the associated railway hotels.
- **Group 2** - The other buildings south of the canal.
- **Group 3** - The Gasholder Triplet and Gasholder No. 8.
- **Group 4** - The Goods Yard Complex.
### Table 5.1.5: Group Value

<table>
<thead>
<tr>
<th>Group</th>
<th>Architectural or Historic Group Value</th>
<th>Townscape Group Value</th>
<th>Predicted Group Value at 2006/7</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Group 1</strong> – The two mainline stations and the associated railway hotels.</td>
<td>Two adjacent Grade I listed stations each of magnificent architectural treatment. Premier examples of 19th century passenger termini complete with associated hotels.</td>
<td>Group of listed buildings of mixed semi public uses at the south end of King’s Cross Central. The two major stations while flanking each other, have divergent alignments and differing levels, emphasising their former independence and separate destinations.</td>
<td>Very High</td>
</tr>
</tbody>
</table>

King’s Cross Station, St Pancras Station, Great Northern Hotel, St Pancras Chambers

| **Group 2** – Other buildings south of the canal | The Gym is an important building that was instrumental in Victorian societal development of public sport and fitness. It represents the former urban environment of the stations, but has the architectural link with King’s Cross station in the form of its roof construction. | Resources of varying individual value. Now comprising dispersed remnants of an area once of complex mixed industrial and related social land use, and with some related hard landscape features. | Moderate |

German Gymnasium, Stanley Buildings, Culross Buildings

Model housing concentrated here reflects pressures of land use arising from expansion of railways.

| **Group 3** – Gasholder Triplet and Gasholder No. 8 | Major elements of a once larger gas industry, and related industrial quarter, which was instrumental in the 19th century development, prosperity and modernisation of London. Demonstrative of industrial importance of the canal. | Gasholder No.8 has value as a landmark feature close to the canal. However any Group value is limited by the earlier dismantling of the triplet and other related structures; the opportunity now exists to establish a new grouping of the four listed guide frames. | High |
Group 4 - The Goods Yard Complex

including the Granary group, the Midland Goods Shed, the Coal Drops and their viaducts, Plimsoll Viaduct, East and West Handyside Canopies, Coal and Fish Offices, Regeneration House and the Regent's Canal

A largely undisturbed cluster of transport related buildings and other features of mid to late 19th century age. With significant amounts of contemporary hard landscape surface features. Has an exceptionally co-ordinated layout which is largely intact.

This area is much less disturbed by the CTRL works than the area to the south of the canal.

The Granary building dominates the group. There are significant amounts of surviving hard contemporary landscaping that continue to forge physical links between the buildings.

Changes in level reflect the historic land uses and serve to give variety and interest to the spaces between the buildings.

Very High

Historic surfacing and materials

5.1.67 The surplus materials stored for re-use by CTRL and the material remaining within the King’s Cross Central site (and the way they have been used, repaired and have been maintained) are important in their own right; they are also able to provide an authentic landscape setting in context with the retained historic buildings.

Trees

5.1.68 The location, condition and amenity value of trees within the site is assessed and presented in the tree survey at Appendix 9D. None of the trees within the site are subject to a Tree Preservation Order. However, all trees of 75mm girth at 1.5m above ground level are afforded protection against unauthorised tree works or felling as they fall within either the King’s Cross or Regent’s Canal Conservation Areas.

5.1.69 Table 5.1.6 summarises the findings of the tree survey by specimen type and BS 5837 category.
Table 5.1.6 Summary of Tree Survey

<table>
<thead>
<tr>
<th>Category (BS5837)</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Total by specimen type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual Trees</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good</td>
<td>2</td>
<td>18</td>
<td>13</td>
<td>2</td>
<td>35</td>
</tr>
<tr>
<td>Moderate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very Poor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tree Groups</td>
<td>0</td>
<td>49</td>
<td>73</td>
<td>0</td>
<td>122</td>
</tr>
<tr>
<td>Total by Category</td>
<td>2</td>
<td>67</td>
<td>86</td>
<td>2</td>
<td>157*</td>
</tr>
</tbody>
</table>

* Of which 87 fall below the protection criteria for trees in conservation areas.

5.1.70 The small number of high quality trees and the limited area covered by vegetation in general reflects the relative lack of landscape planting and the predominance of the characteristic hard urban landscape.

**Lighting**

5.1.71 The lighting of the mainline stations and the clock tower of St Pancras Chambers reinforces their landmark qualities. However, the general level of lighting is of standard quality for public highways and there is considerable scope to enhance lighting levels to provide greater security and interest at night and to improve the presentation of historic buildings.

**Views**

5.1.72 Strategic Views to St. Paul's Cathedral that cross the site are assigned ‘very high’ importance in this assessment.

5.1.73 Local views are identified in the Joint Development Brief and have been categorised into ‘main views’ and ‘secondary views’.

5.1.74 For the purposes of this assessment ‘main views’ in the Joint Development Brief have generally been treated as of ‘high’ importance and ‘secondary’ views ‘moderate’ importance. Where higher values are given these reflect comments received from English Heritage and take into account the importance of views of the Grade I Listed stations.
Table 5.1.7 – Joint Development Brief Local Views (see Figure 5.1.2)

<table>
<thead>
<tr>
<th>Fig.</th>
<th>Main views:</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Views from Euston Road looking north up Pancras and Midland Roads to the side elevation of Barlow Shed;</td>
<td>Very High</td>
</tr>
<tr>
<td>4</td>
<td>Series of views from King’s Cross frontage, Great Northern Hotel, St Pancras Chambers and the Barlow Shed;</td>
<td>Very High</td>
</tr>
<tr>
<td>6</td>
<td>An emerging view of the Granary along a main route northwards from the stations of the Granary;</td>
<td>High</td>
</tr>
<tr>
<td>7</td>
<td>A glimpsed view from north of the German Gymnasium to the north end of the Barlow train shed and St Pancras extension;</td>
<td>High</td>
</tr>
<tr>
<td>13</td>
<td>Views from York Way south of Wharfdale Road, looking south-west to King’s Cross station shed and over tracks to new development;</td>
<td>High</td>
</tr>
<tr>
<td>8A to 8C</td>
<td>Glimpsed views of local landmarks such as St Pancras clock tower and Chambers, the Barlow shed and St Pancras extension from viewpoints in the Goods Yard complex (including Wharf Road, the area in front of the Granary and the upper level of the Coal Drops) and/or from the canal tow path, canal and St Pancras lock area;</td>
<td>High</td>
</tr>
<tr>
<td>11</td>
<td>View from Maiden Lane Bridge (on York Way) to the Granary, Coal and Fish Offices and Camley Street Natural Park; and</td>
<td>High</td>
</tr>
<tr>
<td>2</td>
<td>Views from Euston Road towards the stations, St Pancras Chambers and Great Northern Hotel.</td>
<td>Very High</td>
</tr>
</tbody>
</table>

Secondary Views:

| 10   | View from Camley Street (where the ground rises) to St Pancras station, Barlow shed and St Pancras extension; | Moderate |
| 9B   | Glimpsed views from middle and eastern parts of Goods Way to King’s Cross station; | Moderate |
| 5    | A newly-opened view from immediately north-east of the German Gymnasium towards the stations and Great Northern Hotel; | High |
| 12   | The views from King’s Cross station platforms and from trains to the portals of the gasworks tunnels; and | Moderate |
| 3    | Views from Pentonville Road, the Lighthouse Block area and Gray’s Inn Road, towards the stations.” | High |

5.1.75 Islington UDP local view LV7 is of ‘high’ importance, comprising a locally valued view from Dartmouth Park Hill toward St Paul’s Cathedral.

5.1.76 Where new views would be created by the proposed development, these have been assessed as of ‘high’ importance where they include views of the main landmarks (stations, gasholders etc.). Other views would be of ‘moderate’ or ‘low’ importance.
depending on their location and the likely level of public use. Greater importance is given to views within the conservation areas and major routes through the site.

**Contribution to the Conservation Area**

5.1.77 A detailed assessment of the contribution that buildings, structures and surfaces make to the King’s Cross Conservation Area is included in Part 9 (Appendix 9F Contribution to the Conservation Area). The results are summarised below.

*Positive Contribution*

5.1.78 Buildings, features and spaces which make a positive contribution to the Conservation Area up to and beyond 2006/7 include:-

- **Listed Buildings**
  - The Granary (and other buildings and structures within its curtilage including the Western Transit Shed, Train Assembly Shed, Eastern Transit Shed, Flanking Offices to the Granary, West Handyside Canopy, Midland Goods Shed and East Handyside Canopy).
  - Great Northern Hotel.
  - German Gymnasium.
  - The two Stanley Buildings.
  - Gasholder Triplet (dismantled and in store).
  - Gasholder No.8.
  - Eastern Coal Drops
    - (Listed Buildings outside the site that contribute to the conservation areas include King’s Cross and St Pancras stations, the Steam Locomotive Water Point and St Pancras Lock Keeper’s Cottage)

- **Unlisted Buildings (identified in the EH Position Statement 1997 as making a positive contribution)**
  - Western Coal Drops and Viaduct. *
  - Eastern Coal Drops Viaduct. *
  - Wharf Road Viaduct.*
  - Western Goods Shed.
  - Regeneration House.
  - Coal and Fish Offices.
  - Culross Buildings.
  - St Pancras Lock.
  - Plimsoll Viaduct.*

  (*buildings etc not identified as making a positive contribution in the Regent’s Canal Conservation Area Statement 2001*)
Other features

Historic paving and street furniture, especially that found throughout the Goods Yard and at Battlebridge Road.

Perimeter wall and roadway over the Wharf Road Stables.

Maiden Lane Bridge.

Trees within Camley Street Natural Park and along the Canal

Negative Contribution

5.1.79 Buildings, features and spaces which would continue to make a negative contribution to the Conservation Areas in 2006/7 because of the extent of the loss, intrusion or damage includes:

- filling station;
- site clearance south of the canal;
- Pancras Way (as re-aligned by CTRL);
- miscellaneous modern buildings in front of the Granary;
- modern two storey temporary offices adjacent to Regeneration House;
- gas governor building;
- King’s Cross signal building.

The Proposals

5.1.80 The proposed comprehensive mixed-use development proposed for King’s Cross Central is described in Part 2 of the Environmental Statement, which summarises the scheme as defined in the Development Specifications and accompanying Parameter Plans and Landscape Proposals Plans.

Assumptions

5.1.81 The following assumptions have been made about the development proposals :-

Design Quality

5.1.82 Important information about the scale, height, massing and alignment of the proposed development is provided in the Development Specifications. Other “development parameters” envisaged by the Joint Development Brief have similarly been addressed and incorporated, within the Development Specifications. The significance of effects upon heritage and townscape resources will also be influenced by the quality of the new development components and interventions to retained buildings.

5.1.83 For the purposes of the assessment, it has been assumed that a high quality development would be delivered through the detailed design and planning processes and procedures in accordance with UDP policies, the Joint Development Brief and appropriate planning conditions attached to any planning permission, and Listed Building and Conservation Area Consent(s).
5.1.84 It is noted that the level of control is particularly high in a Conservation Area and within the setting of Listed buildings: the Joint Brief confirms that the LPA will consider its statutory duties in respect of Listed buildings and Conservation Areas and in particular the need to have regard to the desirability of preservation or enhancement (para 1.3.5). It is reasonable and appropriate to assume that the ongoing design and regulatory process (for example approval of reserved matters) would deliver a coherent high quality townscape and provide appropriate protection to the heritage resources on the site.

**Historic Surfaces and Furniture on site**

5.1.85 The intention is to maintain the context of the settings around the historic buildings as far as practicable. This would be through a combination of retaining materials *insitu*, lifting and re-laying, and where historic surfaces need to be taken up to meet the needs of the proposed development e.g. to accommodate buildings, changes of level, infrastructure works or disabled access, where practicable, paving materials etc. would be stored for re-use within the site, to maintain the overall character.

**Use of CTRL salvaged materials**

5.1.86 The CTRL project has required that various parts of heritage buildings, structures and surfaces be removed to make way for the permanent works. It has been a requirement of that project that materials arising from these demolitions be salvaged for reuse within the CTRL works or, where this is not appropriate, made available for reuse by others. Most of the material that is in good condition is already being reused by the CTRL.

5.1.87 While the Applicants are under no obligation to find uses for these materials and no specific proposals exist for their use within KXC, the Applicants have identified certain materials that could be used within the landscape proposals. These include granite setts and kerbs; York Stone paving; surface artefacts (e.g. bollards); and potentially some bricks. Reuse of these materials in the scheme would be a potential positive impact of the KXC proposals. Where other parties (including LBC) have identified specific salvage materials for reuse on current projects, the Applicants have agreed (and would continue to agree) that they should be released as such projects can guarantee that the materials would be reused.

**Building materials**

5.1.88 The decision to salvage building materials would depend on the condition of the materials, their suitability for re-use, methods used to extract them, and the economic viability of the process. For the purposes of the EIA it is assumed that only a small proportion of any building materials arising from demolitions and alterations would be suitable for re-use in the proposed building works. There would be some special cases where important heritage materials are identified for careful removal and re-use. However, the most likely scenario is that damaged materials and rubble etc. would be recycled as hardcore.

**Public Realm management**

5.1.89 It is assumed that the public realm would be managed to a high standard of cleanliness and safety. The applicants have stated their commitment to achieve this in several documents and it is also a key objective of the LPA.
Lighting

5.1.90 For the purpose of assessment it is assumed that the main thoroughfares and access routes would be lit to adoptable standards.

5.1.91 Lighting would contribute to the safety and vitality of the public realm at night. Selected building facades would be floodlit and feature lighting would be designed to highlight works of art or other particular elements such as the water features (ref LPP 107, 114 and 115) and individual or groups of trees. It is assumed that light pollution would be kept to a minimum, consistent with the need for safety and security.

King’s Cross Station Enhancement

5.1.92 Uncertainties exist regarding the design and timing of the King’s Cross Station Enhancement, proposals which are being considered by Network Rail. The ES therefore assesses the proposals without the station enhancement – see Parameter Plan KXC004 and Landscape Proposals Plan KXC101. However, the assessment also separately considers the heritage and townscape effects with the King’s Cross Station Enhancement in place. This has been done in order to consider the potential cumulative effects of the two schemes.

Regent’s Canal

5.1.93 Works to the Regent’s Canal would include landscaping, towpath improvement, lighting and other measures as set out on Parameter Plan KXC006 and Landscape Proposals Plan LPP106

Worst Case

5.1.94 The Development Specifications and Parameter Plans allow for a range of building heights, massing and floor space arrangements. The environmental assessment is based on the ‘worst case’ effects that are likely to result from the implementation of the scheme.

5.1.95 The theoretical ‘worst case’ for heritage and townscape is development up to maximum building heights in each ‘receptor’ location, bearing in mind that in reality other parameters i.e. for development massing and floor space may not permit development up to the maximum height in all locations.

5.1.96 The maximum height parameter would provide the biggest contrast in height between new and retained buildings and the ‘tallest’ streets within the development.

5.1.97 Other ‘worst case’ assumptions are :-

- no re-use of building materials from demolitions/alterations other than as hardcore (where suitable);
- no re-use of CTRL salvaged materials (except the Triplet gasholder guide frames).

Mitigation

5.1.98 Section 2.3 of the Environmental Statement defines mitigation measures as aiming to avoid, minimise, remedy or compensate for the predicted adverse effects of the project. Mitigation measures which would be incorporated into the proposals are summarised in Table 5.1.8.
### Table 5.1.8 – Mitigation Proposals

<table>
<thead>
<tr>
<th>Potential adverse effect</th>
<th>Mitigation</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Heritage buildings</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Demolition</td>
<td>Recording and analysis</td>
<td>Reduction</td>
</tr>
<tr>
<td></td>
<td>Improvements in townscape and public access</td>
<td>Compensation</td>
</tr>
<tr>
<td></td>
<td>Refurbishment and re-use of other heritage buildings and their integration within the overall redevelopment</td>
<td>Compensation</td>
</tr>
<tr>
<td></td>
<td>Increased public access to heritage buildings and their setting</td>
<td>Compensation</td>
</tr>
<tr>
<td>• Loss or damage to setting of retained buildings</td>
<td>Control of building heights and massing</td>
<td>Reduction</td>
</tr>
<tr>
<td></td>
<td>Delivery of high quality development and public realm</td>
<td>Reduction and compensation</td>
</tr>
<tr>
<td>• Alterations / interventions to retained buildings</td>
<td>Refurbishment and re-use of the building in accordance with the refurbishment parameters for each building set out in Annex E of the Main Development Specification.</td>
<td>Reduction and compensation</td>
</tr>
<tr>
<td></td>
<td>Adherence to normal planning and building controls</td>
<td>Avoidance</td>
</tr>
<tr>
<td></td>
<td>Control of construction to avoid damage to retained buildings / features</td>
<td>Avoidance</td>
</tr>
<tr>
<td><strong>Historic surfaces/materials</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Removal of historic surfacing etc.</td>
<td>Retention / re-use in-situ where practicable</td>
<td>Avoidance</td>
</tr>
<tr>
<td></td>
<td>as indicated on Landscape Proposals Plans</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Salvage for re-use in areas associated with heritage buildings</td>
<td>Reduction</td>
</tr>
<tr>
<td><strong>Historic structures e.g. canal walls</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Demolition/ alterations</td>
<td>Recording and analysis</td>
<td>Reduction</td>
</tr>
<tr>
<td></td>
<td>Improvement in townscape and public realm/access</td>
<td>Compensation</td>
</tr>
<tr>
<td><strong>Trees</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Loss of trees</td>
<td>Replacement/additional tree planting</td>
<td>Compensation</td>
</tr>
<tr>
<td><strong>Light pollution</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Adherence to normal planning and building controls</td>
<td>Avoidance</td>
</tr>
<tr>
<td></td>
<td>Lighting to control unwanted glare and light spillage</td>
<td>Reduction</td>
</tr>
<tr>
<td><strong>Views</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Obstruction of strategic views</td>
<td>Built development below viewing plane for strategic views</td>
<td>Avoidance</td>
</tr>
<tr>
<td>• Loss/obstruction of local views</td>
<td>Creation of new views of high quality</td>
<td>Compensation</td>
</tr>
<tr>
<td></td>
<td>High quality development and townscape</td>
<td>Avoidance and compensation</td>
</tr>
</tbody>
</table>
Character

- Loss or damage to the character of the canal corridor

<table>
<thead>
<tr>
<th>Improvements to surfacing and street</th>
<th>Reduction and compensation</th>
</tr>
</thead>
<tbody>
<tr>
<td>furniture</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Improved public access and security</th>
<th>Compensation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Construction

- Damage to heritage buildings/structures to be retained

<table>
<thead>
<tr>
<th>Control of the construction and protection processes</th>
<th>Avoidance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Dilapidation while awaiting redevelopment

<table>
<thead>
<tr>
<th>Structural archaeological watching brief Maintain buildings/features to avoid adverse changes in condition</th>
<th>Avoidance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Sensitivity to the Proposed Changes

5.1.99 The sensitivity of the character areas to change has been considered with regard to the nature of the proposed change that would accrue from implementation of the King's Cross Central development proposals.

5.1.100 At King's Cross Central the largely 'unused' nature of the land in the baseline year means that the area is not sensitive to change in the conventional sense. Policy objectives promote regeneration and 'a very high of design, architecture, townscape, layouts, landscape and open spaces.' (LBC Policy SKC4); therefore a change in character is regarded as an inevitable and positive consequence of development. The changes are not confined to the site itself and the proposed pattern of development also seeks to improve access to and across the Opportunity Area (in the past the large areas of railway land and the gasworks have created barriers to movement).

5.1.101 Within the site the character and appearance of Listed buildings and Conservation Areas are potentially more sensitive to change in general terms but their actual sensitivity would depend on the nature of the proposed development including the public realm.

Assessment of Heritage and Townscape Effects

Introduction

5.1.102 The effect of the proposal on heritage and townscape is made up of a series of detailed effects on individual features and resources which build up to create an overall effect on the character and appearance of the site as a whole and its surroundings. Some of the effects of the proposals would be adverse and others beneficial.

5.1.103 The assessment considers the impact on individual buildings and four character areas (see Figure 5.1.6):

- Southern Character Area (Character Sub Areas 1, 2 and 3 to the south of the canal);
- Regent's Canal (Character Sub Areas 4 (Camley Street Natural Park) and 5) is assessed separately from the Central Character Area to enable the effects on the canal and the Goods Yard area to be differentiated;
- Central Character Area – Character Sub Area 5 (the Goods Yard complex);
• Northern Character Area – Character Sub Areas 7 and 9 (land north of the Goods Yard complex and the Triangle).

Within each character area the following effects are assessed: -

• heritage buildings/ groups/ structures;
• townscape character;
• views.

5.1.104 This information is summarised in Tables 5.1.9, 5.1.10, 5.1.11 and 5.1.12. An overall assessment of effects of the development is presented in Table 5.1.13 Summary of Heritage and Townscape Effects.

5.1.105 This approach enables individual effects to be identified, and balanced through a process of synthesis, building towards an assessment for the proposal as a whole. This accords with the planning requirement for a comprehensive approach to development and the need to assess the overall effects of the scheme.

5.1.106 In addition this report also considers alternative scenarios:-

a) with the King’s Cross Station Enhancement (and LUL Phase 2 works) ; and

b) without the Triangle Site.

**King’s Cross Station Enhancement**

5.1.107 King’s Cross Station Enhancement would remove the existing ‘temporary’ concourse and introduce a new covered concourse between the western façade of the Grade I listed station and the Great Northern Hotel. This would create a new civic space in front of the station, next to Euston Road. The new concourse building would replace part of the landscaped open space shown on the King’s Cross Central Parameter Plan KXC004, and Landscape Proposals Plan LPP101.

5.1.108 The effects of these proposals would be restricted to the areas immediately around the stations.

5.1.109 The potential (cumulative) effects of the King’s Cross Central development with King’s Cross Station Enhancement would be :-

• A major improvement in the setting of the landmark Euston Road frontage to Kings Cross station and St Pancras Station/St Pancras Chambers and views of them from within the King’s Cross and Islington Conservation Areas.

• A reduction in the extent of the proposed new public open space at Station Square.

• The loss or reduction of some local views of the Great Northern Hotel, German Gymnasium and the southern block of Stanley Buildings. For example a ‘secondary’ view identified in the joint Development Brief from the German Gymnasium south toward the Great Northern Hotel, would be partly obscured by the new concourse structure. Southward views from the northern part of Station Square, and the southern part of the Boulevard to the Hotel would also be affected. The new concourse building would however create a new focal point and provide an emphasis to the new western entrance of King’s Cross Station.
5.1.110 Overall the potential cumulative effects with the King’s Cross Station Enhancement on heritage, townscape and views are likely to be beneficial, with the benefits to the Euston Road frontage outweighing any adverse effects from additional built development within Station Square.

Difference in Effects without the Triangle Site Development

5.1.111 Should the Triangle development not proceed some of the benefits of comprehensive development would be lost, for example the, ‘gateway’ to the site would be weakened by the lack of definition to the east. However, given the scale of the proposals for the Main site the benefits (without the Triangle site) would still be assessed as of major significance.

Effects on the Southern Character Area (Sub Areas 1, 2 and 3)

Introduction

5.1.112 The Southern character area is entirely located within the King’s Cross Conservation Area. By 2006/7 the area will have been largely modified by the CTRL and LUL works (Figure 5.1.7) With the exception of a new forecourt to be built by CTRL between the two mainline stations the area will comprise vacant land and isolated buildings (German Gymnasium, Stanley Building, Culross Buildings and Gasholder No. 8).

5.1.113 In 2006/7 there will be views into the site from the adjacent Regent’s Canal Conservation Area and the Islington King’s Cross Conservation Areas (Figure 5.1.2).

5.1.114 The joint Development Brief identifies ‘main’ views northward from Euston Road, from the German Gymnasium to St Pancras and the Barlow Shed, and emerging views toward the Granary travelling north through the site. ‘Secondary’ views include those from Pentonville Road towards the stations, from the German Gymnasium toward the Great Northern Hotel, and from Goods Way to King’s Cross Station (views 3 and 9) (Figure 5.1.8).

5.1.115 Other existing local views from outside the southern character area include views from York Way and oblique views will be gained from the CTRL lines immediately north of the St Pancras station extension.

Proposals

5.1.116 The Great Northern Hotel, German Gymnasium and southern block of Stanley Buildings would be retained with the exception of two small ground floor and basement extensions to the Great Northern Hotel which would be removed. The remaining hotel building, German Gym and southern Stanley building would be refurbished for new land uses (Development Spec. para 3.9 and Annex E, Parts 9, 10 and 11). Together with the mainline stations they would enclose Station Square.

5.1.117 The northern block of Stanley Buildings would be demolished to permit the re-alignment of Pancras Road to the west side of Station Square and alongside the extension to St Pancras Station. The square would be re-modelled to include a revised taxi-servicing to King’s Cross Station (see Figures KXC007 and LPP101). The proposals would not prejudice the future King’s Cross Station Enhancement.

5.1.118 The Culross Buildings would be removed to make way for the creation of new north/south routes between the stations and the Goods Yard complex. The guide frame of Gasholder No.8 would be carefully dismantled for relocation to Zone N north of the
canal (see Parameter Plans). The Gas Governor would be relocated within the canal corridor to Development Zone V.

5.1.119 Two new development zones (A and B) would occupy the land south of the canal. They would define the Boulevard, which would extend north towards Canal Square. The square would link to Granary Square via two new bridges over Regent’s Canal. Development zones A and B would also define the southern edge of Goods Way and give enclosure to Granary Square to the north of the canal – see Landscape Proposals Plan LPP105. Landscape Proposals Plans LPP103 and LPP105 show high quality landscape treatment, tree planting and water features for the Boulevard, with vertical elements at Canal Square to mark the crossing point of Goods Way.

5.1.120 Development zone B would define the new public space of Pancras Square to the north of the German Gymnasium. It would also provide a street frontage to Pancras Road and the extension to St Pancras station (see Landscape Proposals Plan LPP102).

Effects of the Proposals

5.1.121 A summary assessment of the effects arising from the proposed development on the character and resources of the Southern Character Area is set out in Table 5.1.9.
<table>
<thead>
<tr>
<th>ASSET/FEATURE</th>
<th>RECEPTOR</th>
<th>EFFECT</th>
<th>SIGNIFICANCE</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heritage Buildings/Structures/Groups</td>
<td>Moderate to Very High</td>
<td>n/a</td>
<td>Medium to Large</td>
<td>Permanent Adverse</td>
</tr>
<tr>
<td>Townscape and Character</td>
<td>Moderate to Very High</td>
<td>Low to Moderate</td>
<td>Large</td>
<td>Permanent Beneficial</td>
</tr>
<tr>
<td>Views</td>
<td>Moderate to Very High</td>
<td>n/a</td>
<td>Medium to Large</td>
<td>Permanent Beneficial</td>
</tr>
<tr>
<td>OVERALL ASSESSMENT</td>
<td>High</td>
<td>Low to Moderate</td>
<td>Medium to Large</td>
<td>Permanent Beneficial</td>
</tr>
<tr>
<td>OVERALL ASSESSMENT</td>
<td>High</td>
<td>Low to Moderate</td>
<td>Medium to Large</td>
<td>Permanent Beneficial</td>
</tr>
</tbody>
</table>
Effects on Regent’s Canal Corridor (Sub Areas 4 and 5)

5.1.122 The Regent’s Canal corridor and Camley Street Natural Park fall wholly within the Regent’s Canal Conservation Area. Adjacent conservation areas include Camden King’s Cross and Islington King’s Cross (see Figure 5.1.3). By 2006/7 the eastern end of the canal corridor will be relatively undisturbed by the CTRL and LUL works, retaining a strong sense of seclusion and enclosure. The western end will be affected by the new CTRL rail bridge, adjacent to St Pancras Basin, and views of the station extension. The listed steam locomotive water point has already been relocated adjacent to the canal basin as part of the CTRL works. The temporary bridge across the canal for construction traffic would be removed as part of the CTRL works.

5.1.123 The CTRL works have amended the western and southern boundaries of Camley Street Natural Park to achieve realignment of Goods Way and Camley Street, which has resulted in the loss of some trees and shrubs.

5.1.124 The predominantly recreational use of the Regent’s Canal corridor, and educational use of Camley Street Natural Park would continue at 2006/7.

5.1.125 In 2006/7 there will be views into the site from the adjacent King’s Cross Conservation Areas (Camden and Islington), and along the canal towpath from the Regent’s Canal (West) Conservation Area in Islington (see Figures 5.1.2 and 5.1.8). ‘Main’ views include those from the canal towpath and St Pancras Basin area toward local landmarks such as St Pancras clock tower and Chambers, the Barlow shed and St Pancras extension (see views 8B and 8C). A ‘Secondary’ view is identified from Camley Street to St Pancras station and St Pancras extension. The sunken level of the canal limits the extent of views from adjacent areas into the canal corridor (View 10).

5.1.126 Other existing local views from outside the Regent’s Canal corridor include views from York Way and properties to the east. Glimpsed views are gained from Camley Street Natural Park toward the canal, but these are heavily screened by tree and shrub planting. Bridge parapets at the canal crossing are likely to prevent views from the CTRL.

Proposals

5.1.127 Changes arising from King’s Cross Central development would comprise landscaping, towpath improvement, lighting and other works along the canal, as shown on Parameter Plan KXC006 and LPP106. Proposals also include the creation of improved linkages between Wharf Road, Granary Square and the Gasholders zone with the canal towpath.

5.1.128 Three new bridges would be provided over the canal creating direct linkages between the south and north of the canal, and between the canal, Goods Yard complex and Camley Street. These proposals would require the removal, reduction or breaches of the Wharf Road/canal retaining walls at the bridging points, and would create direct stepped and ramped linkages between the disparate levels of the Goods Yard area and the canal towpath. There would also be changes to most of the wall on the south side of the canal (see Figure LPP011).

5.1.129 The canal would also be affected by a connection between the Lower Coal Drops and the towpath as shown on Landscape Proposals Plan LPP108, and also by improved connections between the relocated Gasholders and the towpath as shown on Landscaping Proposals Plan LPP109 (see Central Character Area assessment below).
5.1.130 Three development zones fall within the canal corridor; Zone V the relocated gas governor, is adjacent to the south-eastern corner of Camley Street Natural Park; development zone G, a pavilion within Granary Square, abuts the canal towpath to the east of the Fish and Coal Offices and Zone F is located on the existing filling station site near to Maiden Lane Bridge (See also Central Character Area assessment below). Parameter Plan KXC006 and Landscape Proposals Plan LPP106 identifies townscape improvements to the canal corridor and areas for proposed tree planting.

5.1.131 Although located in the Central Area rather than the canal corridor the relocated gas holders (Development Zone N) would have a significant effect on the canal and they have been considered in both character assessments.

Effects of the proposals

5.1.132 A summary assessment of the effects arising from the proposed development on the character and resources of the Regent's Canal corridor is set out in Table 5.1.10.
<table>
<thead>
<tr>
<th>ASSET/FEATURE</th>
<th>RECEPTOR</th>
<th>EFFECT</th>
<th>SIGNIFICANCE</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heritage Buildings/Structures/Groups – canal walk and towpath</td>
<td>Very High</td>
<td>n/a</td>
<td>Medium to Large</td>
<td>Permanent Beneficial</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Adverse effects of the removal/ intervention in the canal retaining walls would be offset by improvements to the towpath and adjacent areas. Grouping of gasholders guide frames re-established to north of, and in association with, canal and railways. Views to gasholders and direct link with canal created to enhance appreciation.</td>
</tr>
<tr>
<td>Townscape and Character</td>
<td>Very High</td>
<td>Low to Moderate</td>
<td>Large</td>
<td>Permanent Beneficial</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Substantial improvement in townscape quality, and public amenity and safety. Loss of tranquillity offset by improved quality and security and variety of spaces and increased accessibility and enclosure. Trees by St Pancras Lock (Nos. 37 and 40) and majority of trees in Camley Street Natural Park retained. Loss of trees to construct new bridge crossing at Camley Street. Loss compensated for by overall increase in new tree planting along the canal (see KXC006)</td>
</tr>
<tr>
<td>Views</td>
<td>High</td>
<td>n/a</td>
<td>Medium</td>
<td>Permanent Beneficial</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>No effect on Strategic Views. Improved overall quality of townscape enhances views. Some local views obscured (to south) but offset by creation of new views particularly to gasholders.</td>
</tr>
</tbody>
</table>

**OVERALL ASSESSMENT**

| High | Low to Moderate | Medium to Large | Permanent Beneficial | Moderate |
| Adverse effects on historic canal side walls and tranquillity offset by comprehensive improvements to canal corridor and permanent beneficial effects of the relocation of the Gasholders guide frames. |
Effects on Central Character Area (Sub Area 6)

5.1.133 The Central Character Area falls wholly within the Regent's Canal Conservation Area. This area will be much less affected by the CTRL works than the area to the south of the canal and existing land uses will remain.

5.1.134 Views into the area are gained from the Camden and Islington King's Cross Conservation Areas to the south and southeast, respectively. A small area of the Islington King's Cross Conservation Area also lies to the northeast of the Central Character Area and has views toward the East Handyside Canopies (see Figure 5.1.3).

5.1.135 ‘Main’ views include those toward local landmarks such as St Pancras clock tower and Chambers, the Barlow train shed, and St Pancras extension from viewpoints in the Goods Yard complex (including Wharf Road, Granary open space and the upper level of the Coal Drops). No ‘secondary’ views are identified within the Central Character Area.

Proposals

5.1.136 One of the main changes to the Central Character Area is the re-erection of the Triplet gasholder (and Gasholder No.8) guide frames within development zone N facilitated by demolition of the Western Goods Shed. This zone is partly in the Central and partly in the Northern character areas. The creation and establishment of Granary Square as a major area of public realm (Main Development Specification paragraph 4.9 and Landscape Proposals Plan LPP107), with new connections to the Regent’s Canal towpath would also create substantial change within the Central Character Area. The introduction of a major water feature within Granary Square would echo in some respects, the Granary Basin which formed the historic origins of the open space.

5.1.137 The majority of the existing heritage buildings would be retained and re-used as shown on Parameter Plan KXC011 including zones I, K, L and M (Coal and Fish Offices, Midland Goods Shed, East and West Handyside Canopies, the Granary, Flanking Offices and Transit Sheds, Regeneration House and the Eastern and Western Coal Drops). The Train Assembly Shed would be demolished, as would the Western Goods Shed (to make way for the Triplet Gasholder guide frames). The Plimsoll Viaduct and the northernmost bay of both the East and West Handyside Canopies would be removed. Figure KXC011 also shows the proposed demolition of the storage shed and electricity substation south of the Granary and the modern buildings to the west and various lengths of wall and fence.

5.1.138 New development zones would include two new pavilions (zones G and H) within Granary Square, zone J to the east of the Handyside Canopies, zone O Market Square and zone N, earmarked for the relocation and re-erection of the four Gasholder guide frames. New public realm would be established between the Coal Drops, and a new open space (Market Square) would be created to the north of the Coal Drops.

Effects of the Proposals

5.1.139 Table 5.1.11 sets out a summary assessment of the effects arising from the proposed development on the character and resources of the Central Character Area.
### Table 5.1.11 Central Character Area Summary of Effects

<table>
<thead>
<tr>
<th>ASSET/FEATURE</th>
<th>RECEPTOR</th>
<th>EFFECT</th>
<th>IMPORTANCE/VALUE</th>
<th>SENSITIVITY TO CHANGE</th>
<th>MAGNITUDE</th>
<th>NATURE OF EFFECT</th>
<th>SIGNIFICANCE OF EFFECT</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heritage Buildings/Structures/Groups</td>
<td>Moderate to Very High</td>
<td>n/a</td>
<td>Large</td>
<td>Permanent</td>
<td>Beneficial</td>
<td>Major</td>
<td>Demolition/partial demolition of structures within the curtilage of the listed Granary, and intervention to other heritage buildings in the Conservation Area would be offset by the removal of inappropriate modern structures and the refurbishment of the main building group. Relocation and re-establishment of Gasholders group of guide frames is of major significance. Retention and enhancement of setting of the Goods Yard/Granary group. Re-use of salvaged materials in the area.</td>
<td></td>
</tr>
<tr>
<td>Townscape and Character</td>
<td>Moderate to Very High</td>
<td>Low</td>
<td>Large</td>
<td>Permanent</td>
<td>Beneficial</td>
<td>Major</td>
<td>Retention and enhancement of existing distinct townscape character to improve townscape quality and public amenity. Transformation and enhancement of Granary Square as public open space. High quality design and materials would define and enhance the character of external spaces and routes. Enhanced public access with increased activity and vitality.</td>
<td></td>
</tr>
<tr>
<td>Views</td>
<td>High</td>
<td>n/a</td>
<td>Medium to Large</td>
<td>Permanent</td>
<td>Beneficial</td>
<td>Moderate</td>
<td>No effect on Strategic Views. Improved overall quality of townscape enhances views. Some local views obscured (8a and 8b), but offset by newly created sequential and static views and re-established landmarks (Gasholders guide frames).</td>
<td></td>
</tr>
<tr>
<td>OVERALL ASSESSMENT (Central)</td>
<td>High</td>
<td>Low</td>
<td>Large</td>
<td>Permanent</td>
<td>Beneficial</td>
<td>Moderate to Major</td>
<td>Loss of heritage buildings within central character area offset by relocation of the Gasholders and overall conservation of heritage features, character and views to create permanent beneficial effects.</td>
<td></td>
</tr>
</tbody>
</table>
Effects on Northern Character Area (Sub Areas 7 and 8)

5.1.140 The Northern Character Area is not within a Conservation Area and includes no listed buildings or structures. In the baseline year (2006/7) the area will be vacant and will remain in private ownership, Sub Area 7 having previously formed a construction compound for the CTRL works. The York Way viaduct will have been removed and the road realigned to the west as part of the CTRL works. The CTRL embankments and bridges will also have been completed.

5.1.141 Adjacent Conservation Areas are shown on Figure 5.1.3 including the northern part of the Islington King’s Cross Conservation Area which lies to the east of York Way.

5.1.142 No ‘main’ or ‘secondary’ townscape views are identified in section 3.2 of the Joint Development Brief for the Northern Character Area (see Table 5.1.12). However, the detailed section of the Joint Development Brief dealing with Sub Area 5 – York Way and the Triangle refers to the local view LV7 across the site from Dartmouth Park Hill.

5.1.143 Local views of the proposed development from outside the Northern Character Area would include long views up York Way (as the road bends to the west) and from the north, above the railway embankment. There will also be views across the Triangle Site from the elevated CTRL embankment (Eurostar) at 2006/7.

Proposals

5.1.144 The assessment as set out in Table 5.1.12 is based on the implementation of the King’s Cross Central proposals in accordance with both Development Specifications and Parameter Plans for the Main Site and the Triangle Site. However, changes to this assessment are noted should the two sites not proceed together and are described within the overall assessment below.

5.1.145 Development in the north (Area 7) would consist of buildings arranged in a grid pattern around a central spine of open space – Long Park (see KXC004 and Landscape Proposals Plan LPP110). Development on the western boundary would follow the line of the CTRL embankment. ‘North Square’ would be formed at the junction of Long Park with York Way.

5.1.146 The vacant land of the Triangle Site would be replaced by three development blocks (A, B, and C) that would encircle an open amenity space. Retail floorspace would occupy much of the ground floor level, increasing activity and animation along the frontage of York Way. Health, fitness and leisure facilities would occupy the south eastern frontage. Residential units would be constructed above the retail units. Building heights would range from 8 residential storeys above retail units along York Way, to 11, 14 and 17 residential storeys (above ancillary space) along the northern boundary (see Triangle Parameter Plan TS006).

5.1.147 Landscape Proposals Plan LPP113 sets out townscape enhancements and tree planting proposals along the western frontage of York Way.

Effects of the proposals

5.1.148 A summary assessment of the effects arising from the proposed development on the character of the Northern Character Area is set out in Table 5.1.12.

Table 5.1.12 Northern Character Area Summary of Effects
## Part 5.1 – Cultural Heritage and Townscape

<table>
<thead>
<tr>
<th>ASSET/FEATURE</th>
<th>RECEPTOR</th>
<th>EFFECT</th>
<th>SIGNIFICANCE</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heritage Buildings/Structures/Groups</td>
<td>None</td>
<td>n/a</td>
<td>n/a</td>
<td>None</td>
</tr>
<tr>
<td>Townscape and Character</td>
<td>Very Low</td>
<td>Low</td>
<td>Large</td>
<td>Permanent</td>
</tr>
<tr>
<td>Views</td>
<td>Low</td>
<td>n/a</td>
<td>Large</td>
<td>Permanent</td>
</tr>
</tbody>
</table>

**OVERALL ASSESSMENT (with and without Triangle Site)**

| | Low | Low | Large | Permanent | Major | Permanent beneficial effects would accrue throughout and establishment of high quality, coherent townscape on existing vacant land to the east and west of York Way. |
Overall Assessment

5.1.149 Table 5.1.13 provides a summary of the overall assessment for the site, combining effects on all character areas within the whole document. The table generally identifies the overall effects without the King’s Cross Station Enhancement in place; the effects with the King’s Cross Station Enhancement are set out in the sections on the Southern Character Area and the Overall Summary at the bottom of the table.

5.1.150 The effects on the Triangle Site are not considered to be material to the assessment of heritage effects. However, in townscape terms they contribute to the creation of a northern gateway and improvements to York Way.
### Table 5.1.13 Summary of Overall Heritage and Townscape Effects

<table>
<thead>
<tr>
<th>CHARACTER AREA</th>
<th>RECEPTOR</th>
<th>EFFECT</th>
<th>SIGNIFICANCE</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Importance/ value</td>
<td>Sensitivity to change</td>
<td>Magnitude</td>
<td>Nature of Effect</td>
</tr>
<tr>
<td>Heritage Buildings/ Structures</td>
<td>Moderate to Very High</td>
<td>n/a</td>
<td>Medium to Large</td>
<td>Permanent Beneficial</td>
</tr>
<tr>
<td>Historic Surfaces &amp; Materials</td>
<td>High</td>
<td>n/a</td>
<td>Large</td>
<td>Permanent Adverse</td>
</tr>
<tr>
<td>Trees</td>
<td>Low</td>
<td>n/a</td>
<td>Medium to Large</td>
<td>Permanent Beneficial</td>
</tr>
<tr>
<td>Views</td>
<td>High</td>
<td>n/a</td>
<td>Medium</td>
<td>Permanent Beneficial</td>
</tr>
<tr>
<td>Southern Character Area (without KXSE)</td>
<td>High</td>
<td>Low to Moderate</td>
<td>Medium to Large</td>
<td>Permanent Beneficial</td>
</tr>
<tr>
<td>Southern Character Area (with KXSE)</td>
<td>High</td>
<td>Low to Moderate</td>
<td>Medium to Large</td>
<td>Permanent Beneficial</td>
</tr>
<tr>
<td>Regent’s Canal Character Area</td>
<td>High</td>
<td>Low to Moderate</td>
<td>Medium to Large</td>
<td>Permanent Beneficial</td>
</tr>
<tr>
<td>Central Character Area</td>
<td>High</td>
<td>Low</td>
<td>Large</td>
<td>Permanent Beneficial</td>
</tr>
<tr>
<td>Northern Character Area (with and without the Triangle site)</td>
<td>Low</td>
<td>Low</td>
<td>Large</td>
<td>Permanent Beneficial</td>
</tr>
<tr>
<td>Overall Summary (without KXSE)</td>
<td>High</td>
<td>n/a</td>
<td>Large</td>
<td>Permanent Beneficial</td>
</tr>
</tbody>
</table>
### Opportunities for Further Mitigation Measures

5.1.151 Further heritage mitigation could be provided through the publication of the site history and illustrative information about the construction process. This material could be presented in the form of a small permanent or temporary exhibition. Interpretative material could also be located on signs and plaques at viewpoints and places of interest to explain the heritage interest (Ref. Joint Development Brief para 3.2.9).

5.1.152 Other possible compensation for the loss of heritage buildings could be provided by public uses in the listed and other heritage buildings providing greater access to the heritage resources.

5.1.153 Further mitigation of effects on views of landmarks could be achieved through the provision of public viewing opportunities in some of the taller buildings, though this is likely to depend upon security and other matters (ref. Joint Development Brief para 3.2.12). Other opportunities for enhancement include a co-ordinated approach to floodlighting of key buildings (English Heritage Position Statement 1997) and greater reuse of salvaged materials in appropriate locations.

5.1.154 For townscape issues, the future detailed stages of the scheme presents opportunities to address matters such as building lines, frontages (to the public realm and railway lines), set-backs and rooftops through application of the proposed Urban Design Guidelines.

### Monitoring

5.1.155 Construction and implementation activities would be monitored as set out in section 4 of the Environmental Statement.

5.1.156 Heritage buildings and features would be monitored and works to them controlled through planning procedures and processes as set out in listed buildings and conservation area legislation and policy related to Listed Building Consent and Conservation Area Consent applications.

### Summary

5.1.157 The King’s Cross Main Site forms part of two conservation areas and includes a number of listed buildings within and adjacent to its boundary. The heritage resources include buildings (singly, and in groups), gasholder guideframes, historic surfaces and structures and the Regent’s Canal. The historic features, and views of them from local roads and paths, are an important asset of the site and contribute to its character and appearance. There are no designated buildings or conservation areas within the Triangle Site.
5.1.158 Implementation of the proposed development would lead to the complete demolition of one listed building and three unlisted heritage buildings considered to make a positive contribution to conservation areas (see Main Site Development Specification, paragraph 4.51). The majority of listed and unlisted heritage buildings and material, particularly within the Central Character Area (the Goods Yard complex), would be refurbished and embedded within the new development. The Gasholder Triplet and Gasholder No. 8 group of guide frames would be re-established north of the canal. The proposals would achieve conservation and long-term management of the valued heritage resource. This would enhance the status and setting of these buildings, promoting their renewed contribution to the townscape and community.

5.1.159 The proposed network of streets and civic spaces would replace fragmented areas of vacant and under-used land with a comprehensively planned and high quality environment for residents, workers and visitors within the site. It would also create routes across the King’s Cross Opportunity Area, linking communities to the east and west of the site.

5.1.160 The townscape proposals would result in a net increase in urban tree planting, mainly in the new development areas. The areas around the historic railway buildings would generally have a low density of planting in order to retain their robust urban character. Historic surfaces would be restored in-situ or re-used within the Conservation Areas.

5.1.161 It is inevitable that the overall character of the Conservation Areas would change as a result of the proposals, but their appearance would be enhanced by the quality of the proposed development.

5.1.162 Some local views of landmarks would be lost but others would be created as a result of the development. The overall appearance of the site would be improved and greater public access would create more opportunities to appreciate views of the heritage buildings and their settings.

5.1.163 Overall the net effects of the King’s Cross Central development on heritage, townscape and views are considered to be beneficial and of moderate significance.
5.2 Archaeology

Introduction

5.2.1 This chapter summarises the likely permanent effects on archaeology of the proposed King's Cross Central development. These effects may arise during the construction and operational periods. Temporary “construction” effects on archaeology are described in Part 4. The detailed specialist report, addressing both the construction and operational stages, is provided at Part 10 of this Environmental Statement.

5.2.2 In the last few years a significant amount of archaeological fieldwork has occurred before and during the CTRL and LUL development works at St Pancras and King's Cross. In particular, a comprehensive archaeological desk study has been undertaken for the CTRL site and its immediate setting (Oxford Archaeological Unit, 1994). This gives a full account of the existing situation throughout the King's Cross Central site and beyond. The desk study has been supplemented by findings made during engineering site investigations and development ground works for CTRL and LUL, where there have been extensive archaeological watching briefs undertaken by archaeological contractors (Oxford Archaeological Unit, 1997, Gifford and Partners, 2003 and MoLAS, 2003).

Methodology and Assessment Criteria

5.2.3 The archaeological assessment has followed standard methods and good practice promoted by the Local Planning Authority, English Heritage, and the Institute of Field Archaeologists (IFA).

5.2.4 The methodology used to undertake this archaeological assessment reflects good practice promoted by the London Division of English Heritage and the IFA:

- known baseline conditions and the potential for discovery of archaeological remains underneath the site have been established through a desktop study of archaeological literature (including the Greater London Sites and Monuments Record [GLSMR], Ordnance Survey maps) and the findings made on archaeological sites nearby. This has been supplemented by consultations with English Heritage, London Division, including consultation on a draft EIA Scoping Report in April 2003;

- consideration of what mitigation measures (if any) it would be appropriate to implement/carry out, at each stage of the project, taking into account the archaeological potential of the site (see below) and the long-term, phased nature of the development and the fact that individual building design (and other) details would come forward for approval later;

- consultation with the English Heritage archaeological officer advising the planning departments of the London Boroughs of Islington and Camden regarding likely impacts and their effects. English Heritage has commented on a Consultation Draft Scoping Report and this chapter of the Environmental Statement addresses the matters raised at that draft stage;
• predicting and evaluating the likely impacts of the proposed development and engineering site works (including demolition, permanent new basements and other ground-works resulting from the operation of the scheme) on any surviving archaeological features present on site.

5.2.5 In general, the study of known and potential archaeological resources is based on the assessment, estimation of age, quality, condition, function and rarity of finds that have been made on a site and within its setting. In London, the study is typically based on the GLSMR, held by English Heritage, supplemented if appropriate by further information provided by additional desktop and/or site investigations.

5.2.6 The archaeological potential of the King’s Cross Central site has been determined from the extensive archaeological ‘Desk-Top Studies’ and ‘Watching Briefs’ carried out for the CTRL and LUL developments, which are now well-underway. These works fully cover the site and the immediate surroundings. The LUL site works at the southern end of the site have been frequently inspected and these visits confirm the substantially modern character of the shallow made ground (fill) and features within it. For the purposes of this study, the archaeological potential of the King’s Cross Central site has been evaluated against the criteria set out in Table 5.2.1 below:

<table>
<thead>
<tr>
<th>CRITERIA</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major</td>
<td>Where there is likely to be a dense distribution of finds that are substantially intact in a secure burial regime, and which could be investigated by an archaeological programme of works to yield significant results to archaeological objectives.</td>
</tr>
<tr>
<td>Moderate</td>
<td>Where there are likely to be resources of local to regional archaeological interest, where past impacts have had some significant adverse effects, and where an archaeological programme would make a useful contribution to archaeological objectives.</td>
</tr>
<tr>
<td>Minor</td>
<td>Where resources are likely to be of minor/local or regional archaeological interest, but have been substantially damaged or removed, and to the point where archaeological objectives would only be partially satisfied.</td>
</tr>
<tr>
<td>None</td>
<td>Where there has never been a man-made process of interest to archaeologists, where archaeological known formations have been totally removed or archaeologically excavated.</td>
</tr>
</tbody>
</table>

5.2.7 The assessment of value of archaeological resources takes account of their type, rarity, condition, context, and especially the current contribution made to ‘modelling’ the past. Accordingly, archaeological value has been evaluated against the criteria set out in Table 5.2.2 below:
### Table 5.2.2: Archaeological Value

<table>
<thead>
<tr>
<th>CRITERIA</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Major</strong></td>
<td>Highly important sites and physical remains, scheduled or not. They can be of any period, are often rare, and may or may not be in good condition. They may relate to listed Grade I and II* buildings. They significantly contribute to our heritage assets at a national level.</td>
</tr>
<tr>
<td><strong>Moderate</strong></td>
<td>Resources of regional importance making a significant contribution to the understanding of Greater London's history and to notable historic buildings in Conservation Areas of King's Cross and the Regent's Canal.</td>
</tr>
<tr>
<td><strong>Minor</strong></td>
<td>Remains of local value making a positive contribution to understanding the local history of the King's Cross region of north London.</td>
</tr>
<tr>
<td><strong>None</strong></td>
<td>Artefacts and features that at the present time have no accepted interest for appreciating the history of the King's Cross Central site.</td>
</tr>
</tbody>
</table>

### Definition of Significance

5.2.8 The significance of effects of has been assessed based upon the value and importance of the likely archaeological resources on site and the scale and nature of the impacts that the proposed development would bring about, as set out in Table 5.2.3 below:
Table 5.2.3 Significance Criteria

<table>
<thead>
<tr>
<th>CRITERIA</th>
<th>DEFINITIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moderate Beneficial</td>
<td>Gain of new archaeological knowledge by local investigations when achieving <em>in situ</em> preservation.</td>
</tr>
<tr>
<td>Minor Beneficial</td>
<td>Change of land use or resource management to enhance the preservation of identified archaeological deposits.</td>
</tr>
<tr>
<td>Negligible</td>
<td>No perceivable effects on known or predicted archaeological resource or their settings. Mitigation protects the resource, 'as found', from accidental impacts and adverse effects.</td>
</tr>
<tr>
<td>Minor Adverse</td>
<td>Minor adverse effects to small areas of known or potential resources at a local level or where the archaeological resource is very truncated or fragmented. The monitoring of the effects and recording of any resources would be achieved by an archaeological watching brief. The removal of the archaeological resource would not affect the ability to have meaningful future archaeological investigations. Investigation mitigation would increase archaeological knowledge and could outweigh loss of resource.</td>
</tr>
<tr>
<td>Moderate Adverse</td>
<td>The adverse effects would be to archaeological resources at a local-regional level resulting from large-scale engineering impacts but which could still leave some areas of the resource <em>in situ</em>. Archaeological investigation could provide a positive contribution to research agendas.</td>
</tr>
<tr>
<td>Major Adverse</td>
<td>Adverse effects caused to sites of high archaeological potential or sites within Archaeological Priority Areas, Scheduled Ancient Monuments including their settings. Uncontrolled removal of full archaeological sites of high value contrary to PPG 16 and archaeology policies in UDPs. The severity of the effects could require the proposals to be redesigned to allow for <em>in situ</em> preservation and/or considerable archaeological works.</td>
</tr>
</tbody>
</table>

Consultations

5.2.9 The archaeology of the King's Cross Central site has been discussed with English Heritage throughout the evolution of the King's Cross Central proposals. Due to the link between industrial period archaeology and standing industrial buildings, archaeological matters have also been discussed with English Heritage and Camden officers dealing with listed buildings and Conservation Areas. The consultations have generally addressed:

- the history of the site and the type of finds that have been made previously and the general character of ground conditions;
- the likelihood of deeply buried stratified deposits of archaeological potential, related to different periods;
- the nature of the development and areas of potential impact – for example new basements, piles for foundations, the re-profiling of the ground, provision of new underground services and landscaping;
- definition of the archaeological potential and resource value for the purposes of the EIA;
Part 5.2 - Archaeology

- the future process for watching briefs, research objectives, recording designs and method statements, for when the project proceeds to the next stage of first phase detailed design and (then) implementation of development;

- there being no need for any intrusive archaeological evaluations at this stage, i.e. ‘pre-determination’ of the outline planning applications

5.2.10 The EIA team has also consulted the CTRL archaeologist responsible for the design and enactment of site works in the St Pancras area.

The Existing Situation

5.2.11 Existing information includes finds made during the last 150 years, at times when chance discoveries have been made and reported to antiquarians and museums. It also includes information resulting from recent extensive archaeological undertakings, made during ground works for CTRL and LUL. The Greater London Sites and Monuments Record, held and maintained by English Heritage includes records of a number of finds from the general location and from several periods. The GLSMR has recently been added to by the results of watching briefs undertaken for CTRL and LUL. This site work has principally found remains of the industrial period which marry well into the known historical development of the area.

5.2.12 These undertakings, along with desk studies, show there is a paucity of Prehistoric to Post-Medieval sites and finds. This reflects on the character of site development in the Industrial period. The lack of opportunities for fieldwork in the past, and the limited access for antiquarians and archaeologists prior to CTRL construction may also be factors. Recent archaeological site works confirm that ground-works in the 19th and 20th centuries have significantly disturbed the ground, through the older fill and penetrations into the underlying natural soils of geological age.

5.2.13 There are two Archaeological Priority Areas (APA) in the locality identified in the Camden Unitary Development Plan. The first APA relates to the Medieval and Post-Medieval Hamlet of Battle Bridge, at King’s Cross. The second APA relates to the area of the existing St Pancras churchyard, and its former extent beneath and to the east of the railway lines running south to St Pancras station, as far as Camley Street.

5.2.14 Both of these APAs are entirely outside King’s Cross Central, except that the extreme western end of the area for the proposed new bridge and pedestrian/cycleway over the Regent’s Canal extends into the very eastern edge of the designated area related to St Pancras churchyard. However, it is unlikely that construction of the bridge would require any works to the west of Camley Street and thus it is unlikely that there would be any adverse effects on the designated area.

Baseline 2006/7

5.2.15 The major underground facilities and the LUL works mean that there will be no surviving buried resources within most of the southern part of the site, by 2006/7.
5.2.16 Further archaeological fieldwork for CTRL and LUL may find additional archaeological resources but these are not likely to significantly change our understanding of the 2006/7 baseline position. By 2006/7 CTRL should have fully published the findings of their archaeological works at St Pancras-King's Cross. The principal features will continue to relate to the Industrial and Modern periods but chance finds of all other periods cannot be ruled out.

**Proposals**

5.2.17 The assessment is based on the proposals as set out in the Development Specifications for the Main Site and the Triangle Site and summarised in Part 3.2 of the Environmental Statement.

5.2.18 For each phase of development, a watching brief would be implemented at times of engineering site investigation and then during the construction of ground works, within relevant areas.

5.2.19 The main ‘driver’ for this archaeological mitigation relates to the deeply buried man-made fills and alluvial soils, both formations likely to contain ecological ‘ecofacts’. These soils and artefact resources could have a major value and their study would make a valuable contribution to heritage understanding for north London. Archaeological resources related to industrial age could similarly contribute to the understanding of the urban Victorian development processes and to the surviving heritage buildings.

5.2.20 Given the present understanding of ground conditions and archaeological potential and taking into account the ‘assumed mitigation’ measures outlined above, it is considered unnecessary for there to be any archaeological excavations ‘pre-determination’ of the outline planning applications.

**‘Worst Case’**

5.2.21 The worst case scenario would include:

- the maximum excavation of basements within the limits defined by Main Site Parameter Plan KXC016 (see Figure 5.2.1) and Development Specification paragraphs 3.35 to 3.37;
- the maximum regrading of levels with potential impacts on archaeology consistent with Main Site Parameter Plan KXC012, as described within the Soils and Contamination Specialist Report (Part 16);
- piling or foundation rafting for all significant structures without basements;
- where archaeological resources are to be preserved *in situ* the worst case would occur where conditions would give rise to accelerated decay.
Assessment of Effects

5.2.22 The potential effects on archaeology are summarised in Table 5.2.4.

Table 5.2.4 Main Site Construction Likely Effects on Potential Archaeology

<table>
<thead>
<tr>
<th>Impact</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Piling from ground level</td>
<td>Minor to Moderate adverse effect from local removal of fill and alluvium within the casing plan area. Probing of pile locations to remove obstructions could lead to additional effects. Alternatively, it may point to opportunities to move piles to reduce particular localised effects.</td>
</tr>
<tr>
<td>New basements and deep foundation rafts</td>
<td>Minor to Major adverse effect by the removal of fill in the basement area and a narrow zone around each.</td>
</tr>
<tr>
<td>Construction on the ground</td>
<td>Minor adverse effect from the removal of obstructions and construction within the fill.</td>
</tr>
<tr>
<td>Piling from basement level</td>
<td>No effect as fill will already have been removed.</td>
</tr>
<tr>
<td>Deep services in roads and open areas</td>
<td>Minor adverse effect from the cutting of slots through fill.</td>
</tr>
<tr>
<td>‘Deep’ topographic remodelling</td>
<td>Minor to Moderate adverse effects by the removal and made ground and possibly the underlying shallow natural soils.</td>
</tr>
<tr>
<td>Shallow surface landscaping of open areas</td>
<td>Minor adverse effect resulting from obstruction removal and local construction within the fill.</td>
</tr>
</tbody>
</table>

Main Site Construction Effects, by Period

5.2.23 The greatest potential impacts could result from the insertion of basements. Resources of all periods could be removed as these are generally to be found up to 2-4 m deep. Any principal features are likely to relate to the Industrial and Modern periods but chance finds of all other periods cannot be ruled out.

5.2.24 Given the character of the potential deposits of the Industrial Period, assets of minor to major value could be affected. However, the proposals would not impact upon an APA and there is no need for any intrusive archaeological evaluations at this stage, i.e. ‘pre-determination’ of the outline planning applications. Rather, mitigation would be by a watching brief (see also ‘Further Mitigation’ below).

5.2.25 Taking into account the watching briefs and associated recording of such assets, any effects are likely to be of minor-moderate adverse significance.

5.2.26 As with any site, there remains some potential for discovery of resources dating to prehistoric times, containing sensitive features that may be damaged or decay as a result of the development works. Vulnerable remains could be wooden structures and ecological matters such as seeds, vegetable matter and pollen preserved in anaerobic conditions.
5.2.27 Given the low potential for finds from all other periods, however, any effects on these resources are likely to be of minor adverse to negligible significance.

5.2.28 Overall, the impacts of the development are likely to be typical of those to be seen on any significant development site anywhere in London.

5.2.29 Once construction has been completed, there could be some minor operational effects from:

- vibrations;
- ground contamination;
- change of ground conditions;
- maintenance and repair of infrastructure.

5.2.30 No adverse effects are considered likely from noise/vibration, contamination, or changes in ground conditions. The development would quickly re-establish the preservation conditions created and maintained by the urban land uses prior to the area being semi-abandoned and then redeveloped by CTRL and LUL. At most, adverse effects of minor significance could result from repair/maintenance of infrastructure, accepting that such engineering elements would already have disturbed archaeological deposits.

5.2.31 There would be no long-term adverse effects post construction. Rather, the site and post site works could result in positive effects of moderate significance given than the results could make a significant contribution and aid with setting future archaeological research objectives for King’s Cross and Greater London.

**Effects within the Triangle Site**

5.2.32 There would be no adverse effects on archaeology within this development area of the site. This conclusion is reached as a result of two factors:

- Firstly, the topography here was considerably modified to create the flat ground and a level required for railway sidings, and tracks traversing to the Main Site to the west. Today, the original ground level is approximately represented by the road surface along York Way Viaduct.

- Secondly, the considerable ground works associated with the construction of railway facilities over the last 150 years or so and including those now associated with CTRL.

**Effects without the Triangle Site**

5.2.33 It follows that, should development proposals within the Triangle Site not be implemented, there would be no effect on the overall assessment of archaeological effects of the proposals.

**Effects at the Operational Stage with King’s Cross Station Enhancement**

5.2.34 There would be no additional operational effects related to the King’s Cross Station Enhancement alongside King’s Cross Central since no archaeological resources would survive here.
Opportunities for Further Mitigation Measures

5.2.35 Archaeological watching briefs have been committed to by the Applicants, within relevant areas, and so effectively form part of the proposals. These would occur during all stages of engineering ground-works construction where made ground from the 19th century or earlier and River Fleet Alluvium would be encountered. The mitigation process would minimise the risk of unforeseen discoveries but there is always (with any development) a slight risk that the watching briefs may identify archaeological remains whose value requires further mitigation measures. These would follow relevant legislation and policy relating to archaeology and respond to detailed engineering design information available at the time.

5.2.36 As the development proceeds in phases, ‘early’ mitigation solutions may require revising from time to time, to respond to any discoveries (or the lack of them), interpretation of these, and the results of any other archaeological activities in the neighbourhood. Mitigation is likely to focus on research objectives related to the potential resources and responding to up-to-date strategic research objectives for London (Museum of London and English Heritage 2002).

5.2.37 Equally, the results of watching briefs and the scope of future archaeological works should be reviewed at regular intervals. It may be appropriate to ‘scope out’ work, at a later date, on the basis of earlier findings.

5.2.38 Design and construction of proposed piles in such a way as to maximise the opportunity to reuse them for the next generation of buildings would negate the need for future disturbance of ground where potential archaeological remains are located and preserved in-situ.

Monitoring

5.2.39 For archaeology, the watching brief strategy provides the appropriate monitoring process that would provide safeguards for predicted and chance discoveries. The watching brief programme and its implementation would be agreed between the developer and the local planning authority on a phased basis.

Summary

5.2.40 The site was much dug-over for extracting brick-making soils and then was highly disturbed during the creation of the mid 19th century industrial developments. In the last few years a significant amount of archaeological fieldwork has occurred as part of CTRL and LUL development works at St Pancras and King’s Cross.

5.2.41 There is a paucity of ‘known’ sites and finds within the site related to all pre-industrial periods. The character of the site and setting indicate that the archaeological potential related to these pre-industrial times is minor.

5.2.42 For each phase of development, a watching brief would be implemented at times of engineering site investigation and then during the construction of ground works, within relevant areas.
5.2.43 The greatest potential impacts could result from the insertion of basements. Resources of all periods could be removed as these are generally to be found up to 2-4 m deep. Any principal features are likely to relate to the Industrial and Modern periods but chance finds of all other periods cannot be ruled out. Taking into account the watching briefs and associated recording of such assets, any effects are likely to be of minor-moderate adverse significance.

5.2.44 As with any site, there remains some potential for discovery of resources dating to prehistoric times, containing sensitive features that may be damaged or decay as a result of the development works. Vulnerable remains could be wooden structures and ecological matters such as seeds, vegetable matter and pollen preserved in anaerobic conditions. Given the low potential for finds from all other periods, however, any effects on these resources are likely to be of minor adverse to negligible significance.

5.2.45 Once construction has been completed there could be some minor operational effects from:

- vibrations;
- ground contamination;
- change of ground conditions;
- maintenance and repair of infrastructure.

5.2.46 No adverse effects are considered likely from noise/vibration, contamination, or changes in ground conditions. The development would quickly reestablish the preservation conditions created and maintained by the urban land uses prior to the area being semi-abandoned and then redeveloped by CTRL and LUL. At most, adverse effects of minor significance could result from repair/maintenance of infrastructure, accepting that such engineering elements would already have disturbed archaeological deposits.

5.2.47 There would be no long-term adverse effects post construction. Rather, the site and post site works could result in positive effects of moderate significance given than the results could make a significant contribution and aid with setting future archaeological research objectives for King’s Cross and Greater London.

5.2.48 If the Triangle Site is not developed with the Main Site, there would be no difference in effects on archaeology during the operational period.

5.2.49 No significant cumulative effects on archaeology would occur with King’s Cross Station Enhancement.
Parameter Plan KXC 018: Basements

Figure 5.2.1

* Lower Ground Accommodation included within the floor space calcualte at Annex B
5.3 Transport

Introduction

5.3.1 This chapter provides an assessment of how King's Cross Central, comprising the Main Site and Triangle Site, would affect the public transport and highway networks used by people. It therefore complements section 5.4 Socio-Economic and section 5.12 Urban Services, which address how King's Cross Central would affect other facilities and services used by people, for example housing, health and public utilities. Effects at the construction stage are addressed in Part 4.

5.3.2 The ‘environmental’ impacts of changes in traffic volumes on noise and on air quality are addressed in sections 5.9 and 5.10. To some extent, these assessments rely on transport data for different time periods (this chapter concentrates largely on peak conditions, when transport networks are under the most demand), for example noise and air quality assessments typically concentrate on changes over 8, 16 and 24-hour time periods. The additional source transport (traffic) data for the noise and air quality assessments are therefore included within Appendix 8C of this Environmental Statement.

5.3.3 This chapter provides a full assessment of the public transport and highway network capacity issues. For those specialist readers that may wish to review the issues in more detail, a free-standing Transport Assessment has also been prepared and submitted as a separate supporting document alongside the applications.

Methodology and Assessment Criteria

5.3.4 Appendix 1 to the ‘Preparation of Environmental Statements For Planning Projects That Require Environmental Assessment: A Good Practice Guide’ (DoE, 1995) provides guidance on the assessment of effects on ‘human beings’ and confirms that “services, including public utilities and transport, may have a major role to play in supporting new development and should not be overlooked”.

5.3.5 Appendix 1 to the Good Practice Guide also states that “the primary purpose in assessing demand for….services is to ensure that the new development can be assimilated into the area with maximum benefit to the existing community and minimal adverse impact.” (para 17.)

5.3.6 The Joint Camden/Islington Planning and Development Brief states (Para. 2.3.7) that developers should:

“Demonstrate that their proposals would not lead to any unacceptable impacts on the public transport and highway networks, taking into account:

- The likely phasing of developments over time;

- Plans for local capacity improvements, for example as part of the Government’s Public Private Partnership (PPP) for the Underground and the various public transport schemes identified above, or otherwise coming forward in the development period;
5.3.7 As noted above (paras 5.3.1 and 5.3.2) the traditional "environmental" impacts arising from changes in traffic volume are dealt with elsewhere in the Environmental Statement. This chapter focuses on the ability of the public transport and highway networks to accommodate the travel demands of King’s Cross Central. As explained below, these travel demands are likely to be significant (consistent with a large, mixed-use, high density development), and complex, with a range of both positive and negative effects. The assessment recognises that the networks and their capacity are not necessarily static or finite. Rather, they are partly a function of demand – the level of facilities and services provided within an area and patterns of use/demand can respond to one another in complex ways.

5.3.8 This means that it is not appropriate to adopt the conventional approach for ‘environmental’ topics of determining significance by predicting the magnitude of impacts and the sensitivity/importance of receptors. Rather, the assessment responds to the issues raised within the Good Practice Guide and Joint Brief (paragraphs 5.3.5 and 3.3.6 above) and focuses on the capacity and resilience of the relevant networks to accommodate the travel demands and cope with change.

5.3.9 The assessment examines the transport implications for two development conditions:

- The whole King’s Cross Central development (Main Site and Triangle Site)
- The development of only the Main Site

5.3.10 The assessment looks at the trips likely to be generated by the new developments, across all transport modes; it addresses the likely impacts on the public transport and highway systems; and it identifies possible measures to mitigate these impacts, extend transport choice and bring forward local improvements or benefits.

Matching Demand and Capacity

5.3.11 The beginning of 2007 has been adopted as the baseline year for this assessment, as explained further below. Furthermore, based upon information supplied by the applicants, it has been assumed that the overall development of the site would be complete after 2020. This is adopted as the notional Design Year.

5.3.12 Over this lengthy time period, transport patterns would be influenced by the availability of additional transport and housing capacity. The assessment examines the available public transport capacity to maximise the use of non-car modes, and the methodology therefore assumes that travel behaviour would adjust to make use of additional services, capacity and developments. The assessment recognises, therefore, that future transport patterns in the King’s Cross area are likely to be very different from today’s. For example, (and as explained below) the CTRL link and CTRL domestic services would allow commuters from Kent to make direct trips to King’s Cross Central, which is not currently an option. Increased accessibility to the area plus the introduction of major employment at King’s Cross Central, would create a new employment cluster around King’s Cross.

5.3.13 The assessment seeks to cover a range of possibilities by considering potential scenarios. First, the assessment considers various potential scenarios for differing volumes of capacity, which could occur in future years. These capacity scenarios are referred to as Capacity States. The lowest Capacity State would be with existing capacity and only committed improvements. Other Capacity States considered are those with provision of
potential schemes such as King's Cross Station Enhancement, Thameslink 2000 and Cross River Tram (see section on ‘Capacity Assessment - Mainline Rail and LUL’ below).

5.3.14 These Capacity States are then compared with potential development distributions. The trips generated by the development are likely to evolve to meet capacity available; they are also likely to reduce the need to interchange between the main line and Underground with significant numbers of trips originating on Network Rail services. The King's Cross Central development could result in trip patterns (a “Demand Profile”) similar to Liverpool Street and London Bridge, where high proportions of trips arriving on National Rail at these stations do not then continue their journey by Underground but have destinations close to the stations. However, the assessment also considers the worst case ‘Demand Profile”, where the development simply follows existing travel patterns in King's Cross.

5.3.15 In the shorter term, an interim year of 2011 has been assessed for impact on public transport. This year has been chosen since it is the last year before most of the PPP upgrades would be in place on the LUL services.

Transport Growth

5.3.16 As is customary with most transport assessments in London, no growth is assumed to occur on the highway network during the peak hours as they are already operating near to capacity. Therefore baseline flows in 2007 (see below) and in the Design Year of 2020 are assumed to be as existing flows in 2003/4. This methodology has been agreed with LB Camden, LB Islington and Transport for London.

5.3.17 With regard to the National Rail and London Underground Services, background passenger growth is expected to occur. However, the King's Cross Central development is likely to be one of the main contributors to passenger growth on the transport networks in the area over the next 20 years. To avoid ‘double counting’, the approach adopted has been to combine the additional traffic generated by the development with the current traffic levels, then to assess the level of capacity available for other ‘non-specific’ background traffic growth.

5.3.18 For buses, background growth has been allowed from 2001 to 2011 in accordance with advice from Transport for London, recognising the increases that have already taken place in bus patronage since 2001. After 2011, no further background bus growth is assumed in the King's Cross Central area.

Network Capacity in 2020

5.3.19 This assessment looks primarily at the total network capacity in 2020. From the total network capacity, the existing trip demands are subtracted, leaving what is termed as the ‘Available Capacity’ on the network. This Available Capacity would be used by passenger growth, either King's Cross Central or other background development growth.

5.3.20 The King's Cross Central demand is then compared to the Available Capacity to demonstrate the effect of King's Cross Central demand compared to the network capacity and to put it in context. The assessment also shows the further extent of capacity available for other background growth.
5.3.21 For a development of this scale, which would be developed over a period of more than a decade, it is likely that the trip distribution and travel patterns of users would evolve and distribute taking account of the Available Capacity on the rail and underground network. Therefore, for the trip distribution of rail and underground trips the approach considers a range of circumstances comparing various Demand Profiles (see paragraph 5.3.14) with Capacity States (see paragraph 5.3.13).

5.3.22 For other modes, a more conventional approach of using a combination of existing trip distributions in the area and the use of gravity models has been used.

Consultations

5.3.23 The assessment has been prepared following consultations with many bodies including the London Borough of Camden, London Borough of Islington, Transport for London, Network Rail, London Underground Limited, the Strategic Rail Authority, London Cycle Network Steering Group, Sustrans and British Waterways.

The Existing Situation

5.3.24 The London Plan (GLA, 2004) states (Para. 5.37) that King’s Cross has the best public transport accessibility in London.

5.3.25 There are four mainline rail stations within short walking distance (King’s Cross, St Pancras, King’s Cross Thameslink and Euston) – see Figure 5.3.1, six Underground lines – see Figure 5.3.2 and a comprehensive bus network. Table 5.3.1 provides a summary of the current AM peak hour inbound capacity on the adjoining rail network:
Table 5.3.1: King’s Cross - Existing (2003) Total Rail Capacity (AM Peak Hour)

<table>
<thead>
<tr>
<th>Station</th>
<th>Line</th>
<th>Inbound</th>
</tr>
</thead>
<tbody>
<tr>
<td>King’s Cross</td>
<td>WAGN</td>
<td>8,300</td>
</tr>
<tr>
<td></td>
<td>GNER</td>
<td>2,300</td>
</tr>
<tr>
<td></td>
<td>Thameslink (from South)</td>
<td>15,200</td>
</tr>
<tr>
<td></td>
<td>Thameslink (from North)</td>
<td>9,600</td>
</tr>
<tr>
<td>St Pancras</td>
<td>MML</td>
<td>2,100</td>
</tr>
<tr>
<td>Euston</td>
<td>West Coast Main Line</td>
<td>30,000</td>
</tr>
<tr>
<td>LUL</td>
<td>Sub Surface Lines (from East)</td>
<td>38,200</td>
</tr>
<tr>
<td></td>
<td>Sub Surface Lines (from West)</td>
<td>39,600</td>
</tr>
<tr>
<td></td>
<td>Victoria (from South)</td>
<td>34,400</td>
</tr>
<tr>
<td></td>
<td>Victoria (from North)</td>
<td>34,400</td>
</tr>
<tr>
<td></td>
<td>Piccadilly (from South)</td>
<td>27,700</td>
</tr>
<tr>
<td></td>
<td>Piccadilly (from North)</td>
<td>26,700</td>
</tr>
<tr>
<td></td>
<td>Northern (from South)</td>
<td>19,400</td>
</tr>
<tr>
<td></td>
<td>Northern (from North)</td>
<td>18,400</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>306,300</td>
</tr>
</tbody>
</table>

5.3.26 Table 5.3.1 shows that there is currently inbound rail and LUL capacity in the morning peak hour for 306,300 passengers into the King’s Cross area. Of this, on average 73% is currently used and 27%, or 82,000 spaces, is available to be used.

5.3.27 The site is well connected with 17 local bus routes – see Figure 5.3.3, however, existing walking and cycling connections in the area are relatively poor, in part due to the construction works associated with CTRL. One measure of the site’s accessibility is given by the Public Transport Accessibility Level (PTAL) which has a scale of 1 to 6. Most of the King’s Cross Central site has a PTAL of 6, the highest level of public transport accessibility.

**Baseline**

5.3.28 Parts of the site would not become available for redevelopment until the completion of the works empowered under the CTRL Act 1996, these are programmed for completion by 2007.

5.3.29 Table 5.3.2 sets out the baseline assumptions that have been made for the assessment.
Table 5.3.2 – King’s Cross Central 2007 Baseline Assumptions

<table>
<thead>
<tr>
<th>Proposal</th>
<th>Extant Planning Permission</th>
<th>Start date</th>
<th>King’s Cross Central: Assumptions about 2007 baseline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regent Quarter (P&amp;O)</td>
<td>Y</td>
<td>2002</td>
<td>Built and operational by 2007</td>
</tr>
<tr>
<td>Transport</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CTRL- permanent works</td>
<td>Y</td>
<td>2001</td>
<td>Built and operational</td>
</tr>
<tr>
<td>CTRL – temporary haul roads</td>
<td>Y</td>
<td>2001</td>
<td></td>
</tr>
<tr>
<td>Thameslink 2000</td>
<td>Partial (not all scheme has permission)</td>
<td>2002</td>
<td>Box for new low-level Thameslink 2000 Station and tunnels to be constructed as part of CTRL works. Assumed existing Thameslink services would use new box at St. Pancras and Pentonville Road station would close.</td>
</tr>
<tr>
<td>London Underground Ticket Hall Works</td>
<td>Y</td>
<td>2000</td>
<td>Built and operational by 2007 (with remaining works complete by 2020)</td>
</tr>
<tr>
<td>Congestion Charging</td>
<td>N/A</td>
<td>2003</td>
<td>As currently operational in 2003</td>
</tr>
</tbody>
</table>

5.3.30 By the design year of 2020 it is possible that several further major transport infrastructure projects such as the King’s Cross Station Enhancement and Thameslink 2000 could have been implemented. The assessment considers ‘Capacity States’ with these schemes are in place, as explained above.

*Channel Tunnel Rail Link (CTRL)*

5.3.31 St. Pancras International Terminal on the CTRL is due to open in 2007 and has therefore been included in the base case. It is expected that domestic services on the CTRL would operate between Ashford, Ebbsfleet and St. Pancras with up to 8 trains per hour in each direction to/from St. Pancras. The frequency of international services to St. Pancras is anticipated to be up to 5 trains in each direction during peak periods.

*LUL - King’s Cross Station Improvement*

5.3.32 Improvement works are currently in progress at King’s Cross Underground station and are due to be completed by 2007. However, the LUL Phase 2 works (Northern Ticket Hall and associated infrastructure) are subject of a review that may affect the timing of their completion. Prior to the works the station had one central ticket hall and eight platforms. The LUL works will create three separate ticket halls.
5.3.33 The LUL PPP started in March 2003 and will deliver capacity enhancements on the Underground lines of between 15% and 20% by 2020 as detailed below:

**Northern Line**
18% increase in capacity by 2010

**Piccadilly Line**
20% increase in capacity

**Victoria Line**
5% increase in capacity by 2004, further 11% increase in capacity by 2015

**Metropolitan, Circle, Hammersmith and City**
17% increase in capacity

**Proposals**

5.3.34 As explained in Part 3.2 of this Environmental Statement, the King’s Cross Central development proposals would provide up to 742,275 square metres of mixed-use development. The majority of the site is west of the realigned York Way and is referred to as the Main Site; a small section of the site is east of the realigned York Way and is referred to as the Triangle Site. There is a planning application for each site.

5.3.35 The development proposals are set out in the Development Specifications for the two applications. These Development Specifications incorporate various Parameter Plans and Landscape Proposals Plans and there are also various schedules specifying, for example, the proposed minimum dimensions, materials and transport role of the proposed access and circulation routes.

5.3.36 This assessment is based upon the information set out in the Development Specifications.

5.3.37 In summary, the whole development includes for up to 486,280 sq. m of commercial space; up to 2,550 residential units; and other retail, leisure, hotel, assembly and leisure, health, education and community uses. The timescale for the completion of the development is anticipated to be sometime after 2020.

5.3.38 The Main Site Development Specification applies for a range of floor areas for different use classes up to set maxima. There is therefore a range of different development mixes which might occur. This assessment has identified four theoretical development test scenarios for the Main Site, and these test the maximum potential trip generation of the development with regard to different periods during the day and for different modes.
5.3.39 The four Main Site Theoretical Test Scenarios are:

**Theoretical Scenario 1: B1 and Retail Bias**
- 460,000 sq. m B1 (business and employment uses)
- 1,600 residential units
- 46,000 sq. m shopping/food and drink (A1/A2/A3)
- 37,000 sq. m D1/D2 uses

**Theoretical Scenario 2: Residential Bias**
- 400,000 sq. m B1
- 2,300 residential units
- 15,675 sq. m hotel
- 37,000 sq. m shopping/food and drink (A1/A2/A3)
- 64,000 sq. m D1/D2 uses

**Theoretical Scenario 3: Bias on Uses within D1/D2**
- 404,000 sq. m B1
- 1,800 residential units
- 28,100 sq. m hotel
- 36,000 sq. m shopping/food and drink (A1/A2/A3)
- 88,000 sq. m D1/D2 uses

**Theoretical Scenario 4: Bias on Residential and Retail**
- 400,000 sq. m B1
- 2,300 residential units
- 46,000 sq. m shopping/food and drink (A1/A2/A3)
- 70,000 sq. m D1/D2 uses

5.3.40 In addition, the Triangle Site application proposes up to 250 residential units, up to 2,500 sq. m of A1/A2/A3 shopping/food and drink and up to 3,500 sq. m of D1/D2 uses which would include a combination from the following uses: a sports hall, swimming pool, other indoor sports, fitness and recreation facilities, medical/health facilities, crèche facilities and day centre/public hall facilities.
Car Parking/Storage

5.3.41 Parking provision for the development would be low and within the London Borough of Camden’s and Islington’s adopted Parking Standards. It would provide the minimum parking levels necessary for the development.

5.3.42 The Main Site development would be constructed in accordance with the following, maximum car parking/storage ratios:

<table>
<thead>
<tr>
<th>Land Use</th>
<th>Maximum Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>0.5 spaces per dwelling</td>
</tr>
<tr>
<td>Hotels/serviced apartments</td>
<td>1 space per 10 bedrooms</td>
</tr>
<tr>
<td>Use classes D1 and D2</td>
<td>1 space per 600 sq. m.</td>
</tr>
<tr>
<td>Other land uses (A1/A2/A3 and B1)</td>
<td>1 space per 1000 sq. m.</td>
</tr>
</tbody>
</table>

5.3.43 These spaces would be distributed as follows:

- on-street within the development;
- within the Multi Storey Car Park (MSCP); and,
- within basement/lower floors of buildings.

5.3.44 Many of the proposed on-street spaces are likely to be designed and designated for disabled parking, which would account for 5% of the total provision for each use/use class.

5.3.45 The MSCP would provide a maximum of 800 spaces, including disabled spaces. Depending upon the final out-turn of development, the MSCP would accommodate some residential and/or B1 spaces, spaces for retail and leisure uses plus spaces for hotel staff and guests, alongside a city car club scheme.

5.3.46 Basements/lower floors would provide the balance of spaces. The final number would depend upon a range of factors including the final out-turn of residential, office and other development.

5.3.47 The Triangle Site development would include up to 185 car parking spaces, of which up to 125 spaces would be for residential units, at a ratio of 0.5 spaces/unit. The remaining spaces (60 spaces) would serve the D1/D2 uses proposed, upon completion of the development.

Servicing

5.3.48 The strategy for servicing the development is based on a managed system for deliveries. This would allow deliveries to be scheduled and distributed throughout the day in order to reduce the vehicle demand at peak times. Consequently the size of loading bay areas can be reduced and the use of individual bays within the area be made more efficient. This type of management regime also spreads the impact of delivery vehicles on the surrounding highway network.

Policy Context

5.3.49 The assessment demonstrates that the development proposals for King’s Cross Central strongly accord with National, Regional and Local Transport Policy in proposing a high density development at a major interchange with excellent public transport accessibility.
5.3.50 The development has been conceived to:

- concentrate development at key public transport nodes, in particular uses that generate significant volumes of travellers;

- deliver a mix and density of land uses which supports high-quality public transport services and reduces the need to travel. The issue of mix is important as it results in travel demands being more consistent and hence economical to support - across the day and week and in terms of direction of movement (i.e. both inbound and outbound during peak periods);

- create an environment in which walking and cycling are promoted and play a significant role in catering for movement to, from and within the development;

- integrate fully with neighbouring areas and the existing transport systems; and

- ensure that attractive alternatives to travel by private car are available and accessible.

5.3.51 Given the scale of the development proposed, the travel demands are of a significant order. The section above describes the comprehensive and robust process used to assess the scenarios of various travel demands, their timing and distribution across the different modes and transport corridors.

5.3.52 A summary of the principal assumptions for the assessment is set out in Table 5.3.3 below. Many of these assumptions are ‘worst case’ and this is emphasised in Table 5.3.4:

<table>
<thead>
<tr>
<th>Assumption</th>
<th>Basis for Assumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline Year 2007</td>
<td>Much of the site is due to become available after completion of the CTRL works, programmed for 2007. Minor changes to the baseline year would not significantly alter the assessment since most of the assessment compares transport demand and capacity in the Design Year 2020.</td>
</tr>
<tr>
<td>Interim Year 2011</td>
<td>An interim year of 2011 has been assessed for impact on rail modes. This is because the PPP upgrades deliver capacity improvements, most of which will occur shortly after 2011.</td>
</tr>
<tr>
<td>Design Year 2020</td>
<td>A design year of 2020 has been adopted. The impact of the full development on transport modes has been tested in this year. This is a notional design year and could, in capacity terms, represent any year after the final PPP upgrades are complete (around 2018). This is because of the assumptions on transport growth and other transport schemes detailed below. The Implementation Strategy indicates the development is likely to be complete sometime after 2020.</td>
</tr>
<tr>
<td>Committed Developments</td>
<td>The developments to be completed by the baseline year are the Regent Quarter (P&amp;O) development and the Battlebridge Basin redevelopment. The impact of these schemes on the highway assessment has been taken into account.</td>
</tr>
</tbody>
</table>
The transport schemes assumed to be completed by the design year are:

CTRL, LUL King’s Cross Upgrade, PPP upgrades.

Other transport schemes which could occur, but are not included in the base assessment include:

King’s Cross Station Enhancement, Thameslink 2000, CRT, Crossrail 1 and 2

It is assumed that no change would occur to the Congestion Charging scheme which would affect base traffic flows in the King’s Cross area.

No background growth has been assumed on the highway network during the peak hours.

Bus growth of 40% from 2001 to 2011 has been allowed for.

No background growth has been added for LUL and Rail modes, the assessment shows the impact of King’s Cross Central on existing levels of demands, outlining the remaining unused capacity, which would be available for background growth and other changes.

Trip generation has been assumed to be similar to other central London developments. Either derived from first principles based on employment densities, or from databases such as TRAVL and TRICS.

Modal splits have been based on comparable central London developments using databases such as TRAVL and TRICS. The Arup Travel Survey (of around 2000 Arup staff working in Camden) has also provided supporting data for the commercial element within the scheme.

The modal split by car has been “capped” where the proposed car parking provision restricts car use (retail and leisure uses).

Trip distribution for highway and bus assessment has been based on gravity model, existing movements and bus corridors.

Trip distribution by rail modes has considered various profiles, (1) travel survey at London Bridge as an example of high main line rail share, and (2) existing census data. Within these broad mode shares, the split by rail line and service has been determined by Available Capacity.
Table 5.3.4 – Worst Case Assessments

<table>
<thead>
<tr>
<th>Worst Case</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Floor areas</td>
<td>The Development Specification for the Main Site applies for ranges of floor areas. The assessment has determined Development Test Scenarios which provide highest trip generation in various peak hours for various modes. These Test Scenarios are simplified and in some cases describe development combinations which may not be possible under the detailed terms of the Development Specification Floorspace schedule, Annex B. As a result, each scenario represents a ‘worst case’ position and a robust test of an “outer edge” of the floorspace parameters applied for.</td>
</tr>
<tr>
<td>Peak Hours</td>
<td>The assessment has focussed on the peak hours of the week. On weekdays from 8-9am and 5-6pm and on Saturdays at 2-3pm. For the remainder of the week, the existing network demands on most modes is lower and the transport impact of the development would also be less.</td>
</tr>
<tr>
<td>Peak Directions</td>
<td>The rail assessment has considered the peak directions. As the development proposals are predominantly commercial, the main trip generation is inbound in the am peak and outbound in the pm peak. This coincides with the peak demands on the existing rail facilities.</td>
</tr>
<tr>
<td>Interim Year</td>
<td>The 2011 has been chosen since it represents the worst case interim year, because this is the last year before the main PPP upgrades would take place and therefore LUL capacity, compared to demand over time, would be at its lowest.</td>
</tr>
<tr>
<td>Transport Infrastructure in 2020</td>
<td>In the design year assessment of 2020 it is only assumed that CTRL, LUL King’s Cross improvements and the PPP upgrades would be in place. However, it is unlikely that within the next 16 years not one of the following transport schemes would be implemented: King’s Cross Station Enhancement, Thameslink 2000, CRT, Crossrail 1 and 2</td>
</tr>
<tr>
<td>Bus Growth</td>
<td>Allowing for 40% bus growth to 2011 and only allowing for planning standard capacity of 70% of actual capacity.</td>
</tr>
</tbody>
</table>

Assessment of Effects

5.3.53 The assessment of operational effects on transport has been undertaken following the methodology explained above. The effects of construction are assessed in Part 4 of this Environmental Statement.

Reducing the Need to Interchange

5.3.54 Currently at King’s Cross/St Pancras and Euston stations, nearly three quarters of National Rail passengers are interchanging to and from Underground services. In comparison, Waterloo, London Bridge, Liverpool Street and Victoria have less than 50% of National Rail passengers transferring to and from the Underground.
5.3.55 This interchange places a burden on the Underground system at King’s Cross and supports Government and local policy to locate dense commercial and other development at King’s Cross.

5.3.56 The King’s Cross Central proposals include for at least 400,000 sq. m of commercial space, creating a new commercial cluster at King’s Cross and thereby ameliorating some of the problems of onward interchange and overcrowding. Significant numbers of employees arriving by National Rail to both King’s Cross and St Pancras would not need to interchange to LUL but would be able to easily access the King’s Cross Central development adjacent to the stations.

5.3.57 Major new residential developments are planned for the Milton Keynes area, Stratford, Thames Gateway and Ashford areas which would all have good access to Euston and King’s Cross/St. Pancras stations. In all, about 300,000 new homes would have good access to the development, without the need to interchange onto the Underground.

Trip Demand

5.3.58 The Development Specification for the Main Site provides a framework for a range of different floor areas for each class use. In order to assess the potentially worst transport impact of the development proposals it has been necessary to determine which mix of uses could generate the most trips, in particular peak hours and for each transport mode.

5.3.59 Four theoretical Development Test Scenarios have been identified for the Main Site to determine and assess ‘worst case’ transport impacts (paragraph 5.3.39 above). These scenarios have been chosen because they maximise various land use classes which have high trip generation factors for different modes. The assessment assumes that any of these scenarios could occur on the development site and therefore this assessment identifies which scenario would have the worst impact on which mode in which peak hour.

5.3.60 Development Test Scenario 4, which has maximum residential and maximum retail components, generally presents the worst-case situation with regard to the total trips. The total peak hour trips for this scenario (together with peak hour for the Triangle Site added in) are summarised in Table 5.3.5.
### Table 5.3.5 External Trip Demands - Whole Development (Main Site Scenario 4)

#### Weekday Morning Peak Hour

<table>
<thead>
<tr>
<th></th>
<th>Arrivals</th>
<th>Departures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial</td>
<td>7,726</td>
<td>416</td>
</tr>
<tr>
<td>Residential</td>
<td>116</td>
<td>2,678</td>
</tr>
<tr>
<td>Retail</td>
<td>1,227</td>
<td>707</td>
</tr>
<tr>
<td>Leisure</td>
<td>604</td>
<td>226</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>9,673</td>
<td>4,027</td>
</tr>
</tbody>
</table>

#### Weekday Evening Peak Hour

<table>
<thead>
<tr>
<th></th>
<th>Arrivals</th>
<th>Departures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial</td>
<td>1,096</td>
<td>6,366</td>
</tr>
<tr>
<td>Residential</td>
<td>1,643</td>
<td>380</td>
</tr>
<tr>
<td>Retail</td>
<td>3,299</td>
<td>3,861</td>
</tr>
<tr>
<td>Leisure</td>
<td>1,201</td>
<td>1,276</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>7,239</td>
<td>11,883</td>
</tr>
</tbody>
</table>

#### Saturday Peak Hour

<table>
<thead>
<tr>
<th></th>
<th>Arrivals</th>
<th>Departures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial</td>
<td>137</td>
<td>137</td>
</tr>
<tr>
<td>Residential</td>
<td>630</td>
<td>630</td>
</tr>
<tr>
<td>Retail</td>
<td>5,086</td>
<td>4,632</td>
</tr>
<tr>
<td>Leisure</td>
<td>1,826</td>
<td>1,092</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>7,679</td>
<td>7,301</td>
</tr>
</tbody>
</table>

### 5.3.61

The development proposals could generate around 80,000 trips on a weekday. Taking into account other Development Test Scenarios, in the peak hours, the number of inbound trips in the am peak could reach around 11,000 and in the pm peak the outbound trips could peak at around 12,500. The vast majority of these trips would be by public transport. Trips on the highway network could peak at around 600 two way vehicles in the morning and evening peak hours.

### Modal Split and Trip Distribution

### 5.3.62

The modal splits for the Main Site and Triangle Site have been considered separately. The Triangle Site is likely to have lower mode share by rail and LUL due to the longer distance to travel to access the mainline and LUL stations. The modal splits have been estimated by reference to databases and surveys of other developments, taking account of class use, parking provision and public transport accessibility.
5.3.63 The combined modal split for the Main Site and Triangle Site is summarised in Table 5.3.6 below:

<table>
<thead>
<tr>
<th>Journey Description</th>
<th>Car</th>
<th>Rail / LUL</th>
<th>Bus</th>
<th>Taxi</th>
<th>Motorcycle</th>
<th>Bicycle</th>
<th>Walk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial - Journeys to Work</td>
<td>2%</td>
<td>85%</td>
<td>7%</td>
<td>0%</td>
<td>3%</td>
<td>2%</td>
<td>1%</td>
</tr>
<tr>
<td>Residential - Journeys to Work</td>
<td>9%</td>
<td>50%</td>
<td>20%</td>
<td>1%</td>
<td>4%</td>
<td>4%</td>
<td>12%</td>
</tr>
<tr>
<td>Residential - Educational Based</td>
<td>25%</td>
<td>30%</td>
<td>20%</td>
<td>1%</td>
<td>0%</td>
<td>4%</td>
<td>20%</td>
</tr>
<tr>
<td>Residential - Escort Educational Based</td>
<td>25%</td>
<td>30%</td>
<td>20%</td>
<td>1%</td>
<td>0%</td>
<td>4%</td>
<td>20%</td>
</tr>
<tr>
<td>Residential - Shopping Based</td>
<td>10%</td>
<td>45%</td>
<td>15%</td>
<td>1%</td>
<td>2%</td>
<td>5%</td>
<td>22%</td>
</tr>
<tr>
<td>Residential - Other Personal Business</td>
<td>12%</td>
<td>50%</td>
<td>15%</td>
<td>2%</td>
<td>4%</td>
<td>2%</td>
<td>15%</td>
</tr>
<tr>
<td>Retail - Journeys to Work</td>
<td>0%</td>
<td>57%</td>
<td>30%</td>
<td>1%</td>
<td>1%</td>
<td>4%</td>
<td>7%</td>
</tr>
<tr>
<td>Retail - Visitors</td>
<td>5%</td>
<td>47%</td>
<td>19%</td>
<td>1%</td>
<td>2%</td>
<td>1%</td>
<td>25%</td>
</tr>
<tr>
<td>Leisure - Journeys to Work</td>
<td>0%</td>
<td>57%</td>
<td>30%</td>
<td>1%</td>
<td>1%</td>
<td>4%</td>
<td>7%</td>
</tr>
<tr>
<td>Leisure - Visitors</td>
<td>10%</td>
<td>35%</td>
<td>15%</td>
<td>1%</td>
<td>2%</td>
<td>2%</td>
<td>35%</td>
</tr>
</tbody>
</table>

5.3.64 Overall, it is expected that the vast majority of trips associated with the development (over 95%) would use public transport, walk or cycle. Of these, most would be either by mainline rail or Underground, with around 85% of all users expected to use these modes.

5.3.65 For a development of this scale, which would be developed over a period of more than a decade it is likely that the trip distribution and travel patterns of users would evolve and distribute taking account of the Available Capacity on the rail and Underground network. Therefore, for the trip distribution of rail and Underground trips, the assessment considers a range of circumstances comparing various Demand Profiles with Capacity States, as set out at paragraphs 5.3.76 to 5.3.85 below.

5.3.66 For other modes, a more conventional approach of using a combination of existing trip distributions in the area and the use of gravity models has been used.

Walking Demand

5.3.67 The development proposals would significantly improve walking and cycling connections in the King's Cross area which are currently limited to York Way, Goods Way and Pancras Road in the vicinity of the site.

5.3.68 The development would generate significant pedestrian flows which would generally arrive at the rail stations in the am peak and depart in the pm peak. This tidal nature of the flows is due to the predominance of commercial floorspace provision within the development proposals.
5.3.69 The daily number of trips to and from the proposed King's Cross Central development is estimated at around 80,000 with up to 15,000 two-way trips occurring in the p.m. peak hour (comprising 4,700 inbound and 10,300 outbound). Most of these trips would use rail or Underground and would arrive or depart from the stations at the southern end of the site.

5.3.70 Up to 9,400 pedestrians could arrive in the am peak and access the development northwards, with most using the Boulevard; up to 2,100 outbound trips would occur at the same time. Total two way trips in the am peak hour would therefore be 11,500.

5.3.71 This level of pedestrian activity is similar to peak hour flows outside London's busiest mainline stations of Victoria and London Bridge. Those stations serve the adjoining catchments of Victoria Street/Westminster and the City respectively but both suffer from the highway arrangements obstructing the easy and safe movement of pedestrians to and from the stations.

5.3.72 Two-way flows across Goods Way would be some 7,000 in the am peak hour and 9,500 in the pm peak hour.

5.3.73 For the proposed King's Cross Central development, the planning and design of pedestrian connections from all parts of the proposed development to the rail and underground stations have been of prime importance and designed with pedestrians given a priority.

5.3.74 It is proposed that a new fully signalised junction between Goods Way/Boulevard and the Granary would be implemented. The pedestrians would be allocated up to 26 seconds in each 45 second cycle. The signals would ensure that priority is given to the north/south pedestrian flows and public transport. The assessment indicates that the predicted traffic on Goods Way would be acceptably accommodated. Pedestrian wait times between crossings would be kept to a minimum.

5.3.75 Capacity Assessment - Mainline Rail and LUL

The total capacity of the Mainline and Underground systems in the design year has been assessed based on planned train frequencies and train lengths. LUL publish various levels of capacity for their rolling stock. The Total Crush Capacity assumes all seats occupied and a standing density of 7 people per square metre. The Practical Crush Capacity is 87% of the Total Crush Capacity. However, both levels are often currently exceeded.

5.3.76 For example, the southbound Northern Line has a Total Crush Capacity of 18378 in the peak am hour (0800-0900). However, the existing passengers using this service are 19431. Therefore, the Total Crush Capacity is already being exceeded. Both Total and Practical Crush Capacities have been addressed to assess the range of impacts of the King's Cross Central development on LUL; the analysis and findings below are based on the Practical Crush Capacity, as this is considered to be the most appropriate and relevant measure.

5.3.77 The assessment has considered various Demand Profiles and Capacity States, based on trip distributions and transport infrastructure that could occur in the future. The Capacity States considered for potential rail and LUL capacities in the design year of 2020 are:
State A: This includes only the committed schemes which are the CTRL and PPP upgrades on LUL.

State B: This is as State A but also includes the King’s Cross Station Enhancement.

State C: This is as State B, but also includes for Thameslink 2000 services.

5.3.78 In the base Capacity State (A), when only the committed schemes would have been delivered, the impact of King’s Cross Central on mainline rail could peak at 43% to 48% of the Available Capacity, much of this demand would be taken by the CTRL domestic services.

5.3.79 The impact on LUL services could peak at 28% of Available Capacity, for lines to and from the north and east. This would occur if the Demand Profile were to remain as existing in the King’s Cross area. This is considered unlikely since the provision of the CTRL rail link and domestic services will alter travel patterns in the area.

5.3.80 As explained above, the assessment has also addressed a Demand Profile of high utilisation of mainline rail commuter services, including the new CTRL domestic service. These are new services which are due to come on line after 2007 and they are likely to form a key part of the rail access to the development.

5.3.81 Using this distribution, the impact on LUL and mainline rail services has been assessed. Overall, the King’s Cross Central development could utilise 9% of rail and LUL Available Capacity in the AM peak and 14% in the PM peak. The greatest impact on the LUL services could be a maximum of 17% use of Available Capacity in the peak hour for lines to the north and east.

5.3.82 Whichever Demand Profile or Capacity State occurs in the future, the overall conclusion is that the trips generated by King’s Cross Central would be well within the overall Available Capacity available on the rail networks. Around 85% of the Available Capacity on rail modes would be available for other demands, such as background growth.

5.3.83 The assessment of the interim year 2011, shows that the King’s Cross Central development would utilise 5% or less of rail and LUL Available Capacity. It also shows that Available Capacity on the deep lines to the north and east is very limited (with or without King’s Cross Central).

5.3.84 With regard to station capacity, PEDROUTE assessment has been undertaken of the LUL station based on the 2020 design year development flows and the completed station upgrade configuration and the results of the assessment indicate that the King’s Cross Central development flows could be accommodated within the LUL station satisfactorily in the design year with the committed PPP upgrades.

Buses

5.3.85 The assessment has reviewed the existing bus network and updated it to reflect the Design Year 2020 demand, taking into account the current and projected patronage and the Mayor’s commitments to enhance bus capacity.

5.3.86 The additional trips generated by the development proposals have been examined to assess how such demand would impact upon the future bus network.
5.3.87 The peak bus demand would be around 1,500 two-way trips. Whilst the majority of these trips would be accommodated by the 2011 London Bus projected service pattern, some capacity shortfalls would potentially be experienced along the York Road and Pentonville Road corridors. The assessment uses the conservative bus occupancy planning standard preferred by London Buses.

Highway Assessment

5.3.88 The highway assessment covers a significant area of the highway network, extending up to 4 km from the site, in the local and wider area around the site and takes into account:

- existing and base year traffic flows;
- traffic generated by the development (both Main Site and Triangle Site);
- changes in traffic patterns as a result of altered shopping patterns in the catchment area; and,
- the issue of potential reassignment of through traffic onto the site roads.

- Sensitivity tests suggested by LB Islington

5.3.89 The highway network is shown in Figure 5.3.4. The number of car trips likely to be generated by the whole development in the peak hour is summarised in Table 5.3.7:

### Table 5.3.7 - Private Car Trips in Peak Hours (Whole development)

<table>
<thead>
<tr>
<th></th>
<th>Weekday AM Peak Hour</th>
<th>Weekday PM Peak Hour</th>
<th>Saturday peak hour</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Arrive</td>
<td>Depart</td>
<td>Arrive</td>
</tr>
<tr>
<td>Commercial</td>
<td>139</td>
<td>7</td>
<td>20</td>
</tr>
<tr>
<td>Residential</td>
<td>8</td>
<td>195</td>
<td>114</td>
</tr>
<tr>
<td>Hotel</td>
<td>39</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>Retail</td>
<td>11</td>
<td>11</td>
<td>57</td>
</tr>
<tr>
<td>Leisure</td>
<td>58</td>
<td>17</td>
<td>60</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>255</strong></td>
<td><strong>245</strong></td>
<td><strong>262</strong></td>
</tr>
</tbody>
</table>

5.3.90 These trips have been assigned to the road network and Table 5.3.8 summarises the link flows and percentage change due to the development traffic.
### Table 5.3.8 – Summary of Absolute and Percentage Impacts On Local Roads (Whole development)

<table>
<thead>
<tr>
<th>Link</th>
<th>Future Base flows (two-way vehs)</th>
<th>Future flows with development (two-way vehs)</th>
<th>Absolute increase (vehs)</th>
<th>Percentage increase (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AM pk</td>
<td>PM pk</td>
<td>AM pk</td>
<td>PM pk</td>
</tr>
<tr>
<td>York Way (N)</td>
<td>1427</td>
<td>1423</td>
<td>1509</td>
<td>1530</td>
</tr>
<tr>
<td>York Way (S)</td>
<td>1029</td>
<td>1294</td>
<td>1105</td>
<td>1387</td>
</tr>
<tr>
<td>Euston Road</td>
<td>3121</td>
<td>3148</td>
<td>3276</td>
<td>3292</td>
</tr>
<tr>
<td>Goods Way</td>
<td>863</td>
<td>852</td>
<td>889</td>
<td>937</td>
</tr>
<tr>
<td>Copenhagen St</td>
<td>558</td>
<td>680</td>
<td>532</td>
<td>663</td>
</tr>
<tr>
<td>Caledonian Rd</td>
<td>920</td>
<td>870</td>
<td>985</td>
<td>943</td>
</tr>
<tr>
<td>Camden Road</td>
<td>1623</td>
<td>1758</td>
<td>1695</td>
<td>1852</td>
</tr>
<tr>
<td>St Pancras Way/ Royal College St</td>
<td>1350</td>
<td>1195</td>
<td>1397</td>
<td>1244</td>
</tr>
</tbody>
</table>

#### 5.3.91
The assessment has involved a detailed highway assessment of the local network around King’s Cross, encompassing around 25 junctions in the vicinity.

#### 5.3.92
The increase in traffic due to the King’s Cross Central development proposals is generally estimated to be less than 5% on most routes. York Way, Goods Way, Pancras Way and Caledonian Road in certain peak hours would experience higher increases, generally up to around 10%. The increase in traffic on York Way in the Saturday peak hour when the existing flows are lower could approach 15% of the existing flows.

#### 5.3.93
TRANSYT modelling has included the signal junctions on Euston Road, Goods Way and York Road. The majority of the network has been derived from an existing TfL model and have a number of additional nodes have been added where necessary, such as the new site access junctions from York Way and Goods Way. The network has been tested for the future base situation (2020) and the future with the whole development and the future with just the Main Site development.

#### 5.3.94
The results indicate that the network could generally accommodate the predicted increases in the Design Year 2020. The TRANSYT model shows that the junctions would operate within capacity for the future situation with development. However, the existing mini-roundabout junction of York Way and Market Road is already close to capacity and, in time, as the development becomes more fully occupied, it could result in additional queuing.

### Effects without the Triangle Site

#### 5.3.95
The difference in the assessment of impacts on rail and LUL modes between consideration of the whole development and only the Main Site is negligible, since the Triangle Site development would generate comparatively few trips by these modes compared to the Main Site.
5.3.96 The impact on the bus network without the Triangle Site would be similar to that set out above for the whole development. For the majority of route corridors, there would be sufficient capacity to cater for the generated trips.

5.3.97 Junction assessments for the local road network with development of the Main Site only show that the impact of the marginally smaller development would be slightly less than indicated above, due to the reduction in development traffic flows.

Effects with King's Cross Station Enhancement

5.3.98 If the King's Cross Station Enhancement is developed the capacity at the King's Cross mainline rail station would be increased with the ability for additional services to be provided. In this case the impact of the King's Cross Central development on rail and LUL would be slightly reduced. However, the assessment shows that the reduction would be relatively small and the overall impact of King's Cross Central would be to utilise up to 9% of rail and LUL Available Capacity in the am peak and up to 13% of rail and LUL Available Capacity in the pm peak.

5.3.99 The provision of the King’s Cross Station Enhancement would not significantly affect capacity with regard to other modes, although it would require different taxi drop off and pick up facilities.

Opportunities for Further Mitigation

5.3.100 The King's Cross Central development provides an opportunity to enhance and improve the viability of bus services in the area. The additional demand generated by King's Cross Central would assist in making existing routes more popular, and therefore, more profitable for the operators. The demand would also provide bus operators with the opportunity of adding new services and routes, which currently would not be viable.

5.3.101 Improvement measures could include service extensions, deployment of higher capacity vehicles and frequency enhancements to provide additional capacity in busy corridors; extend services from King's Cross Railway Station and provide new links to Barnsbury/Dalston. In practice the most appropriate response would be a combination of these measures.

5.3.102 On highways, a possible signalised junction re-arrangement for the existing mini-roundabout junction of York Way and Market Road would reduce the queuing impact assessed above.

5.3.103 In addition, there is a long-term option to improve/signalise the Caledonian Road/Brewery Road junction, providing crossing facilities for pedestrians.

5.3.104 These junction improvements are considered as long-term possible responses to traffic flows, calculated on a series of worst-case scenarios, for the completed development in the Design Year of 2020.
Monitoring

5.3.105 The applicants propose monitoring of transport access to the site through a variety of measures such as automatic counters and surveys as part of a Green Travel Plan. This data would provide an indication of travel behaviour and the effectiveness of the Travel Plan initiatives.

Summary

5.3.106 The King’s Cross Central development proposals are for up to 742,745 sq. m gross floor area of mixed use development. The scale of the regeneration proposals for King’s Cross Central, to create a new part of the city with substantial commercial, and mixed used development proposals, are such that the travel demands would be significant.

5.3.107 The development would create a new commercial cluster and, its location at the most accessible site in London by public transport would ensure that travel demands are minimised. The need for interchange from various modes would be minimised and reduced.

5.3.108 King’s Cross Central represents an appropriate form of major new development as:

- it is the most accessible location in London by public transport;
- it reflects National, Regional and Local Policy;
- the development trip demands could be accommodated within the committed transport facilities and services, enabling efficient utilisation of existing and committed infrastructure; and
- the proposals would reinforce King’s Cross and its transport networks role in promoting regeneration in this part of London and bringing benefits to transport users, reducing the need to interchange.

5.3.109 Overall, the assessment demonstrates that the peak trip demands for King’s Cross Central could be accommodated on the various transport modal networks in the Design Year and in the ‘worst case’ interim year of 2011.
Main Line Stations
(Source: Arup)

Figure 5.3.1
Existing Bus Network

Figure 5.3.3
Highway Network

Figure 5.3.4
5.4 Socio-economics

Introduction

5.4.1 This chapter summarises an assessment of various positive and negative impacts on people. It considers the issues that are likely to be most important in bringing about economic and social change to the King's Cross area. In doing so, it distinguishes between the social and economic needs of existing communities now, and the potential impacts that may arise from the development and its ‘users’.

5.4.2 It is clear that no single development would be able to address all of the regeneration objectives and aspirations of local communities. Achieving the optimum social and economic transformation of the area would require partnership and commitment from a wide range of stakeholders to achieve the successful integration of existing and new communities.

Methodology and Assessment Criteria

5.4.3 The methodology takes account of the advice set out in the DoE Good Practice Guide on Environmental Assessment 1995, and in particular, Appendix 1. It also draws on guidance provided by DETR Circular 02/99 and the Town and Country Planning (Environmental Impact Assessment) Regulations 1999. It follows similar approaches adopted for large scale development such as the Stratford Rail Lands and Greenwich Peninsula.

5.4.4 The assessment is based on the proposed development land uses and floorspace set out in the Planning Applications. It is set out in four stages:

- Baseline (including description and evaluation)
- Identification of predicted effects for the ‘worst case’ scenario
- Assessment of significance
- Identification of further opportunities for mitigation

5.4.5 Using the statistical and research evidence available, three geographic areas of impact have been defined:

- The King’s Cross Central site;
- The Central Impact Zone - defined by the following Camden and Islington wards: Caledonian, King’s Cross, St Pancras and Somers Town; and
- The Wider Impact Zone – defined by the following Camden and Islington wards: Barnsbury, Bloomsbury, Clerkenwell, Cantelowes, Holborn and Covent Garden, Holloway and Regent’s Park.

5.4.6 It is considered unlikely that any King’s Cross Station Enhancement would significantly alter the socio-economic effects of King’s Cross Central and so the potential for significant cumulative effects would not arise.
Measuring the Significance of Impacts

5.4.7 By bringing a large underused site at the heart of deprived neighbourhoods in King’s Cross back into full economic use King’s Cross Central is likely to result in net social and economic benefits. The people that gain from some aspects are not necessarily the same people that are negatively affected by other aspects. Therefore the assessment has regard to the number of people affected as one measure of the significance of effects. Table 5.4.1 indicates the different sizes of population considered.

Table 5.4.1 Population Based Significance Measures

<table>
<thead>
<tr>
<th>Population Affected</th>
<th>Significance of Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small number of individuals spread across the impact area.</td>
<td>Negligible</td>
</tr>
<tr>
<td>Specific community living in a particular geographic location (e.g. a particular street or neighbourhood) or belonging to a specific demographic, socio-economic or other interest group (such as people under the age of 3 years, the unemployed or private rented sector residents).</td>
<td>Minor</td>
</tr>
<tr>
<td>Population living in the Central Impact Zone</td>
<td>Moderate</td>
</tr>
<tr>
<td>Population living in the Wider Impact Zone</td>
<td>Major</td>
</tr>
</tbody>
</table>

Consultations

5.4.8 The assessment takes account of a wide range of views gathered from the applicants own consultations and the response to the Consultation Draft Environmental Assessment Scoping Report from Camden Council and its partners.

The Existing Situation

Introduction

5.4.9 A profile of current social and economic conditions has been compiled using a combination of published statistical sources and bespoke research. Headline issues are highlighted below.

Demographics

5.4.10 The Central Impact Zone currently has a population of approximately 35,470 people in 14,846 households. The population of the Wider Impact Zone is approximately 73,580 in 33,925 households (ONS, 2001). Accordingly, the Central and Wider Impact Zones have population densities of approximately 2.39 and 2.17 people per household. This is marginally higher than the Camden and Islington average of 2.15 people per household.
**Multiple Deprivation**

5.4.11 Ten of the twelve wards (2001 ward boundaries) in the combined Central and Wider Impact Zones are ranked within the 20% most deprived in England (Index of Multiple Deprivation, 2000). The following four wards in the Central Impact Zone are amongst the 10% most deprived in England:

- Somers Town - within the 5% most deprived
- Holloway - within the 10% most deprived
- Thornhill - within the 10% most deprived
- Kings Cross - within the 10% most deprived

**Ethnicity**

5.4.12 At present, the Central and Wider Impact Zones have considerable ethnic diversity, and this has been increasing during the past decade. In particular, Kings Cross ward has the largest proportion of ethnic minority residents of any of the wards within the Central or Wider Impact Zones wards, with those classified as white British constituting only 37.2% of the population.

**Employment**

5.4.13 The 2001 Census reported that there were 15,112 'economically active' people living in the Central Impact Zone and 35,905 in the Wider Impact Zone (N.B. this includes self-employed, short-term unemployed and full-time students with jobs).

5.4.14 In 2000, there were 50,710 employees working in the Central Impact Zone area, and a further 198,000 in the Wider Impact Zone. In 2000 a lower proportion of residents in the Central and Wider Impact Zones were employed in the construction industry than the averages for England and London.

5.4.15 A greater proportion of women work part time in the Central Impact Zone (8.4% of female population 16-74) than in the Wider Impact Zone (7.9%) (ONS, 2001). An additional 1,802 women in the Central Impact Zone (13.4% of 16-74 year olds) are considered economically inactive due to domestic commitments, looking after their home, family or other dependants.

5.4.16 Using the DTLR Census Matrix Tool (which analyses 1991 Census Derived ‘travel to work’ data), only an estimated 3% (7,649) of all employees working in the Central Impact Zone live in the Central Impact Zone wards. This suggests that local employment rates are low.

**Unemployment and Income**

5.4.17 Comparison of the August 2003 claimant count with estimates of the economically active population suggests an unemployment rate in the Central Impact Zone of between 12% and 13%. The London average is around 5%. The former King’s Cross Partnership estimated real unemployment amongst ethnic minority groups to be around 25% (Bangladeshi 34%) in 2001.
5.4.18 Income levels amongst residents in the Central and Wider Impact Zones fall below the London average, with high income support dependency and low incomes. In 2002/03, the Central Impact Zone had 66% more households living on incomes in the lowest bracket (£0 – £5,000) than the average for London. A significant proportion (56%) of households in the Central Impact Zone had a total income of less than £25,000, compared with 35% of households in London as a whole (CACI, 2003).

Housing

5.4.19 Housing tenure in the Central and Wider Impact Zones is markedly different from London as a whole, containing high proportions of public housing and low proportions of open market housing. In the Central Impact Zone, the 2001 Census reported that 40% of households live in housing rented from the Council and 18% in housing rented from Housing Associations. The Wider Impact Zone has similar characteristics with 35% and 15% of households in Council and Housing Association homes respectively. These are significantly higher than the London average of 17% and 9% for Council and Housing Association housing respectively (ONS, 2001).

5.4.20 There is a significant demand for affordable housing in Camden and Islington, common to all Inner London authorities. Demand for market housing in the Central and Wider Impact Zones also outstrips supply and as a result the value of this housing is high. Camden estimates that 97.2% of newly forming households, and 84.5% of existing households in unsuitable accommodation who need to move within the borough, are currently unable to afford market housing (LBC, 2003a).

School Provision and Capacity

5.4.21 Fourteen infant and primary schools are located within the Central Impact Zone and four secondary schools are located within the Central and Wider Impact Zones.

5.4.22 There is currently a surplus of 427 places in infant and primary schools and 112 places in secondary schools within the combined Central and Wider Impact Zone.

School Performance

5.4.23 Primary school performance (Key Stage 2) in the Central Impact Zone was variable in 2002. Six primary schools achieved higher results than their respective borough averages and the London average, but five achieved lower results against those benchmarks (DfES, 2003).

5.4.24 Secondary school performances in the Central and Wider Impact Zones are also variable, with two performing better than their borough averages and two falling short. However, secondary school performances have improved in the area over the past four years, both in terms of the percentage of pupils attaining five or more GCSE grades A* - C, and the number of students not passing any subjects (DfES, 2003).

5.4.25 Camden and Islington Councils have addressed school performance over recent years, through initiatives such as Excellence in Cities, the Camden Small Education Action Zone (EAZ), Islington Small EAZ, New Deal for Communities, and the King’s Cross Single Regeneration Budget. These programmes have had positive results.
Skills and Adult Education

5.4.26 Poor skills and related adult education is a major issue in the Kings Cross area and has been a focus for the King’s Cross Partnership and Camden Central Partnership. The 1999 Skills Survey of King’s Cross residents identified that:

- 47% of the economically active population had a post 16 qualification
- 19% had a degree/diploma &/or teaching qualification
- 10% had either NVQ or City & Guilds
- Nearly 1 in 10 had achieved ‘A’ Levels or their equivalent
- 5% had a secretarial qualification, 2% an overseas qualification, 1% nursing

5.4.27 A training audit undertaken for Camden Central Partnership (CAG, 2001) and an employment study on the construction industry (DTZ Pieda Consulting, 2003) found:

- No big gaps in training provision but a high demand for English as a Second or Other Language training and childcare training, which often leave classes oversubscribed.
- The main barriers to training are a lack of basic skills (literacy, numeracy, language, IT), lack of childcare facilities and multiple ‘well-being’ problems (such as homeless and mental and physical health).
- The existence of barriers to construction training.

Community Facilities

5.4.28 Community facilities and the issues they currently face include:

- approximately 30 buildings available for community use.
- Tenant’s halls are only used for an average of five hours per week and community halls for 53 hours a week.
- Every hall and community building in the area requires some capital works including both internal and external decoration.
- There is no information available to determine the capacity and demand for cultural facilities, or the extent to which they are accessible to all residents in the area.
- Approximately 43 childcare facilities are provided in the Central Impact Zone and another 54 in the Wider Impact Zone. These facilities vary in type (crèches, day nurseries, nursery schools and pre-school play groups), size, and the age groups that they provide for.
- The area has been prioritised for the improvement of pre-school and parent support facilities through two Sure Start programmes (Sure Start Euston and Sure Start King’s Cross and Holborn).
- Camden aims to provide funded nursery education places for up to 85% of its 3 year-olds by the summer term 2004. The Council also aims to provide 995 new out-of-school places (excluding childminders) by the end of 2004, with a focus on deprived wards such as St Pancras and Holborn (LBC, 2003b).
At the borough level, there appears to be an adequate quantity of nursery provision (3 and 4 year olds) (LBC, 2003b), but the quantity of provision for under-threes is considered poor in the King’s Cross area. In particular the wards of St Pancras, Camden, Holborn and Regent’s Park have insufficient provision.

There are 134 religious meeting places within two miles of the site of which only 2% are Muslim and 2% are Hindu despite higher proportional representation of people following these faiths.

Open Space

The inner London character of Camden and Islington mean that in parts they include large areas of ‘open space’ deficiency, where access to a range of open spaces is considered below an average applied across London as a whole. However, Camden and Islington are no different to other inner London Boroughs. In King’s Cross, the proximity of Regents Park, Caledonian Park and Bingfield Park means that the deficiency is in small local spaces rather than larger parks. It is clear from current priorities (e.g. plans to improve Bingfield Park and Crumbles Castle) that improvements to some spaces (in Bingfield Park’s case, a larger space) are already been undertaken to meet local needs.

Crime

Kings Cross has a particular reputation for drug offences, street prostitution, robbery and violence. These remain the principal recorded crimes in the Kings Cross area, although their incidence has fallen in recent years, as a result of concentrated and targeted operations by the police. Crime trends in the Central and Wider Impact Zones identified from recent Crime Audits (LBC, 2003d; LBI, 1998) are as follows:

- King’s Cross has a predominance of hate crimes and drugs crime.
- St Pancras has a high number of incidences of violence against the person.
- Somers Town has a high number of incidences of violence against the person, disorder and anti-social behaviour.
- Bloomsbury has the highest crime rate in Camden, and is particularly high in drugs, hate and car crime, disorder and anti-social behaviour, and violence against the person.
- Clerkenwell is one of Islington’s worst wards in terms of overall offences.

Baseline 2006/7

In addition to projections based on the existing situation described above, information has been gathered from the impact assessments undertaken for the CTRL project, the Regent Quarter development, Arsenal and the King’s Place development proposals for Battlebridge Basin. This research provides important contextual information including expected employment levels in 2006/7.

In general few changes are expected to current socio-economic conditions in the Central and Wider Impact Zones by 2006/7. Whilst some new development is taking place, proportionally the new housing and employment created is unlikely to make a dramatic difference to the statistical profiles for the communities in both impact zones. However, some changes have been projected:
Population - The 1999 based GLA ward-based projection forecast a 3.4% increase in the population of the combined Central and Wider Impact Zones by 2006 (3,222 people). This would result in a net population growth in the Central Impact Zone of 822 people (2,400 in the Wider Impact Zone).

Household Structure - Between 2001 and 2006 growth can be expected in the 15-24 and 40+ age groups in the Central Impact Zone, in small household structures.

Ethnicity - In line with London wide trends, continued increases in ethnic diversity may be expected, especially growth among the Bangladeshi, Chinese and black populations within the Central Impact Zone.

Jobs - Overall the combined new developments in King’s Cross are expected to create around 7,600 new jobs before 2007 (see Table 5.4.2). However, none of the proposals are of sufficiently large scale to have a significant sub-regional (North London) or pan-London employment impact. Therefore it is unlikely that these developments will significantly affect employment numbers or unemployment rates across the Central or Wider Impact Zones.

Table 5.4.2 Estimated Employment Growth Between 2002 and 2007 (Permanent Jobs)

<table>
<thead>
<tr>
<th>Development</th>
<th>Gross Jobs</th>
<th>Jobs Displaced</th>
<th>Total Net Jobs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lough Road</td>
<td>1,747*</td>
<td>70</td>
<td>1,677</td>
</tr>
<tr>
<td>Regent Quarter</td>
<td>2,600**</td>
<td>not known</td>
<td>2,600</td>
</tr>
<tr>
<td>CTRL at St Pancras (operational phase)</td>
<td>600</td>
<td>400</td>
<td>200</td>
</tr>
<tr>
<td>St Pancras Chambers</td>
<td>120</td>
<td>0</td>
<td>120</td>
</tr>
<tr>
<td>King’s Place</td>
<td>3,000****</td>
<td>not known</td>
<td>3,000***</td>
</tr>
<tr>
<td>Total</td>
<td>8,067</td>
<td>470</td>
<td>7,597</td>
</tr>
</tbody>
</table>

* including 1,004 relocated jobs and 65 full time equivalent temporary jobs

** 1,000 temporary construction jobs calculated as 100 full time equivalent jobs

***assuming no displacement of existing jobs

****figure estimated by Islington Council Planning team (January 2004)

Jobs On-Site - There are currently estimated to be around 200 jobs in some 40 small businesses on land owned by Exel. Whilst many of these businesses are likely to have left the site by 2007, for the purposes of the impact assessment it is assumed that 200 jobs would be the worst case scenario for jobs displaced by King’s Cross Central.

Local Employment Rates - The assumed 2007 baseline estimates an increase in the number of workers in the Central and Wider Impact Zones living locally from 3% to 5%.
Part 5.4 – Socio-economics

- Housing - At the local level, the Regent Quarter and Lough Road schemes both include significant housing elements resulting in the provision of 138 and 819 new units respectively. Around 205 of these units (all in Lough Road) will be affordable (social rented and shared equity). 45 new affordable units are also being built by Circle 33 Housing Association at the former Playground Site, Junction of Gifford Street and Rufford Street.

- School Capacity and Performance - For the purposes of this Environmental Statement, the assumed baseline situation for schools at 2006/07 is:
  - 7-9% surplus of primary school places in the Central Impact Zone amounting to between 235 and 302 surplus places;
  - Up to 8.5% deficit in secondary school places in the Camden part of the Central and Wider Impact Zone but up to 7.3% surplus in the Islington part; in total, a deficit of approximately 111 places;
  - Similar school performances to the current levels.

- Community Centres - In 2006/07 there will be the same overall quantity of community centre provision as currently exists, but there may be an increase in the quality and use of these facilities and less available capacity.

- Cultural and Leisure Facilities - There will be an increase in the provision of cultural and leisure facilities by 2006/07 following the completion of:
  - A gymnasium and gallery at Regent Quarter.
  - A replacement library at Naish Court.
  - A concert hall and associated facilities at King’s Place.

- Open Space - Planning Permission was granted by Islington Council for improvements to Bingfield Park and Crumbles Castle on 11 March 2004. These improvements will be completed by 2007. Other improvements to small Green Spaces (local parks and spaces within Housing Estates) are also expected before 2007 although it is not clear which spaces will be prioritised by Camden and Islington Councils.

- The changing character of the area and the removal of many of the focal points for criminal activity brought about by new developments is likely to help reduce the attractiveness of the area for certain types of criminal activity (drug dealing and prostitution in particular). It is difficult to quantify the extent of this effect but a reduction in criminal activity is expected.

- Crime rates in housing areas in the Central Impact Zone (particularly antisocial behaviour) that do not necessarily relate to the drugs and prostitution activity of the wider area are unlikely to fall dramatically without significant improvements in local social, economic and physical conditions.
Proposals

Assumptions and the ‘Worst Case’

5.4.33 The assessment considers two scenarios that give rise to the greatest (largest) impacts from new jobs and population created by development. They generate different effects on socio-economic conditions and place different pressures on existing and new community services. Both ‘worst case’ scenarios are described in detail in Table 5.4.3 (providing floorspace assumptions).

Table 5.4.3 High and Low Employment Floorspace Scenarios (Square Metres Gross External)

<table>
<thead>
<tr>
<th></th>
<th>Main Site Low Employment Scenario (sq.m)</th>
<th>Main Site High Employment Scenario (sq.m)</th>
<th>Triangle Site (sq.m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Offices (B1)</td>
<td>400,000</td>
<td>486,280</td>
<td>0</td>
</tr>
<tr>
<td>Residential</td>
<td>176,875</td>
<td>125,000</td>
<td>18,000</td>
</tr>
<tr>
<td>Hotels</td>
<td>15,675</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>A1, A2, A3</td>
<td>37,000</td>
<td>42,785</td>
<td>2,500</td>
</tr>
<tr>
<td>Community Facilities (D1)</td>
<td>42,350</td>
<td>22,560</td>
<td>3,500</td>
</tr>
<tr>
<td>Leisure (All D2)</td>
<td>22,000</td>
<td>17,275</td>
<td></td>
</tr>
<tr>
<td>Multi Storey Car Parks</td>
<td>23,850</td>
<td>23,850</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>525</td>
<td>525</td>
<td></td>
</tr>
<tr>
<td><strong>Total Floorspace (sq.m)</strong></td>
<td><strong>718,275</strong></td>
<td><strong>718,275</strong></td>
<td><strong>24,000</strong></td>
</tr>
</tbody>
</table>

NB. The net internal figure is assumed to be 80% of the gross external figures stated above.

5.4.35 King’s Cross Central would include maximum development of 742,275 sq m, of which a maximum of 24,000 sq m would be in the Triangle Site. Maximum floor spaces are specified for each land use. In order to assess the likely employment created from these land uses, the two scenarios applied are those that would give rise to the highest employment rate and the lowest employment rate respectively. Each is a ‘best case’ in some respects but a ‘worst case’ in others.

5.4.36 The maximum residential scenarios may be considered as the ‘worst case’ in terms of impact on local facilities, as they would involve the greatest increase in the local population. On the other hand, the minimum residential scenarios may be considered as the ‘worst case’ in terms of meeting housing need and facilitating neighbourhood renewal, as they would result in the smallest increase in additional housing units.
In assessing the impact on community facilities it has been noted that the D1 and D2 floorspace applied for (110,815 square metres across the Main Site and Triangle Site) could readily accommodate a full range of new facilities. However, the use of this space for such facilities may not necessarily be the most efficient way to create and deliver new or enhanced services, as recognised in the Joint Planning and Development Brief at paragraphs 2.10.8, 2.11.5 and 2.12.4.

Consequently, though it is clear that the applicants envisage accommodating some new provision within King’s Cross Central, there is no detail at this stage and no specific commitments about particular new or enhanced facilities. The Main Site Development Specification paras 3.25 – 3.29 identifies the types of facilities that could be provided on the Main Site and para 6.15 states that thresholds for the phased delivery of community, health and education uses would be agreed with the LPA when outline permission is granted. Thereafter the level, mix, timing and delivery of new provision would be matters for agreement, as plans come forward for each major phase (para 3.26).

The Triangle Site application does refer specifically to a health and fitness centre, incorporating medi-centre facilities, a crèche and community facilities, but at this stage the applicants have in effect designed a flexible ‘box’, up to 3,500 square metres in floorspace, within which various uses and facilities could be provided, to be determined later.

As a result, within each individual topic area, this assessment identifies and assesses impacts initially assuming no additional provision. The assessment then considers how these judgements might be different with new or enhanced provision as part of the D1/D2 floorspace proposed.

The assessment has also assumed that the new principal public realm areas within King’s Cross Central (shown on, for example Parameter Plans KXC004, KXC006 and the Landscape Proposals Plans at Annex D to the Main Site Development Specification) would be managed and maintained to a very high standard, within a regime that provides for and promotes, public access. These are not matters laid down within the Development Specifications, which concentrate on the form of built development, nevertheless, the applicants intentions and commitments are clear from a range of publications concerning King’s Cross.

Assessment of Effects

Projecting impacts over the length of the development period combines a number of assessment techniques, including:

- analysis of historic social and economic trends in King’s Cross;
- comparison with other UK and international examples of similar scale developments and the impacts they have had on local people.
- evidence drawn from recent trends in socio-economic change, drawn largely from studies undertaken by the Office of the Deputy Prime Minister, the Neighbourhood Renewal Unit and leading social researchers such as the Joseph Rowntree Foundation;
- consultation with key services and representative community groups; and
Part 5.4 – Socio-economics

consultants’ judgement, drawing on the experience of previous socio-economic impact assessments and recent experience of neighbourhood renewal and local economic development work.

5.4.43 The assessment considers the direct impact of development on the baseline socio-economic indicators and reviews the links between them to gauge the overall effect of impacts across a wide range of differing socio-economic issues.

5.4.44 A summary of likely effects is provided at the end of this section in Table 5.4.5.

Summary of Employment Estimates

5.4.45 Once complete, the development would result in:

- Job creation: it is estimated that total direct employment for the whole site completed development would range from 22,287 to 26,485 full time equivalent jobs. Accounting for displacement (of some existing businesses) and multiplier effects a range of between 24,773 and 29,496 full time equivalent jobs would be created. Development without the Triangle Site would make a minor difference, reducing total numbers by between 56 and 167 jobs.

- Increased local employment – of the total jobs created for the completed development across the Whole Site, without specific positive interventions, between 7,432 and 8,849 jobs are likely to be taken by local residents in the Central and Wider Impact Zones. Development without the Triangle Site would make little difference (a reduction of between 17 and 50 jobs).

Assessment of Significance

5.4.46 The proposed development would have a Major Beneficial impact in terms of job creation. New jobs created would vastly outweigh those displaced. Displacement of some existing businesses is expected as a result of rising commercial land values. However, this effect is only likely to be a Minor Adverse impact as there are few opportunities in the Central or Wider Impact Zones for large-scale redevelopments. Where redevelopment or rent increases do occur they are likely to be accompanied by higher quality, higher wage employment and greater security for employees (as longer term commitments are made to property).

5.4.47 At the same time, the creation of a new office/commercial cluster would encourage the redevelopment and refurbishment of antiquated, vacant, commercial buildings such as those on Pentonville Road, King’s Cross Road and Gray’s Inn Road. There are other potential development plots behind the British Library, at Vale Royal and along Market Road. These wider changes would spread employment opportunities and further transform the area into a modern employment district for London.

5.4.48 With current low local employment rates it can be expected that new, more secure businesses would increase local employment levels. With improved quality of employment this would result in significant net benefits for local people. Therefore the development would have a Moderate Beneficial impact on local employment and help reduce local unemployment, offering a wide range of employment opportunities across a diverse variety of sectors, including entry-level positions that would provide opportunities for the unemployed, more senior positions that would enable career progression of those already in work, and high-level professional / managerial positions.
5.4.49 The number of local jobs created would significantly increase the potential total 'spend' in local services, businesses and shops, enabling them to increase income and possibly expand and improve. There would be a *Moderate Beneficial* impact on local income levels, with far-reaching implications for the local economy and individual social and economic circumstances.

**Housing**

5.4.50 The proposed development would:

- provide between 1,600 and 2,300 new homes on the Main Site (with up to an additional 250 on the Triangle Site), reintroducing a 24-hour residential presence in the area;

- create somewhere between 555 and 1,275 affordable/low-cost units across the Main Site and the Triangle Site should the final agreed affordable housing proportion fall within the scenarios assessed in Table 5.4.4. It should be noted that this EIA assessment does not constitute a commitment to any particular level of affordable housing; that would depend upon further discussions.

- help to balance the tenure profile of the Central Impact Zone by introducing a significant mix of market and affordable/low cost housing in an area currently dominated by social rented property.

**Table 5.4.4 Affordable/Low Cost Housing**

<table>
<thead>
<tr>
<th>Scenario</th>
<th>50% affordable/low-cost</th>
<th>30% affordable/low-cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Market (50%)</td>
<td>Affordable/low-cost (50%)</td>
</tr>
<tr>
<td>Minimum dwelling numbers</td>
<td>800</td>
<td>800</td>
</tr>
<tr>
<td>(main site only)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum dwelling numbers</td>
<td>1,150</td>
<td>1,150</td>
</tr>
<tr>
<td>(main site only)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum dwelling numbers</td>
<td>925</td>
<td>925</td>
</tr>
<tr>
<td>(including Triangle)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum dwelling numbers</td>
<td>1,275</td>
<td>1,275</td>
</tr>
<tr>
<td>(including Triangle)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Assessment of Significance**

5.4.51 The quantity of affordable/low-cost housing in the King’s Cross Central proposals has the potential to bring about important economic and social changes. Depending upon the level of affordable/low-cost provision and tenure profile within the development, King’s
Cross would be large enough to act as a catalyst for the creation of an intermediate market in its own right.

5.4.52 Depending upon the level of affordable housing and the tenure profile, therefore, the proposals would have **Beneficial** effects of at least **Moderate Significance**. The proposals provide scope for a significant net increase in affordable/low-cost housing in the area, catering for identified housing needs of low income groups with wider, structural effects. However, lower levels of provision (for example, below 600 affordable/low-cost units) and a heavy bias towards social renting would reduce these effects to more **Minor** significance.

5.4.53 With only 250 of the potential 2,550 new homes being proposed on the Triangle Site, the assessments of significance set out above would not change with development of the Main Site only.

### Education

5.4.54 The proposed development could generate a child population of between 757 and 1,025 across the whole site, reduced to between 667 and 936 if the Triangle Site were not developed.

5.4.55 Comparing child numbers and estimated age profiles this could result in increased pressure on the capacity of local schools leading to a deficit of up to 123 places in primary schools and 470 in secondary schools (including existing deficits).

**Assessment of Significance**

5.4.56 Whilst the development proposals are likely to place additional capacity pressures on local primary and secondary schools, these are not sufficient to warrant the need for new schools to be built. It is also difficult to predict where capacity pressures would be most acutely felt as parents choices of school are increasingly influenced by a variety of factors outside the developers’ control.

5.4.57 Whilst there is sufficient D1 floorspace proposed to accommodate new education facilities there is little justification for this based on the capacity assessment for the development alone. Any such need would be generated in combination with other population generating developments in the wider area. Instead the expansion/enhancement of existing schools or the improvements of routes to, and performance of, schools more able to accommodate new pupils could accommodate new demand created by King’s Cross Central. In the absence of new facilities or resources to address this lack of capacity the impact on local educational resources would be **Moderate Adverse**. The Further Mitigation section considers the measures that could be taken to address this impact.

5.4.58 By contrast the development proposals are likely to have a positive effect on the performance of local schools, some of which currently struggle to meet target standards. Given the long construction period it is children who are currently attending schools that are likely to gain most from the employment and other opportunities generated.

5.4.59 Targeted correctly, in combination with the Local Education Authorities and other service providers the investment brought by King’s Cross Central could generate significant match funding for local education linked initiatives, encouraging a greater prioritisation of King’s Cross for strategic education budgets.
Therefore the impact of the development proposals on local educational performance is expected to be *Moderate Beneficial* rising to *Major Beneficial* if the applicants’ successfully develop some of the D1 floorspace for the uses which are closely linked to schools and higher education.

It has not been possible to assess the child yield expected for development on the Triangle Site. However, given the small number of family sized units (15 x 3 bedroom units) the assessment of significance set out above would not change significantly should the Triangle Site not be developed.

**Community Facilities & Social Capital**

The right mix of community and leisure uses can have a dramatic effect on the choices available to local people and opportunities for interaction and activity. These components are fundamental to improving the ‘social capital’ of communities.

Overall the mix and range of community and leisure facilities offered in King’s Cross Central are likely to have a *Major Beneficial* Impact on the social capital of communities in the Central and Wider Impact Zones. The uses proposed would add a choice of activities and opportunities never before available to many members of neighbouring deprived communities. Improved social capital is likely to be a major contributor to regeneration in the area, with knock-on effects on health, income, employment and education.

However, careful consideration of the location and size of new facilities would be required if the beneficial impact on social capital is to be maximised. Too many facilities located within the site may create perceptions of ‘exclusivity’ amongst existing communities, discouraging use. Conversely, investment in inappropriate facilities outside the site boundary would do little to encourage new residents to use them.

In relative terms the socio-economic effects of the Triangle Site development on community facilities and social capital are small, albeit the proposals make provision for specific D1/D2 uses. The Main Site proposals include substantial levels of D1/D2 floorspace in any event.

Specific conclusions include:

- **Shops and Leisure** - Pre-application consultation by the Local Authorities and the applicants suggests that the introduction of new shopping and leisure facilities to the area is perceived as a need and benefit by local residents. Therefore the Retail and Leisure components of the scheme are likely to have a *Major Beneficial* Impact on the social capital of large parts of the surrounding communities in the Central and Wider Impact Zones.

- **Child Care** - It is assumed that some of the D1 floorspace applied for and the crèche proposed on the Triangle Site would provide some childcare facilities for every age group under 4 years old. It is difficult to judge whether new provision would be adequate to ensure pressure on existing facilities is not increased. The provision of new facilities would have a major impact on the ‘social capital’ of the new population but, as a ‘worst case”, there may be only a *Negligible to Minor Beneficial* impact on neighbouring communities due to the specific communities they would serve. These beneficial impacts could be enhanced to *Moderate* or *Major Beneficial* if facilities were also made available to existing local residents and workers.

- **Community, Cultural and Leisure Centres** - with the inclusion of a range of communal meeting places, including a dedicated community facility as well as a range
of other more leisure or recreation oriented spaces within the development, the effect on existing communities could be Moderate Beneficial. If the Triangle Site was not developed it would be important for an equivalent community facility to be accommodated on the Main Site or existing facilities off-site to be enhanced to retain the likely Moderate Beneficial Impacts.

- Open Space – it is considered that with on-site provision of informal open space and play areas, and access to sports facilities, as proposed for the Triangle Site, the proposal would not place significant additional demand on existing open spaces. The proposed development would address an area of open space deficiency and would act as a link between open spaces that surround the site. The opportunity has been taken to create a wide range of different space offering differing activities to different members of the community and links with other existing local parks and open space areas. In this respect the choice and quality of open space offered to local communities in the Central and Wider Impact Zones would be vastly improved resulting in a likely Major Beneficial Impact.

**Crime and Community Safety**

5.4.66 King’s Cross Central would represent a dramatic change to the local environment and the removal of some ‘hotspots’ for criminal activity. The high level of management that would follow the quality of design and landscaping in the proposals and ‘stewardship measures’ described in the Regeneration Strategy are likely to have a Major Beneficial impact on perceptions of the wider King’s Cross area, not just the area within the development boundary.

5.4.67 The effect of enhancing the King’s Cross Central environment, in combination with the other developments in the area is likely to reduce overall crime levels in the area as a whole as the opportunities for criminal activity (vacant premises, unoccupied streets and obscure hiding places) are removed and the image of the area is lifted. Drug and prostitution related crime may be displaced but there is little evidence to show that it is more likely to occur elsewhere in the area than somewhere else in London. Equally construction activity on the site is unlikely to have any greater displacement effect than 2007 levels as very little criminal activity takes place on the site at present. Therefore the effect on King’s Cross can be considered to be Major Beneficial.

5.4.68 The assessment of significance set out above would continue to apply for development of the Main Site only. This is because in relative terms the socio-economic issues raised by the Triangle Site in relation to crime are limited.
### Table 5.4.5 Summary Table of Likely Effects

<table>
<thead>
<tr>
<th>Issue</th>
<th>Likely Effect</th>
<th>Likely Effect without Triangle Site</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Employment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job Creation</td>
<td>Major Beneficial</td>
<td>No significant difference</td>
</tr>
<tr>
<td>Displacement</td>
<td>Minor Adverse</td>
<td>No significant difference</td>
</tr>
<tr>
<td>Local Employment</td>
<td>Moderate Beneficial</td>
<td>No significant difference</td>
</tr>
<tr>
<td>Local Income Levels</td>
<td>Moderate Beneficial</td>
<td>No significant difference</td>
</tr>
<tr>
<td>Local Construction Employment</td>
<td>Minor/Moderate Beneficial</td>
<td>No significant difference</td>
</tr>
<tr>
<td><strong>Housing</strong></td>
<td>Moderate Beneficial (moving to Minor if Social housing numbers became over dominant in the affordable/low-cost proportion)</td>
<td>No significant difference</td>
</tr>
<tr>
<td>Tenure Mix</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>School Capacity</td>
<td>Moderate Adverse</td>
<td>No significant difference</td>
</tr>
<tr>
<td>Educational Performance</td>
<td>Moderate Beneficial (rising to Major if the applicants deliver the higher education and other education links and facilities proposed in the Implementation Strategy)</td>
<td>No significant difference</td>
</tr>
<tr>
<td><strong>Social Capital</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shops and Leisure</td>
<td>Major Beneficial</td>
<td></td>
</tr>
<tr>
<td>Childcare</td>
<td>Negligible/Minor Beneficial (rising to Moderate/Major if facilities were made available to existing local residents)</td>
<td>Would result in loss of proposed creche but no significant impact if alternative provision made on Main Site.</td>
</tr>
<tr>
<td>Community/Leisure Centres</td>
<td>Moderate Beneficial</td>
<td>Would result in loss of proposed community/leisure facility but no significant impact if alternative provision made on Main Site</td>
</tr>
<tr>
<td>Open Space</td>
<td>Major Beneficial</td>
<td>No significant difference</td>
</tr>
<tr>
<td><strong>Crime &amp; Community Safety</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perception and Fear</td>
<td>Major Beneficial</td>
<td>No significant difference</td>
</tr>
<tr>
<td>Incidence of Crime</td>
<td>Major Beneficial</td>
<td>No significant difference</td>
</tr>
</tbody>
</table>
Opportunities for Further Mitigation Measures

5.4.69 King’s Cross Central would result in a major improvement in social and economic conditions in the neighbourhoods that surround it and beyond. The significance of negative impacts on the local population are generally low. With some additional inputs and joint working between the applicants, the Local Authorities and other partners, King’s Cross Central could achieve dramatic regeneration outcomes, addressing negative effects and enhancing positive. In particular:

- Merely beginning work on site would overcome uncertainty. It would also signify the completion of CTRL and the opening of St Pancras International services.

- A construction programme that delivers regular new additions to the physical, social and economic fabric of the area in a managed way that limits disturbance and impact on residents lives would give assurances that the development is likely to be completed in a timely fashion and start to change negative perceptions of the area.

- Given the scale of the King’s Cross Central project and other projects programmed for construction at the same time (including Stratford City and Arsenal) there would be benefits in joint development of a local employment strategy that maximises local take-up at King’s Cross Central but has links into a much wider geographic area than the development site alone.

- The applicants, Local Authorities and other partners should prioritise sustainable long term solutions for GP/healthcare facilities (dealt with in more detail in the Health Specialist Report), childcare for children under five years and primary and secondary education initiatives.

- There would be advantages in the applicants sharing their ideas and experience in design and long term management of the public realm with the Local Authorities, and local communities to encourage optimal integration between King’s Cross Central and the neighbourhoods that surround it.

- The positive impact on school performance could be enhanced by establishing more concrete links between schools and some of the activities on the development.

- There is an opportunity to explore ways of improving community safety and management of the environment, jointly with the Metropolitan Police and the Local Authorities, to ensure King’s Cross Central and adjacent areas provide a safe and welcoming environment.

- A high quality management strategy would ensure the retention of the high quality public realm proposed. The strategy should include ways of managing, public and private areas, including security, cleansing, traffic management, gardening, repairs and information provision. The organisation needed to support such an initiative should aim to employ local people to foster pride and develop knowledge of the development. The Public Realm Strategy and Regeneration Strategy consider this issue further.

- King’s Cross Central would be large enough to act as a catalyst for the creation of an ‘intermediate’ market. Prioritising intermediate provision would signify a number of important positive economic and social changes, including:
  - the creation of a local ‘ladder’ of housing choice;
encourage low and middle income workers to move to jobs in Camden and Islington and other Central London locations;

- help stabilise transience in the local population by providing choice in the housing market.

5.4.70 The timing of interventions is critical to successful regeneration. To date, the Local Authorities and local partnerships have achieved considerable success in improving education performance, increased community safety and reduced crime levels, better health services and more training and job brokerage services. It is important that the momentum gained should not be lost in the intervening period before development begins on King’s Cross Central.

5.4.71 Encouraging and supporting some initiatives early in the development process, within the limited resources available, would deliver and ‘lever in’ significant benefits. These could include:

- supporting employment initiatives that prepare local people for jobs known to be needed on site;
- helping the Education Authorities on childcare and education strategies,
- involvement in local schools,
- Working with the Police on design and community safety and the Local Authorities and local communities on area management initiatives.
- It could also mean lending support to bids for further funding and special programmes.

Summary

5.4.72 The impact of proposed development on people is often the result of a complex mix of intertwined social, economic and physical factors. King’s Cross Central is large enough to have effects on a range of socio-economic factors for residential and working communities across a large part of north London. It would introduce a mix of new residents and employment opportunities that could underpin an economic and social revival of communities that are currently experiencing severe levels of deprivation and exclusion.

5.4.73 The likely effects of King’s Cross Central on socio-economic factors are considered in the Environmental Statement by reference to a largely statistical baseline. Comparisons are drawn with other developments of comparable scale enabling different ‘worst case’ scenarios for employment and population generation to be tested. The assessment makes qualitative judgements on the likely impact on less tangible factors such as crime, educational performance and community capital and considers the impact of choices such as the proportion of affordable/low-cost housing included or the type of education provision made.

5.4.74 The assessment concludes that King’s Cross Central would result in a major improvement in social and economic conditions in the neighbourhoods that surround it and beyond. The significance of negative impacts on the local population would generally be low. Table 5.4.5 summarises the likely effects on socio-economic factors.
5.4.75 The assessment also considers a number of measures that could be taken or joint actions agreed with the Local Authorities and their partners that would enhance the positive impacts to maximise regeneration potential. These range from merely beginning work onsite and considering methods of increasing local employment in the construction phases to promoting new childcare strategies and supporting the Local Education Authorities in establishing stronger higher education links.
5.5 Health

Introduction

5.5.1 This chapter summarises the likely significant effects on health of the proposed King’s Cross Central development during its operational stage. The detailed specialist report is provided in Part 13 of this Environmental Statement. Effects on health at the construction stage are addressed in Part 4.

5.5.2 The appropriate inclusion of an element of health consideration at this stage of the development/application process allows the integration of health issues with other environmental, social and physical impacts. It facilitates the consideration of measures to mitigate impacts on the health of communities occupying the scheme and in surrounding neighbourhoods. It also helps to identify potential health gain opportunities. A wider, social understanding of health is used, in line with the World Health Organisation’s definition of health as “a state of complete physical, mental and social well-being and not merely an absence of disease”.

Methodology and Assessment Criteria

5.5.3 There are few directly comparable assessments within the UK. However, the methodology used is consistent with assessments undertaken for development projects within the UK that have used EIA as a principal information source regarding the effects of the development (e.g. Dibden Bay, Finningley Airport).

Determinants of Health

5.5.4 Nine determinant indicators have been selected, based on the annual Health in London Report (Greater London Authority, 2002), responses to the consultation draft Environmental Assessment Scoping Report and literature review. The correlation between these factors and the causes of deprivation in King’s Cross makes these indicators a good basis for this assessment. The indicators have been further subdivided into those that are predominantly socio-economic factors, and those that are more related to the physical environment, as follows:

<table>
<thead>
<tr>
<th>Socio-economic factors</th>
<th>Physical environment factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unemployment</td>
<td>Air quality</td>
</tr>
<tr>
<td>Ethnicity and unemployment</td>
<td>Road traffic accidents</td>
</tr>
<tr>
<td>Educational attainment</td>
<td>Noise</td>
</tr>
<tr>
<td>Homes judged unfit to live in</td>
<td></td>
</tr>
<tr>
<td>Domestic burglary rate (crime)</td>
<td></td>
</tr>
<tr>
<td>Social capital</td>
<td></td>
</tr>
</tbody>
</table>

Where relevant to local conditions and where information is available, a wider consideration of related issues is made under the indicator headings.
Other health statistics (prevalence of disease, mortality, life expectancy and morbidity rates etc) have also been used to further enhance the baseline assessment and fully understand the health issues within the locality.

Health Services

A review of existing local health services has been undertaken to gain an understanding of current provision and capacity, with a view to assessing the effects the development may have on these services. The services reviewed included: general medical practitioners, dental practices, opticians and pharmacies. Assessment of the full range of services and service needs is limited by information availability.

Population affected/Spatial scope

There is the potential for the development to affect the determinants of health for those people using the new facilities (including those living, working, visiting and socialising in the new area) as well as those people who are members of the existing communities surrounding it. The wards included within the assessment (based on new ward boundaries, from May 2002) are:

- Central Impact Zone: Caledonian, King's Cross, St Pancras and Somers Town Wards
- Wider Impact Zone: Barnsbury, Bloomsbury, Clerkenwell, Cantelowes, Holborn and Covent Garden, Holloway and Regent's Park Wards

Baseline Year

The baseline date for the impact assessment is 2006/2007. Using projections made in the Socio-economic and other Environmental Assessment Reports, it has been possible to estimate changes in local conditions for the relevant determinants by 2006/2007. Where evidence exists the assessment then attempts to link these changes to the health specific indicators discussed earlier. The result is a largely qualitative view of the likely health of local communities in 2006/2007. The assessment also takes account of known changes in health service provision between 2003/4 and 2006/2007.

Approach

This report combines a number of methods to identify and assess potential effects on the health of existing and future communities within the King's Cross area as a result of the development, within the scope described above. These are described briefly below.

- *Socio-economic and other Environmental Assessment Reports.* Within this EIA many of the social, environmental and economic factors (determinants) that affect the health and well-being of individuals and communities have been assessed in great detail. Thus, the findings of these assessments are relevant to the assessment of health and have been summarised and used for baseline and impact assessment.

- *Literature review.* A search has been made of the available literature (including previous health studies and recent research) to provide an evidence base linking changes to the social, environmental and economic determinants with potential effects on health. The full literature review is included in the Health Specialist Report (Part 13).
• **Services search and survey.** The existing range of health services within the Central Impact Zone has been assessed through a website search (www.nhs.uk) and telephone survey to determine available capacity. Information was gained on location, services offered and capacity for new patients.

• **Consultation.** Consultation with members and representatives of the Camden and Islington Primary Care Trusts has been ongoing throughout the preparation of this report to allow for information transfer and cooperation between all parties. Advice has been sought, in particular, on health services provision and capacity, trends in general health/health services, and determinant/health linkages.

**Assessment and Definition of Significance**

5.5.9 The assessment of health impacts distinguishes between direct and indirect impacts and considers negative as well as positive effects. It is important that a distinction is made between impacts on people's health generated directly or indirectly by the development and continuing poor health of existing communities that are amongst the most deprived in the UK.

5.5.10 The Health Specialist report (Part 13) as summarised in this Chapter, systematically describes the expected effects of the development on the determinants and services described in the baseline, within the scope described above. In general, health based statistics are not assessed directly as they have a wide and complex range of contributory factors, many of which are not related to the development. This approach is consistent with other assessments for development projects.

5.5.11 Given the multiple influences on determinants of people's health, it is difficult to distinguish between effects that may result from the development and those that may occur due to other personal, environmental, social or economic influences. Therefore a quantitative assessment has not been attempted. Instead, a qualitative assessment is made, focusing on the potential range of effects and the identification of mitigation measures to address any potential negative effects, and other measures that would promote potential health gain.

5.5.12 The assessment of significance of potential health effects is an area of uncertainty. Given the context of this study and the complex urban environment in which it is situated, it is not possible to accurately predict the magnitude of all potential effects on health resulting from the development. Therefore, given this limitation, significance is estimated in the following way:

i) Identification of the significance of the effects on the individual determinants, taken from Specialist Reports/summary assessment chapters within this Part 5. This assessment will thus be subject to the same assumptions/limitations described in the relevant Specialist Reports that make up the EIA. Where an appropriate assessment of significance is not available in these reports, an estimation of significance is made based on the likely population size affected (an approach analogous to that taken for the Socio-economic assessment, Part 12). Examples of differing levels of significance are provided in Table 5.5.1 below.
Table 5.5.1: Examples of Significance

<table>
<thead>
<tr>
<th>Population Affected</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effects experienced by sub-sections of the local community, e.g. those who undertake a particular activity/use a particular service.</td>
<td>Minor (adverse or beneficial)</td>
</tr>
<tr>
<td>Effects likely across the local community, e.g. within the Central Impact Zone.</td>
<td>Moderate (adverse or beneficial)</td>
</tr>
<tr>
<td>Effects likely to be experienced beyond the site and its immediate locality, into the Wider Impact Zone and potentially beyond.</td>
<td>Major (adverse or beneficial)</td>
</tr>
</tbody>
</table>

2) Where likely significant effects have been identified, further clarification of the potential effects on health have been provided based on the method described in the ‘Merseyside Guidelines for Health Impact Assessment’ described below.

The Merseyside Guidelines

5.5.13 The Merseyside Guidelines were first published in 1998 as one of the first HIA initiatives in the UK and have become widely known and used. Many of the projects using the Guidelines take advantage of their flexibility to tailor the approach appropriate to the project.

5.5.14 The Merseyside Guidelines methodology involves the classification of effects in three different ways: (i) determining the nature of the impact; (ii) assessing its measurability; and (iii) estimating the degree of certainty (risk) of the impact. These principles have been used to identify assessment terminology appropriate to the EIA context of this assessment. Therefore, effects are classified as follows:

- determining the nature of the impact: predicted effects are classified as either positive or negative;
- assessing measurability: as in the Merseyside Guidelines, measurability is defined on a 3-point scale of qualitative, estimable or calculable; these terms are self-explanatory;
- estimating the degree of certainty (risk) of the impact: again a 3-point scale is used following the principles of the Merseyside Guidelines. A scale of likelihood is used (based on the fact that unlikely effects are screened out in Stage 1 of the assessment, see above), with effects termed likely, highly likely and definite. The terms are defined further below:
  - as a guide, ‘likely’ effects generally occur where linkages between the determinant and health effects have been established but where a reasonable level of action is required (e.g. on the part of individuals) to take-up the opportunities available; this term is generally more applicable to socio-economic effects (although not exclusively);
  - ‘Highly likely’ effects are those where linkages between the determinant and health have been established and where the effects assessed do not require individuals (or organisations) to take a particular course of action, for example to pursue new opportunities; this term is generally more applicable to physical environment effects (although not exclusively) and/or effects at a community level;
  - ‘Definite’ effects are inevitable.
The guidelines stress that definite, quantifiable data are in no sense superior to qualitative data.

**Determinant/Health Linkages**

The Health Specialist Report (Part 13) sets out the findings of the literature review and presents the current understanding with regard to linkages between health effects and the determinant indicators.

**Consultations**

The principal consultations regarding the health assessment have been with the Camden Primary Care Trust (PCT) (also representing the Islington PCT and the Kings Cross HIA Steering Group). Comments made during the scoping and subsequent stages in the EIA have been centred around the methodological approach, appropriate baseline data use and availability and appropriate selection of determinants/indicators. The continuation of meetings with PCT representatives, following the initial submission of the consultation draft Environmental Assessment Scoping Report, has enabled issues to be readdressed as the Health Chapter has progressed.

The principal methodological issues have been addressed through considerable literature review, to bring the assessment in line with current practice (albeit that there are few comparable assessments in the UK at the present time). The scoping responses have been incorporated as an information source into the assessment, and determinants/indicators have been developed following literature review (in particular the Greater London Authority’s Health in London publications). These have been the subject of subsequent discussions with PCT representatives, in which the selected determinants have been ratified and added to.

**The Existing Situation**

**Determinants of Health (Socio-economic factors)**

For most of the determinants of health, detail about the existing situation is presented in other sections and specialist reports within the Environmental Statement, and therefore are presented only briefly here (to avoid repetition). Further details are also provided in the Health specialist report (Part 13).

**Unemployment**

The employment/unemployment characteristics of the Central and Wider Impact Zones are set out in Section 5.4 and Part 12. In summary, significant levels of unemployment are prevalent throughout the impact areas in comparison with London averages. Furthermore, those that are unemployed have been so for a proportionally longer period of time.
5.5.21 **Ethnicity and Unemployment**

The ethnic characteristics of the study areas are described in Section 5.4 and Part 12. In summary, an extremely diverse ethnic make up exists in the Central and Wider Impact Zones, with the principal ethnic minority groups being Bangladeshi, African, Chinese and Indian. All-London data indicates that Bangladeshi groups are significantly disadvantaged in employment terms, with unemployment rates more than five times that of White British groups, followed by Black Africans (unemployment over three times that of White British).

5.5.22 **Educational attainment**

The educational attainment characteristics of the Central and Wider Impact Zones are described in Section 5.4 and Part 12. In summary, the results are variable across the Central and Wider Impact Zones, with some schools performing above borough and London averages, and others falling below. However, there has been investment and attention given to educational attainment in recent years through a range of initiatives, which have been shown to be successful. Skills training and related adult education, however, is still relatively poor.

5.5.23 **Proportion of homes judged unfit to live in**

Characteristics of the housing market within the study areas are described in Section 5.4 and Part 12. Details regarding household amenities collected for the 2001 Census give an indication of the housing quality within the study area. In summary:

- overcrowding is above London and England rates in both the Central and Wider Impact Zones (as averages);
- lack of basic amenities varies across the boroughs, with the percentage of most severely lacking properties equalling more than four times the England average and just under twice the London average;
- a prevalence of high-rise accommodation in the area, with large percentages of households living in basement and 5th floor and above accommodation.

5.5.24 Furthermore, the Camden Health Improvement and Modernisation Plan identifies 14,000 dwellings within Camden and Islington as being unfit for habitation.

5.5.25 **Crime**

The crime baseline is described in Section 5.4 and Part 12 in detail. In summary, the data collected indicates relatively high crime rates within Camden and Islington; the rate of offences recorded (per 1000 population) in both boroughs exceeds the England and London averages for all categories of crime. The Camden Central Health Needs Assessment (covering an area beyond that of the Wider Impact Zone) found that 84% of respondents felt that violence affected their local community.

5.5.26 **Social capital**

There are few measurable indicators available to assess social capital, which comprises trust, reciprocity, local identity, civic engagement and community cohesion (Putnam, 1993; cited in Cave et al., 2001)

5.5.27 Whilst there is evidence of strong social capital within small communities within the King's Cross area, there are also significant indications of distrust, animosity and wide
discrepancies between levels of participation and social inclusion, with the gap between the transient and well-established communities likely to be the greatest. With regard to the more physical aspects of social capital (community facilities, described further in Section 5.4) the study areas are generally under-served in terms of the resources and accessibility of community centre accommodation, nursery provision for the under-3s, Muslim meeting places and, in some respects, open spaces.

**Determinants of Health (Physical environment factors)**

**Air quality indicators**

5.5.28 Baseline conditions with regard to air quality are described in Section 5.10 and Part 18. In summary, the London Boroughs of Camden and Islington have already identified potential exceedences of the nitrogen dioxide and PM$_{10}$ objectives and both boroughs have been declared Air Quality Management Areas.

**Road traffic accidents**

5.5.29 Road traffic conditions are described in Section 5.3. With regard to traffic accidents in particular, the data available suggests a higher accident rate in Camden in comparison with the London rate (no data is currently available for Islington). There is a high occurrence of pedestrian accidents in the area, potentially related to the crossing points across the roads increasing the potential for conflicts between cars and pedestrians.

**Noise**

5.5.30 The main sources of noise affecting the site (road and rail traffic) would be significantly altered by 2006/2007 and therefore surveys of the existing situation have not been considered to be appropriate.

**Health based statistics**

**Life expectancy at birth**

5.5.31 ‘Average life expectancy at birth is a summary statistic derived from mortality at all ages’ (Greater London Authority, 2002). As such, the potential influences are vast and would comprise genetic, socio-economic, environmental, lifestyle and amenity influences. In general, life expectancy for men in Camden and Islington is one and a half years less than both the London and national averages; for women however it is approximately 5 months greater compared with the England average.

**Infant mortality rate**

5.5.32 Another summary statistic, infant mortality rate, is again influenced by a variety of factors. Data on infant mortality is available on a borough level basis from the Greater London Authority (2003) document for the periods 1993-1998 and 1996-2001. In summary for both boroughs, the infant mortality rate was considered to be ‘significantly low’ for the 1993-1998 period, but has since risen out of this bracket.

**Proportion of people with self-assessed good health**

5.5.33 Self-assessment data has an important function because it tells us ‘how people are feeling generally and not just whether they have specific conditions’ (Greater London Authority, 2002). Within the Central Impact Zone, the percentage of respondents reporting good
Part 5.5 - Health

5.5.34 Ison (2003a) reports that people living in King's Cross, Somers Town, St Pancras, Thornhill and Holloway wards have higher rates of death from all causes, heart disease, cancer and accidental injury than people in England and Wales. In addition, local admission rates for respiratory diseases are generally higher than average.

5.5.35 Mental health issues are reported to be particularly pertinent to Camden and Islington. Looking at suicide and undetermined injury rates, Camden and Islington ranks second from bottom amongst the 99 health authorities in England.

5.5.36 Tuberculosis (TB) notification is reported by Ison (2003a) to be higher in both Camden and Islington boroughs, compared with London and national averages.

5.5.37 Surveys undertaken of adults and Year 10 schoolchildren and reported by Ison (2003a) reveal a high prevalence of behaviours damaging to health within Camden and Islington boroughs.

5.5.38 Other information from the 2001 Census (including limiting long-term illness, provision of unpaid care) confirms that the health of the King's Cross population is generally below national average.

Health services

5.5.39 Ison (2003a) report that access to primary care healthcare is poor in the King's Cross area, particularly for Black and Minority Ethnic Groups. One of the principal indicators of primary health care capacity is the level of GP services. In the National Patient Survey on various aspects of GP performance, Camden and Islington PCTs performed within the worst 20% of all PCTs for four (Camden) or five (Islington) of the seven questions posed. Within this survey, Islington PCT was situated at the bottom of the worst 20% for 'how long did you wait for a GP appointment?'

5.5.40 Current primary health services in the King's Cross area predominantly cater for the needs of a residential population, with specialist services available for specific local needs (such as sex workers and drug users). Initial surveys of the Central Impact Zone suggest that the area currently contains:

- 9 GP practices, with a total of 15 GPs;
- 12 of these GPs are in practices within the LB Camden Boundary;
- only 3 GPs are located in Islington (in 1 practice);
- 5 practices had additional language capabilities (other than English), including French, Arabic, Greek, Portuguese, Gurjarati and Hindi;
- 4 dental practices;
- pharmacies; and

Health ranged from approximately 65% to 71%, and in the Wider Impact Zone from approximately 65% to 72%; this compares with London and England averages of 71% and 69% respectively. Reporting of 'not good' health ranged from approximately 9% to 12% in the Central Impact Zone and between 8% and 12% within the Wider Impact Zones; these ranges equate to the London and England averages, at 8% and 9% respectively.
5.5.41 The demographic data contained with the Socio-economic report (Part 12) indicates a population of 35,469 within the Central Impact Zone. This equates to approximately 2,365 people per GP, vastly exceeding the national average of 1,800 people per GP.

5.5.42 Indicators confirm that demand for health services is higher in the area, with expenditure on GP prescribed drugs for mental health per patient per practice higher than those in the rest of Camden and Islington. Furthermore, the investigations have revealed a high-prevalence of small GP practices which presents difficulties in providing the range of services demanded by local residents.

5.5.43 One of the principal obstacles to improving health services locally is the difficulty in attracting staff. Camden GP practices and health centres report high vacancy rates, including 16.7% for health visitors (compared to 2.2% for England), 16.2% for midwives (compared to 2.8% for England) and 12.9% for district nurses (compared to 2.2% for England) (Ison, 2003a). Additional difficulties are present in the need to cater for an extremely ethnic diverse population and the specific needs that they represent.

**Baseline 2006/7**

5.5.44 The Socio-economic and other Environmental Assessment Reports have considered all of the factors that influence the determinants selected (with the exception of health services). These have been used as a basis for considering probable local health conditions for the 2006/7 baseline, with suggestions made of the implications for health services. Only summary details are provided below; further information can be found in the relevant specialist reports and/or their summary chapters (within Part 5).

5.5.45 With regard to general borough-wide health, targets and action plans to tackle health inequalities in the area are proposed in the Health Improvement and Modernisation Plans for Camden and Islington (Camden and Islington Health Action Zone, 2002a and 2002b). Whilst improvements are likely to arise from this action, without measures to address the extreme transience within the area, it is unlikely that community health would change significantly.

**Determinants of Health (Socio-economic factors)**

*Unemployment.*

5.5.46 The Socio-economic Report (in Part 12) reports some growth in local employment and possible falls in unemployment. These changes are unlikely to be significant in a wider context however unless population transience is addressed. Similar rates of long-term unemployment are predicted.

*Ethnicity and Unemployment.*

5.5.47 Continuing diversity of Black and Minority Ethnic Groups is expected by 2006/7. To a degree new communities are likely to replace rather than add to existing numbers and proportions of Black and Minority Ethnic unemployed are likely to be similar to current levels.
Educational attainment.

5.5.48 The Socio-economic report (Part 12) concludes that school performance is likely to remain at equivalent levels to current indicators.

Proportion of homes judged unfit to live in.

5.5.49 The area has seen variable improvements in housing stock with extensive housing renewal and refurbishment programmes being undertaken in some areas. However, other stock remains in a poor condition and private rented stock shows little evidence of recent investment. There is little increase in local social or other affordable housing numbers projected for 2006/7.

Crime.

5.5.50 The Socio-economic report (Part 12) concludes that crime rates are unlikely to fall dramatically by 2006/2007, particularly for housing areas.

Social capital.

5.5.51 The less measurable elements of social capital are expected to follow the trends described above as well as those for general health, and therefore predictions are for no significant change. Changes to the more physical components of social capital (community facilities and open space) have been predicted in Part 12, generally following a pattern of no net change.

Determinants of Health (Physical environment factors)

Air quality indicators.

5.5.52 The Air Quality and Climate Change assessment predicts the continuation of current poor air quality conditions which may be harmful to health (principally at roadside locations). This is likely to remain the case, even with action plan measures (developed by the Local Authorities in response to the Air Quality Management Area designations) in place.

Road traffic accidents.

5.5.53 Given the lack of detailed information and analysis regarding road traffic accidents, it is not possible to provide a quantitative estimate of the 2006/7 baseline. However, for the purposes of the assessment that follows (which is qualitative), the relationship between the Camden road traffic accident rate and that for London is not expected to change significantly.

Noise

5.5.54 Road traffic noise levels (at 10m from the road) at various locations in the vicinity of the site are predicted (in Part 17) to range from 67.8 dB_{A10.1\ hour} to 76.7 dB_{A10.1\ hour}, taking into account permitted development schemes.

General health

5.5.55 Given that deprivation levels, employment and income are not expected to show dramatic improvements between 2003/4 and 2006/7 it is unlikely that the health of the population in 2006/7 would differ significantly from the current situation.
5.5.56 A greater sense of poor health amongst local residents, compared to London averages, reflects statistical evidence of greater numbers of people suffering long term limiting illnesses and other disease based indicators. However, it may also reflect negative perceptions of construction and traffic impacts on health due to the area’s position on the road network and the extent of CTRL construction work currently taking place. These two factors are likely to continue throughout the next four years, with construction work on CTRL and related Underground facilities tailing off towards 2007. Therefore it is unlikely that perceptions of poor health in 2006/7 would dramatically differ from perceptions now.

5.5.57 If any change in the health profile is to occur it is expected to be one of declining health. Based on recent trends this is most likely to occur for tuberculosis and mental health (Fahey and Ison, pers comm).

Health service needs

5.5.58 The potential change in health service needs has been assessed based on the predictions for the determinants of health above. Overall the health profile is expected to change little, or possibly decline, in the area, putting the same or marginally increased pressure on an already over-capacity service.

Proposals

5.5.59 As explained in Part 3.2 of this Environmental Statement, the proposed development is defined by Development Specifications for the Main Site and the Triangle Site incorporating a number of Parameter Plans. The Development Specifications define and fix the parameters of the development, and form the basis for the EIA.

Assumptions made about the Proposals

5.5.60 The assumptions made during the assessment of the determinants of health (in other sections and specialist reports within the Environmental Statement) are carried through into this health report (which is based on those assessments). Thus, the proposals assessed and assumptions made are those forming the basis of the contributing chapters (socio-economic, air quality, noise and transport). For provision of health services, the assessment is based on population numbers predicted during the socio-economic analysis.
**Worst Case**

5.5.61 Given that the health assessment principally relies on the assessments of its determinants, there is not a single definitive ‘worst case’. Therefore the assessment follows the ‘worst case’ approaches adopted for each of the other assessments. Further details are provided in Part 13 and the relevant specialist reports/summary chapters.

**Assessment of Effects**

**Assessment of Effects on Determinants of Health (Socio-economic factors)**

5.5.62 The table below summarises the assessment of the effects on health, associated with changes in the socio-economic determinants of health as a result of the operational phase of the development. Further detail and explanation is provided in the Health Specialist report (Part 13). Only operational effects are described; construction effects are considered in Part 4 of this Environmental Statement.

**Table 5.5.2: Summary Assessment of Effects on Health (Socio-economic factors)**

<table>
<thead>
<tr>
<th>DETERMINANT</th>
<th>EFFECT OF DEVELOPMENT</th>
<th>SIGNIFICANCE OF EFFECT ON HEALTH</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Unemployment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job Creation</td>
<td>Major Beneficial</td>
<td>Nature: Positive</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Measurability: Qualitative</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Risk of Occurrence: Likely</td>
</tr>
<tr>
<td>Displacement of Existing Business</td>
<td>Minor Adverse</td>
<td>Nature: Negative</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Measurability: Qualitative</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Risk of Occurrence: Likely</td>
</tr>
<tr>
<td>Local Employment</td>
<td>Moderate Beneficial</td>
<td>Nature: Positive</td>
</tr>
<tr>
<td>(with potential for enhancement)</td>
<td></td>
<td>Measurability: Qualitative</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Risk of Occurrence: Likely</td>
</tr>
<tr>
<td>Low Income Levels</td>
<td>Moderate Beneficial</td>
<td>Nature: Positive</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Measurability: Qualitative</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Risk of Occurrence: Likely</td>
</tr>
<tr>
<td>Ethnicity and employment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job Creation</td>
<td>Major Beneficial</td>
<td>Nature: Negative</td>
</tr>
<tr>
<td></td>
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<tr>
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<td>Displacement of Existing Business</td>
<td>Minor Adverse</td>
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<td>Measurability: Qualitative</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Risk of Occurrence: Likely</td>
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</table>
## Part 5.5 - Health

<table>
<thead>
<tr>
<th>DETERMINANT</th>
<th>EFFECT OF DEVELOPMENT</th>
<th>SIGNIFICANCE OF EFFECT ON HEALTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educational Attainment</td>
<td>Effects on school capacity Moderate Adverse (new facilities/resources could address these effects, see below)</td>
<td>Nature: Negative Measurability: Qualitative Risk of Occurrence: Likely (on worst case basis)</td>
</tr>
<tr>
<td>Effects on Educational Performance</td>
<td>Moderate Beneficial (with potential to rise, see below)</td>
<td>Nature: Positive Measurability: Qualitative Risk of Occurrence: Likely</td>
</tr>
</tbody>
</table>

If proposals deliver new high quality higher education and other education links and facilities, the overall significance of effect on health through educational attainment could rise to **Major Beneficial, Positive, Qualitative, and Likely**.

<table>
<thead>
<tr>
<th>DETERMINANT</th>
<th>EFFECT OF DEVELOPMENT</th>
<th>SIGNIFICANCE OF EFFECT ON HEALTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proportion of Homes Judged Unfit to Live In</td>
<td>Direct provision of new, good quality housing Minor to Moderate Beneficial</td>
<td>Nature: Positive Measurability: Qualitative Risk of Occurrence: Likely</td>
</tr>
<tr>
<td>Creation of housing ladder and other, wider indirect benefits</td>
<td>Minor to Moderate Benefits</td>
<td>Nature: Positive Measurability: Qualitative Risk of Occurrence: Likely</td>
</tr>
<tr>
<td>Crime</td>
<td>Reduction in crime/fear of crime and enhanced perceptions of King’s Cross Major Beneficial</td>
<td>Nature: Positive Measurability: Qualitative Risk of Occurrence: Likely</td>
</tr>
<tr>
<td>Social Capital</td>
<td>Impact on social capital through mix and range of community and leisure facilities Major Beneficial</td>
<td>Nature: Positive Measurability: Qualitative Risk of Occurrence: Likely</td>
</tr>
<tr>
<td>Increase in exercise opportunities</td>
<td>Minor Beneficial</td>
<td>Nature: Positive Measurability: Qualitative Risk of Occurrence: Likely</td>
</tr>
</tbody>
</table>

### Summary and Cumulative Effect on Socio-economic Determinants of Health

5.5.63 In the context of the Merseyside Guidelines for Health Impact Assessment (Scott-Samuel *et al.*, 2001) approach, the preceding assessments are mostly assessed as **positive, qualitative and likely**. The reason for this is four-fold:

- the development would bring about beneficial effects with regard to the determinants of health considered- as an association has been made between poor performance of these determinants and poor health, it is considered that improvements in the determinants is likely to lead to improvements in health;
for this type of assessment, quantitative predictions of disease prevalence are not possible – it is not an epidemiological study;

- each individual determinant has the potential to influence health; however, the range of contributory factors to health and well being ensure that effects on individual determinants can only be assessed in terms of likely outcomes – not definite outcomes;

- whilst opportunities can be created, and take-up can be encouraged, it is essentially each individual's responsibility to embrace what is on offer and realise the potential.

5.5.64 In considering cumulative effects, inducement of a housing ladder within the local communities would encourage the establishment of a stable residential community within the area. This would have direct positive effects on factors such as social capital but, more importantly, would encourage the maintenance of health gains deriving from other socio-economic features to remain with the resident population. Without this, the dominance of social housing in the area means that those benefiting from employment and other opportunities within the area may not have the opportunity to stay and invest in the community/social capital. A graduated housing ladder with mixed tenure is seen as an important element in achieving sustainable urban renewal and maximising the potential health gain of the community. Investment in other public services would promote the attractiveness of local facilities and prevent outward migration.

5.5.65 Therefore, assessing the cumulative impact of the proposals on the socio-economic related indicators, the development is likely to have **positive** health effects on an individual and wider community basis. The predicted positive effect can be further classified as **qualitative** and **highly likely**.

5.5.66 The sphere of influence of the developer is limited in comparison with the range of issues present within the local communities which may promote or prevent uptake of opportunities associated with the socio-economic determinants of health. Therefore the leadership and active involvement of the Local Authorities, health services, police and other service providers would be important in optimising the potential benefits on offer.

**Assessment of Effects on Determinants of Health (Physical environment factors)**

5.5.67 The table below summarises the assessment of the effect on health, associated with changes in the physical environment determinants of health as a result of the operational phase of the development. Further detail and explanation is provided in the Health Specialist report (Part 13). Again, only operational effects are included; Part 4 can be referred to for construction phase effects.
Table 5.5.3: Summary Assessment of Effects on Health (Physical environment factors)

<table>
<thead>
<tr>
<th>DETERMINANT</th>
<th>EFFECT OF DEVELOPMENT</th>
<th>SIGNIFICANCE OF EFFECT ON HEALTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Quality</td>
<td>Impacts on air quality indicator concentrations due to operational traffic</td>
<td>Minor Adverse Nature: Negative Measurability: Qualitative Risk of Occurrence: Likely (on worst case basis)</td>
</tr>
<tr>
<td></td>
<td>Impacts on air quality indicator concentrations due to heating plant</td>
<td>Minor Adverse Nature: Negative Measurability: Qualitative Risk of Occurrence: Likely (on worst case basis)</td>
</tr>
<tr>
<td>Road Traffic Accidents</td>
<td>Potential for reduction in Road Traffic Accident rate</td>
<td>Moderate Beneficial Nature: Positive Measurability: Qualitative Risk of Occurrence: Highly likely</td>
</tr>
<tr>
<td>Noise and Vibration</td>
<td>Traffic noise and plant/machinery effects (where prediction is possible)</td>
<td>Negligible N/A</td>
</tr>
</tbody>
</table>

Assessment of Effects on Health Services

5.5.68 Whilst the applicants envisage accommodating some new health provision within King’s Cross Central, there is no detail at this stage and no specific commitments about particular new or enhanced facilities. The Main Site Development Specification paras 3.25 – 3.29 identifies the types of facilities that could be provided on the Main Site and para 6.15 states that thresholds for the phased delivery of health and other uses would be agreed with the LPA when outline permission is granted. Thereafter the level, mix, timing and delivery of new provision would be matters for agreement, as plans come forward for each major phase (para 3.26). The Triangle Site application does refer specifically to new medi-centre facilities, but at this stage the applicants have in effect designed a flexible ‘box’, up to 3,500 square metres in floorspace, within which various uses and facilities could be provided, to be determined later.

5.5.69 The sense in this flexible approach is self-evident. It means that the applicants, local authorities and other service providers would have scope to decide later on the precise form of new provision within the Main Site, in particular, armed with the best information at the time.

5.5.70 The principal effect of the development on health care services would be the introduction of a new residential and working population to the area requiring local health care provision. The size of these populations has been estimated in the Socio-economic Report (Part 12) as:

- the housing proposed in the Planning Applications would introduce a population of between 3,338 and 4,678 people on the Main Site rising to between 3,785 and 5,125 people if the Triangle site is developed;
- it is estimated that total direct employment for the whole site development (completed development) would range from 22,287 to 26,485 full time equivalent jobs. Accounting for displacement and multiplier effects a range of between 24,773 and 29,496 full time equivalent jobs could be created.

5.5.71 In the context of current under-capacity/performance, in the absence of new facilities or resources to address the (principally GP) needs arising from King’s Cross Central, there would be adverse effects of moderate significance, given the size of the population potentially affected.

5.5.72 This scenario is considered unlikely, given that:
- “primary health care and support facilities” are listed at para 13.27 of the Main Site Development Specification as one of the types of facilities that could be provided;
- para 6.15 of the same document refers to agreeing thresholds for the phased delivery of health and other uses;
- the Triangle Site application makes specific reference to new medi-centre facilities.

5.5.73 The new population of up to 5,125 people would require up to 3 GPs on the basis of the national average, or up to 4 GPs on the basis of the aspirational target of 1 GP per 1,500 people (from Fahey and Ison, pers comm.). To put this in context, recent experience of new primary care facilities in London suggests that a facility of 1,000 sqm could accommodate a 4 GP practice together with other ancillary services.

5.5.74 Thus, the proposed development could readily accommodate new provision, with the floorspace applied for, to meet the needs arising from the development. Any new provision could be on the Triangle Site and/or the Main Site.

5.5.75 The accommodation and provision of new facilities to meet the new demands arising from the development would counteract the ‘moderate adverse’ effect identified above and produce some benefits for the neighbouring population. Indeed, any new/enhanced facility is likely to reduce the current level of undersupply for existing residents.

5.5.76 The development would bring other positive effects on health service provision. Firstly, the additional connectivity through the site linking two currently divided communities allows for efficiencies in existing service provision through consolidation and rationalisation. Secondly, the regeneration activities in the area are likely to improve conditions (such as safety, housing etc) that would attract and help with retention of staff – this is currently a major issue within the area, where vacancy rates for health professionals are well above the England averages.

5.5.77 Thus, in summary, the effect can be assessed as follows:
- Additional pressure on health services already operating beyond capacity: *Moderate adverse* significance (*Negative, Qualitative* and *Highly Likely*) without new provision/investment to meet the needs of the development.
- Effects of *Minor to Moderate Beneficial* significance (*Positive, Qualitative* and *Highly Likely*) with new provision/investment to meet the needs of the development, plus associated (wider) benefits through a more favourable people per GP ratio beginning to redress the capacity issues currently encountered.
- Increased recruitment and retention and opportunities for rationalisation: *Minor to Moderate Beneficial* significance (*Positive, Qualitative* and *Likely*)
- The cumulative effects on primary care health service provision could be of Moderate Beneficial significance (Positive, Qualitative and Highly likely)

**Effects without The Triangle Site**

5.5.78 The assessments set out above would not change should the Triangle Site not be developed. There is sufficient D1 floorspace on the Main Site to accommodate any needs arising from the new development and its population.

**Effects with the King's Cross Station Enhancement**

5.5.79 The King’s Cross Station Enhancement alongside King’s Cross Central, is not likely to lead to any significant additional/cumulative effects on local health services.

**Opportunities for Further Mitigation Measures**

5.5.80 Mitigation/enhancement measures that would have an effect on determinants of health are set out in the relevant parts of other topic-based chapters, for example noise, air quality and socio-economics. They are therefore not repeated here.

5.5.81 Part 12 of the ES recommends that the applicants, Local Authorities and other partners should prioritise facilities sustainable long term solutions for a number of community facilities and services and these include GP/healthcare facilities. This recommendation takes account of the Part 13 findings summarised above.

5.5.82 The long-term provision of facilities for the additional working/visitor population is a related issue and an opportunity for further enhancement. GP services are traditionally allocated based on residential information. However, there is a growing trend for walk-in centres, both NHS and privately run (as well as some partnerships between the two), providing access to consultations without an appointment. The location of these facilities varies from shopping centres and railway stations to hospitals and airports. Monitoring of patients utilising the Newham NHS Walk-in Centre has revealed that approximately 40% are made up of non-resident workers, students, tourists and visitors to the area (NHS Information Authority, accessed 27 January 2004). There are currently no facilities of this nature within the locality of the development; however, the increase in resident and working populations may stimulate development of this kind, funded either by the NHS or privately.

5.5.83 Capitalising on the opportunities for rationalisation of services presented by the greater connectivity afforded by the development would be a matter primarily for consideration for the PCTs. The wider Health Impact Assessment that is underway may assess these opportunities in more detail.
Monitoring

5.5.84 Details of monitoring pertaining to each of the relevant determinants of health are provided in the appropriate Specialist Reports.

Summary

5.5.85 The potential for health effects to arise as a result of the operation of the development has been considered within the context of this Environmental Statement. This is one of the first development projects to address health aspects in this way, with the aim of identifying opportunities for health gain within the surrounding communities and/or addressing any potential negative effects during the planning stage.

5.5.86 Health effects have been identified based on the predicted impact on selected determinants of health. The determinant indicators selected for this study include socio-economic determinants (unemployment, ethnicity and unemployment, educational attainment, proportion of homes judged unfit to live in, crime, social capital), and physical environment determinants (air quality indicators, road traffic accidents, and noise). A literature review has been undertaken to demonstrate the current understanding with regard to linkages between these determinants and specific health effects. In addition, an assessment has been made of the potential effect on health services within the locality of the development.

5.5.87 Currently, the site and surrounding area is performing poorly with regard to many of the determinants of health. For example:

- unemployment levels are high, particularly among certain ethnic groups,
- educational attainment is variable, with adult skills being particularly poor (with knock-on effects for unemployment and income)
- many people are living in poor quality, unsuitable housing, with few options available for progression through the housing market
- crime levels are relatively high, as is fear of crime
- social capital is variable: the resources and accessibility of community facilities are often limited.
- air quality indicators are being exceeded
- traffic accidents are generally high
- health services are operating beyond capacity

This is supported by health based statistics which show, overall, a lower than average standard of health in the area.

5.5.88 Through the development of the Kings Cross Central proposals, adverse effects on health are identified through:

- some loss of jobs through displacement of existing businesses;
- effects on school capacity (though new facilities/resources would address these effects);
very small changes in air quality indicator concentrations;
additional pressure on health services already operating beyond capacity (though new provision/investment to meet the needs of the development would address these effects).

5.5.89 At the same time, positive effects on health are predicted through:

- new local employment, supported by stimulation of a graduated housing market to maintain community stability;
- positive impacts on local income levels;
- effects on educational performance within local schools;
- the provision of new, good quality housing;
- the creation and management of new high quality environments, to reduce crime and the fear of crime and enhance perceptions of King’s Cross;
- the provision of new community and leisure facilities and opportunities for exercise;
- increased connectivity between Camden and Islington, by opening the site up and providing new routes and spaces with appropriate pedestrian priority;
- new opportunities for health service rationalisation;
- regeneration of the area is likely to help attract and retain staff for health services within the locality.

5.5.90 Securing the optimum health benefits at community wide level would depend upon maintaining community stability through measures to make people able to stay in the area (e.g. graduated housing ladders) and to make people want to stay in the area (facilities, schools, pleasant, safe environments). These represent the cumulative effects of the project.

5.5.91 Where potential negative effects have been identified there are generally measures in place or wider benefits to ensure minimal residual impact:

- minor effects on business displacement are outweighed by other positive employment effects of greater significance; and
- negative effects with regard to educational and health service provision can be addressed within the D1/D2 space provided, with the net/residual effects likely to be positive (of up to major significance, if the development provides a range of new facilities/enhancements).

5.5.92 The minor effects on air quality described reflect poor background air quality; the additional pollutant loading from the development would be very small.

5.5.93 Overall, the development is projected to lead to beneficial effects on the health of its new residents and surrounding communities, through positive effects on the determinants of health.
5.6 Nature Conservation

Introduction

5.6.1 This chapter summarises the likely significant effects on nature conservation of the proposed King’s Cross Central development during the operational stage. Effects on nature conservation during the construction stage are addressed in Part 4. The detailed specialist report, that addresses both the construction and operational stages, is provided at Part 14.

Methodology and Assessment Criteria

5.6.2 For the purposes of this assessment of nature conservation effects, King’s Cross Central comprises the Main Site and the Triangle Site. The study area for the assessment of nature conservation effects of the King’s Cross Central proposals incorporates the proposed development site itself (comprising the proposals in the planning applications for both the Main Site and the Triangle Site) and its environs, extending to approximately 1km from the boundary of the site. The site and its surroundings are described in Part 2.1 of this Environmental Statement. The site largely comprises previously developed land in an urban setting and its ecology and nature conservation status reflect this.

5.6.3 The assessment of nature conservation effects follows the guidance set out in:

- *Guidelines for Baseline Ecological Assessment*,
  Institute of Environmental Assessment (1995)
- *Guidelines for Ecological Impact Assessment*  
  (Amended Pilot - November 2002)  
  Institute of Ecology and Environmental Management (2002)

5.6.4 A desk-study was undertaken whereby information was sought from:

- English Nature;
- Environment Agency;
- Greater London Authority;
- British Waterways;
- London Wildlife Trust;
- British Trust for Ornithology;
- London Bat Group; and
- London Natural History Society.
5.6.5 A number of further surveys were commissioned by the Applicants to provide baseline ecological data. These were surveys of:

- Aquatic plants, habitats and invertebrates;
- Terrestrial invertebrates
- Amphibians;
- Bats;
- Reptiles;
- Breeding birds; and
- Trees.

**Definition of Significance**

5.6.6 The matrix set out in Table 5.6.1 has been used as a guide in assessing the significance of impacts. This matrix is based on guidance issued by the Institute of Ecology and Environmental Management (2002).

**Table 5.6.1 Significance of Ecological Impacts**

*(based on Institute of Ecology and Environmental Management, 2002)*

<table>
<thead>
<tr>
<th>Impact Magnitude</th>
<th>Value of Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>International</td>
</tr>
<tr>
<td>Major Negative</td>
<td>Critical</td>
</tr>
<tr>
<td>Negative</td>
<td>Major - Minor</td>
</tr>
<tr>
<td></td>
<td>Neutral</td>
</tr>
<tr>
<td>Positive</td>
<td>Major - Minor</td>
</tr>
<tr>
<td>Positive</td>
<td>Critical</td>
</tr>
</tbody>
</table>

5.6.7 The following levels of significance are used in the assessment of effects:

**Major:** effects of the development of greater than local scale

**Moderate:** effects of the development that may be judged to be important at a local scale (i.e. in the local planning context)

**Minor:** effects that are of low importance in the decision making process

5.6.8 All of the above are considered to be material to a planning judgement. A further category of ‘negligible’ is used to describe effects which are of such low importance that they are not material.

5.6.9 The IEEM methodology also refers to an additional level of significance, ‘Critical’ (Table 5.6.1) which relates to major effects on features of international, national or, in some cases, regional importance.
Part 5.6 – Nature Conservation

Consultations

5.6.10 As explained in Part 1.4 there has been an extensive programme of consultations relating to the Kings Cross Central proposals, based around a series of consultation documents, including the EIA’s Consultation Draft Scoping Report. The responses to the consultation draft Scoping Report relevant to Nature Conservation are summarised in this section.

5.6.11 English Nature confirmed that the consultation draft scoping report considered all the main conservation issues of relevance for the Environmental Assessment (letter of 7 May 2003) and strongly endorsed the suggested habitat creation for black redstart.

5.6.12 The Environment Agency’s response (letter of 15 May 2003) made no specific reference to matters of ecology or nature conservation, referring only to matters relating to water.

5.6.13 The response from the Biodiversity Team of the Greater London Authority (letter of 14 March 2003) referred to the need to refer to the North London Link and the now greatly disturbed Kings Cross Goods Yard Sites of Borough Importance for Nature Conservation Grade 1. They stated that there would need to be regular annual breeding surveys for black redstarts for the duration of the construction period.

5.6.14 The response from the London Borough of Camden (letter of 3 June 2003) referred to the need for surveys of fish and aquatic life in the Regent’s Canal, the habitat qualities of the canal edge extending into Camley Street Natural Park, and non-breeding birds. The response also stated that the assessment should acknowledge the species diversity and importance of ‘brownfield’ sites in the urban environment. Additional mitigation should be provided through seeking habitat creation for species other than the black redstart; re-colonisation opportunities for species, including terrestrial invertebrates, that existed prior to the CTRL work commencing; and an examination of the opportunities presented for temporary nurseries or habitats by the long term phasing of the development. Given the scale and long period of development, the London Borough of Camden stated that surveys and monitoring studies are vital to ensure the effectiveness of mitigation measures. The response suggests that annual breeding surveys for black redstarts and other indicator species should be undertaken for the duration of the construction period.

5.6.15 The response from the London Borough of Islington (11 June 2003) stated that the report seemed to be a reasonable assessment of the impacts which need to be assessed although a more pro-active approach to mitigation could be taken. The potential for provision of bat roosts is referred to. Reference is also made to the potential for off-site mitigation on, for example, the ‘linear land’.

5.6.16 The London Wildlife Trust responded to "Principles for a Human City" (letter of 3 April 2003), commenting on the unique sustainable development opportunities offered by Kings Cross Central. The Trust also commented that it considered the 2001 ‘Principles’ document to underestimate the potential for enhancement of the natural environment. Consultations have continued with the Trust on a range of topics including the integration of Camley Street Natural Park with the Kings Cross Central development and the design and procurement of a new Camley Street Visitor Centre.

5.6.17 The Trust has subsequently responded to “A Framework for Regeneration”. It considered the proposals to be both imaginative and exciting but were concerned at the possible threats to Camley Street Natural Park from the much larger numbers of people who would be living, working in, or visiting the area once the development was complete. Particular issues referred to by the Trust were:
Part 5.6 – Nature Conservation

- the impact of the development on Camley Street Natural Park. The proposals appeared to the Trust to indicate a lack of new green open space within the development area. Camley Street could not provide for recreational use by high numbers of visitors. Additional green open space should be provided;

- the proposed new pedestrian bridge across the Regent's Canal to Camley Street Natural Park should not connect directly with the park which has opening and closing hours and should not be considered as part of the accessible public realm;

- possible extension to the Park;

- the impact of the development on the Regent’s Canal. The existing ecological value of the canal must be maintained, and ideally opportunities taken as part of the development to enhance its ecological value;

- the contribution that development could make to biodiversity in the King’s Cross Area such as benefits to wildlife of national, regional and local importance, a strong network of open spaces, appropriate design of the new built and unbuilt environment could provide the framework for improving existing ecological value. For example, the provision of a network of brown or rubble/locally sourced aggregate roofs within the development could provide suitable habitat for black redstarts. The potential for an ‘Eden-project’ type facility in the old gas holders was stated to be of particular interest;

- offer of help to build a new visitor centre and education centre at the Park.

The Existing Situation

5.6.18 The key nature conservation features (comprising sites, habitats and species) which have been identified within and in the vicinity of the site, and which are relevant in the context of the King’s Cross Central proposals, are set out in Table 5.6.2. Where appropriate these are shown on Figure 5.6.1.
### Table 5.6.2 Key Nature Conservation Features

<table>
<thead>
<tr>
<th>Feature</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sites</strong></td>
<td></td>
</tr>
<tr>
<td>Camley Street Natural Park</td>
<td>Local Nature Reserve</td>
</tr>
<tr>
<td></td>
<td>Site of Metropolitan Importance</td>
</tr>
<tr>
<td>Regent’s Canal</td>
<td>Site of Metropolitan Importance</td>
</tr>
<tr>
<td>North London Link and Kings Cross Goods Yard</td>
<td>Site of Borough Importance Grade I</td>
</tr>
<tr>
<td></td>
<td>(but much of the interest within King’s Cross Central lost as a result of the CTRL works)</td>
</tr>
<tr>
<td>Railside Land (in Islington)</td>
<td>Site of Borough Importance Grade I</td>
</tr>
<tr>
<td></td>
<td>(but much of the interest within King’s Cross Central lost as a result of the CTRL works)</td>
</tr>
<tr>
<td>Bingfield Park, Islington</td>
<td>Site of Local Importance</td>
</tr>
<tr>
<td><strong>Habitats</strong></td>
<td></td>
</tr>
<tr>
<td>Wasteland</td>
<td>London Biodiversity Action Plan</td>
</tr>
<tr>
<td>Canals</td>
<td>London Biodiversity Action Plan</td>
</tr>
<tr>
<td>Canalsides and Railsides</td>
<td>Camden Biodiversity Action Plan</td>
</tr>
<tr>
<td>Waterways and Wetlands</td>
<td>Camden Biodiversity Action Plan</td>
</tr>
<tr>
<td>The Built Environment</td>
<td>Camden Biodiversity Action Plan</td>
</tr>
<tr>
<td><strong>Species</strong></td>
<td></td>
</tr>
<tr>
<td>Common pipistrelle</td>
<td>EC Habitats Directive Annex IV</td>
</tr>
<tr>
<td></td>
<td>Wildlife and Countryside Act Schedule 5</td>
</tr>
<tr>
<td></td>
<td>UK Biodiversity Action Plan</td>
</tr>
<tr>
<td></td>
<td>London Biodiversity Action Plan</td>
</tr>
<tr>
<td></td>
<td>Camden Biodiversity Action Plan</td>
</tr>
<tr>
<td>Black redstart</td>
<td>Wildlife and Countryside Act Schedule 1</td>
</tr>
<tr>
<td></td>
<td>London Biodiversity Action Plan</td>
</tr>
<tr>
<td>House sparrow</td>
<td>London Biodiversity Action Plan</td>
</tr>
<tr>
<td></td>
<td>Camden Biodiversity Plan</td>
</tr>
<tr>
<td></td>
<td>Red list</td>
</tr>
<tr>
<td>Starling</td>
<td>Red list</td>
</tr>
<tr>
<td>Linnet</td>
<td>Red list</td>
</tr>
<tr>
<td>Lesser black-backed gull</td>
<td>Amber list</td>
</tr>
<tr>
<td>Herring gull</td>
<td>Amber list</td>
</tr>
<tr>
<td>Stock Dove</td>
<td>Amber list</td>
</tr>
<tr>
<td>Dunnock</td>
<td>Amber list</td>
</tr>
<tr>
<td>Blackbird</td>
<td>Amber list</td>
</tr>
<tr>
<td>Smooth newt</td>
<td>Wildlife and Countryside Act Schedule 5 (partial protection)</td>
</tr>
<tr>
<td>Common frog</td>
<td>Wildlife and Countryside Act Schedule 5 (partial protection)</td>
</tr>
<tr>
<td>Common toad</td>
<td>Wildlife and Countryside Act Schedule 5 (partial protection)</td>
</tr>
</tbody>
</table>
**Feature Status**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Odonata – Dragonflies and Damselflies</td>
<td>Camden Biodiversity Action Plan</td>
</tr>
<tr>
<td>Solitary bee <em>Hylaeus cornutus</em></td>
<td>Nationally Notable (a)</td>
</tr>
<tr>
<td>Solitary wasp <em>Crossocerus distinguendus</em></td>
<td>Nationally Notable (a)</td>
</tr>
<tr>
<td>Hoverfly <em>Pipizella virrens</em></td>
<td>Nationally Notable (a)</td>
</tr>
<tr>
<td>Beetle <em>Longitarsus parvulus</em></td>
<td>Nationally Notable (b)</td>
</tr>
<tr>
<td>Beetle <em>Podagrica fuscicornis</em></td>
<td>Nationally Notable (b)</td>
</tr>
<tr>
<td>Beetle <em>Hippodamia variegata</em></td>
<td>Nationally Notable (b)</td>
</tr>
</tbody>
</table>

**Nature Conservation Status and Biodiversity Action Plans**

5.6.19 The nature conservation status, degree of protection and relevant UK, London and Camden Biodiversity Action Plans for these species and habitats are described in Part 14.

**Changes subsequent to Surveys**

5.6.20 Most of the King’s Cross Central ecological surveys were carried out during the summer of 2001, during the early stages of site establishment and clearance for Channel Tunnel Rail Link construction. Thus the surveys represent the position prior to any significant rail link works. Those works have comprised demolition, site clearance, major groundworks and construction of new railway lines and associated structures, including tunnels, embankments and bridges. These works have had effects on the ecology of the site since the surveys were undertaken. However, given the continually changing conditions at the site, and the safety issues associated with surveys of construction sites, further surveys were not considered to be worthwhile nor were they necessary to identify and assess the nature conservation effects of King’s Cross Central.

**Baseline 2006/7**

5.6.21 The CTRL works are predicted to have no significant long-term effects on the Regent's Canal, or Camley Street Natural Park. On the other hand, almost the whole of the Goods Yard section of the North London Link and King’s Cross Goods Yard Site of Borough Importance, together with the Copenhagen Junction section of the Railside Land Site of Borough Importance in Islington, has already been lost to the CTRL construction works. The CTRL works will result in the creation of new landforms in the form of embankments adjacent to the King’s Cross Central site.

5.6.22 The changes within the designated sites will be a reflection of changes in the habitats for which they are important i.e. wasteland and railsides. No significant changes are predicted for canals and canalsides, waterways and wetlands and the built environment within the site.

5.6.23 No changes are predicted which would affect the low level use of the site by common pipistrelle bats.
5.6.24 One pair of black redstarts was confirmed breeding within the Exel Logistics depot in 2001, with an additional male in the south of the site. The black redstart survey carried out in 2002 suggested that whilst breeding was possible that year, and the location at which breeding was confirmed in 2001 had not in itself been affected, the increased levels of disturbance and physical change had rendered the site less suitable for this species. Whilst this may remain the case throughout the remainder of the CTRL works, it is possible that the species may again breed within the site, and in assessing the impacts of the King’s Cross Central development on the basis of the worst case, it is assumed that one pair does breed at the site.

5.6.25 Use of the site by house sparrow and the other Red-list bird species starling and linnet, and the Amber-list species stock dove, dunnock and blackbird is likely to be reduced as a result of the CTRL works. Lesser black-backed gull and herring gull may continue to nest on the roof of the Granary complex.

5.6.26 The land north of Goods Way, which contained ponds supporting a population of smooth newts, has been used as part of a CTRL construction site. Newts were removed from this area and introduced to ponds elsewhere on the CTRL route, and also to Camley Street Natural Park (outside that part of the park included within the King’s Cross Central site), in advance of the loss of the ponds. There is no requirement for replacement of these ponds on completion of the CTRL works. Thus the King’s Cross Central site will not contain any suitable breeding ponds for smooth newts following completion of the CTRL construction. No further changes which would affect amphibians at the site are predicted.

5.6.27 No changes which would affect Odonata are predicted.

5.6.28 An area of invertebrate interest in the Triangle Site has been lost as a result of the CTRL works.

5.6.29 The plan at Figure 5.6.2 shows the predicted baseline conditions at 2006/2007.

5.6.30 The desk study and survey information which is summarised in this section, taking into account the changes which are predicted to 2006/2007, primarily as a result of the CTRL works, forms the baseline for the assessment of the ecological and nature conservation impacts of the King’s Cross Central proposals.

Proposals

Assumptions made about the Proposals in addition to those set out in the Development Specifications

5.6.31 The following assumptions are made in this assessment of nature conservation effects:

- in assessing any nature conservation benefits which may arise from features of the development, for example the provision of green/brown roofs and the planting proposals for the public realm, only the minimum provision set by the development specifications has been assumed;
- in considering the likely baseline condition of the site in 2006/2007, it has been assumed that areas vacated by the CTRL contractors which remain temporarily unused will be managed to maintain a visually tidy appearance.
Worst Case

5.6.32 The assessment of effects is carried out on the basis of the likely ‘worst case’. The likely ‘worst case’ in this context is the development scenario which would have the greatest adverse impact on nature conservation and which could be implemented within the limits set out in the Development Specifications, taking into account the agreed mitigation. Thus the assessment assumes that the design of the proposals would:

- include minimum soft landscape provision shown on the Landscape Proposals Plans;
- provide only the minimum committed “greening” in building design;
- give rise to the maximum shading of the canal and Camley Street Natural Park by new buildings permitted by the proposed maximum building heights.

Assessment of Effects

Predicted effects of Development

5.6.33 The characteristics of the proposed development (as defined by the Development Specifications and the agreed mitigation) have been considered, and the potential for effects, adverse and beneficial, assessed. The significance of any effects has been determined in terms of the importance/value and sensitivity of the sites, habitats and species which would be affected in a national, regional, and local context.

5.6.34 In this section of the Environmental Statement the potential impacts of the proposals on the key nature conservation features of the site are considered under two categories:

- permanent land-take; and
- operational effects.

5.6.35 The effects of the construction works on nature conservation interests are described in Part 14, and are summarised in the Construction section (Part 4).

5.6.36 The permanent land-take is the area taken up by the development. Whilst this occurs during the construction phase, it is a permanent effect and does not form part of the construction impacts *per se* which are generally temporary effects.

5.6.37 Given that the development programme would be phased over a number of years, after the first 3 years, parts of the site would be occupied and operational whilst other areas are under construction. The full programme may extend over a period of some 12-15 years or longer.

5.6.38 Implementation of the development involving the demolition of some, and works to other, existing buildings, and construction of new buildings, would change the nature of the built environment from one where construction is largely of stone, brick, tile and similar natural materials, to one where synthetic materials or natural materials which have been subject to a high degree of processing predominate.

5.6.39 The assessment of effects is carried out on the basis of the likely ‘worst case’ as explained above.
5.6.40 Table 5.6.3 summarises the identified likely nature conservation impacts of the proposals. As explained in Part 4, the assessment of impacts and their significance has been undertaken considering the effects of construction (identified in Part 4), operations and permanent land-take together, for each part of the site and its nature conservation receptors. This mirrors the approach adopted in the Specialist Report, Part 14.

5.6.41 It must be appreciated that there is considerable overlap between the various interest features described and thus the same impacts are often repeated through the table. For example the Regent’s Canal is a Site of Metropolitan Importance which also includes ‘Canals’, ‘Canalsides and Railsides’ and ‘Waterways and Wetlands’ Biodiversity Action Plan habitats. Similarly the North London Link and King’s Cross Goods Yard Site of Borough Importance also includes ‘Wasteland’ and ‘Canalsides and Railsides’ Biodiversity Action Plan habitats, which in turn provide habitats for black redstart and terrestrial invertebrates. Thus the same impacts are reported for several different features.

Table 5.6.3 Summary of identified likely nature conservation impacts

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value of Feature</th>
<th>Impact of Permanent Landtake/Construction/Operation Stages</th>
<th>Overall Impact</th>
<th>Significance of Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sites</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Camley Street Natural Park</td>
<td>Metropolitan</td>
<td>Land-take: Negative</td>
<td>Negative</td>
<td>Moderate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Construction: Negative</td>
<td>Negative</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Operational: Negative</td>
<td>Negative</td>
<td></td>
</tr>
<tr>
<td>Regent’s Canal</td>
<td>Metropolitan</td>
<td>Land-take: Negative</td>
<td>Negative</td>
<td>Moderate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Construction: Negative</td>
<td>Negative</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Operational: Negative</td>
<td>Negative</td>
<td></td>
</tr>
<tr>
<td>North London Link and Kings Cross Goods Yard</td>
<td>Borough</td>
<td>Land-take: Neutral</td>
<td>Neutral</td>
<td>Negligible</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Construction: Neutral</td>
<td>Neutral</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Operational: Neutral</td>
<td>Neutral</td>
<td></td>
</tr>
<tr>
<td>Railside Land (in Islington)</td>
<td>Borough</td>
<td>Land-take: Neutral</td>
<td>Neutral</td>
<td>Positive</td>
</tr>
<tr>
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<td>Construction: Neutral</td>
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</tr>
<tr>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Construction: Neutral</td>
<td>Neutral</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Operational: Neutral</td>
<td>Neutral</td>
<td></td>
</tr>
<tr>
<td>Habitats</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wasteland</td>
<td>Metropolitan/Borough</td>
<td>Land-take: Negative</td>
<td>Negative</td>
<td>Moderate</td>
</tr>
<tr>
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<td></td>
<td>Construction: Negative</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Operational: Neutral</td>
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Part 5.6 – Nature Conservation

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King’s Cross Central
<table>
<thead>
<tr>
<th>Feature</th>
<th>Value of Feature</th>
<th>Impact of Permanent Landtake/Construction/Operation Stages</th>
<th>Overall Impact</th>
<th>Significance of Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Canals</strong></td>
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<td>Moderate</td>
</tr>
<tr>
<td>Borough</td>
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<td><strong>Construction:</strong> Negative</td>
<td>Negative</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Operational:</strong> Negative</td>
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<td></td>
</tr>
<tr>
<td><strong>Canalsides and Railsides</strong></td>
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</tr>
<tr>
<td></td>
<td></td>
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<td>Negative</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Operational:</strong> Negative</td>
<td>Negative</td>
<td></td>
</tr>
<tr>
<td><strong>Waterways and Wetlands</strong></td>
<td>Borough</td>
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<td>Negative</td>
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</tr>
<tr>
<td></td>
<td></td>
<td><strong>Construction:</strong> Negative</td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
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</tr>
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<td></td>
<td><strong>Construction:</strong> Negative</td>
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<td></td>
<td><strong>Operational:</strong> Negative</td>
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<tr>
<td><strong>Species</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
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<tr>
<td></td>
<td></td>
<td><strong>Construction:</strong> Neutral</td>
<td>Neutral</td>
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</tr>
<tr>
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<td></td>
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</tr>
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<td>Negative</td>
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</tr>
<tr>
<td><strong>House sparrow</strong></td>
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</tr>
<tr>
<td></td>
<td></td>
<td><strong>Construction:</strong> Negative</td>
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</tr>
<tr>
<td></td>
<td></td>
<td><strong>Operational:</strong> Negative</td>
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</tr>
<tr>
<td><strong>Red-list birds</strong></td>
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</tr>
<tr>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
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<td><strong>Amber-list birds</strong></td>
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<tr>
<td></td>
<td></td>
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<td>Negative</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Operational:</strong> Negative</td>
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</tr>
<tr>
<td><strong>Amphibians</strong></td>
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</tr>
<tr>
<td></td>
<td></td>
<td><strong>Construction:</strong> Neutral</td>
<td>Neutral</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Operational:</strong> Neutral</td>
<td>Neutral</td>
<td></td>
</tr>
</tbody>
</table>
### Part 5.6 – Nature Conservation

#### Feature Value of Feature Impact of Permanent Landtake/Construction/Operation Stages Overall Impact Significance of Impact

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value of Feature</th>
<th>Impact of Permanent Landtake/Construction/Operation Stages</th>
<th>Overall Impact</th>
<th>Significance of Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Odonata – Dragonflies and Damselflies</td>
<td>Borough</td>
<td>Land-take: Neutral Construction: Neutral Operational: Neutral</td>
<td>Neutral Negligible</td>
<td>Negligible</td>
</tr>
<tr>
<td>Terrestrial Invertebrates</td>
<td>Borough</td>
<td>Land-take: Negative Construction: Negative Operational: Neutral</td>
<td>Negative Moderate</td>
<td>Moderate</td>
</tr>
</tbody>
</table>

5.6.42 Although a number of individual impacts of the proposals have been identified and are set out in the table, in reality the main effects largely arise from the inevitable land take of the proposals resulting in loss of “wasteland” habitats with consequent effects on species associated with such habitats.

**Effects without the Triangle Site**

5.6.43 Depending on the CTRL completion proposals, there is the potential that some of the interest of the Triangle Site could recover post 2006/7, and in so far as this is the case, the effects of the King’s Cross Central proposals without the Triangle Site would be reduced to a degree. However, in the event that the Triangle Site was not developed, there would be no change which would materially alter the assessment of the significance of the ecological and nature conservation effects of the King’s Cross Central proposals.

**Effects with King’s Cross Station Enhancement**

5.6.44 The section of the King’s Cross Central site in the vicinity of the sites proposed for the King’s Cross Station Enhancement is of negligible nature conservation interest and in this respect, there would be no cumulative impact on nature conservation interests should the projects go forward together.

**Opportunities for Further Mitigation Measures**

5.6.45 As explained earlier in this section, some measures to mitigate adverse effects have been adopted as part of the proposals and have been taken into account in assessing the likely nature conservation impacts. The degree of a number of impacts could be further reduced if further mitigation measures were adopted. Such measures are identified in the Nature Conservation Specialist Report at Section 14 of this Environmental Statement and would be considered in the further detailed development of the proposals. In summary these are as follows:

**Camley Street Natural Park**

- Assisting with the provision of the new visitor centre at the park.
Regent’s Canal/Canalsides

- Implementation of measures (some of which are off-site) identified in the King’s Cross Opportunity Area Planning and Development Brief and the King’s Cross Canal Action Plan. Their implementation would depend upon co-operation with and action by British Waterways.

North London Link/Railside land/Wasteland/Built Environment

- There is commitment to provision of green/brown roofs (or equivalent systems) on a minimum of 15% of the area of new buildings within the Main Site and to the creation of a ‘habitat area’ in the Triangle Site. Any increase in the area of such provision above this minimum would be beneficial. Other potential measures which could be implemented include vertical green/brown habitat walls and other habitat features on buildings, and aggregate based habitat around infrastructure facilities (e.g. gas governor, substation, etc) which would provide habitat for wildlife characteristic of “wasteland” sites.

- No indication of the timing of such habitat provision or its distribution across the site is given. In so far as timing is concerned, then the earlier in the programme the better. However, this should not be at the expense of long term effectiveness if this could be better served by later provision which was better related spatially.

- Consideration could be given to the management of the site boundary with the CTRL in the north of the site. If the King’s Cross Central and CTRL land were sympathetically managed then an area of some ecological value could be created. However management of the CTRL embankments is outside the Applicants’ Control.

- Consideration could also be given to the potential for the use of parts of the site not programmed for immediate development to provide temporary habitat areas. It is likely that opportunities for such habitat provision would be limited. Further consideration could be given during detailed design of the initial works.

Species

Breeding birds

- In addition to provision of green/brown roofs on buildings etc, black redstart nest sites could be provided on suitable structures.

Bats

- Bat roosts could be provided in new bridge structures over the canal and in structures associated with the gas governor.

Terrestrial invertebrates

- In addition to provision of green/brown roofs on buildings etc specific habitat features such as rubble mounds and beds of pollen and nectar rich plant species could be provided.
Monitoring

5.6.46 Where measures are implemented to mitigate adverse ecological effects of development, it is important that their effectiveness is monitored. This is particularly the case for development which is phased over time since the detailed design and management can be adapted in the light of the results of monitoring. The results of monitoring are also valuable in the wider development of techniques for future application.

5.6.47 In the case of King’s Cross Central the mitigation proposed is specifically targeted at the creation of elements of wasteland habitat in the form of green/brown roofs. In addition to general monitoring of the establishment and development of the habitat, monitoring of characteristic species would be recommended. These should include as a minimum, black redstart and invertebrates typical of wasteland habitats.

Summary

5.6.48 The King’s Cross Central site largely comprises previously developed land in an urban setting and its ecology and nature conservation status reflect this. Following an initial desk study, a number of surveys were commissioned by the Applicants to provide baseline ecological data.

5.6.49 Most of the King’s Cross Central ecological surveys were carried out during the summer of 2001, during the early stages of site establishment and clearance for Channel Tunnel Rail Link construction. Thus the surveys represent the position prior to any significant rail link works. The desk study and survey information, taking into account the changes which are predicted to 2006/2007, primarily as a result of the CTRL works, forms the baseline for the assessment of the ecological and nature conservation impacts of the King’s Cross Central proposals.

5.6.50 Where practicable, where potential negative impacts have been identified, means to mitigate those impacts have been incorporated into the design of the proposals. The effectiveness of the proposed mitigation has been taken into account in the assessment of the significance of impacts. Opportunities for further mitigation measures have also been identified.

5.6.51 Table 5.6.4 summarises the likely nature conservation impacts of the proposals. The table reflects consideration of the effects of construction (identified in Part 4), operations and permanent land-take together, for each part of the site and its nature conservation receptors.
Table 5.6.4 Summary of identified likely nature conservation impacts

<table>
<thead>
<tr>
<th>Feature</th>
<th>Significance and nature of Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sites</strong></td>
<td></td>
</tr>
<tr>
<td>Camley Street Natural Park</td>
<td>Moderate negative</td>
</tr>
<tr>
<td>Regent’s Canal</td>
<td>Moderate negative</td>
</tr>
<tr>
<td>North London Link and Kings Cross Goods Yard</td>
<td>Negligible</td>
</tr>
<tr>
<td>Railside Land (in Islington)</td>
<td>Minor positive</td>
</tr>
<tr>
<td>Bingfield Park, Islington</td>
<td>Negligible</td>
</tr>
<tr>
<td><strong>Habitats</strong></td>
<td></td>
</tr>
<tr>
<td>Wasteland</td>
<td>Moderate negative</td>
</tr>
<tr>
<td>Canals</td>
<td>Moderate negative</td>
</tr>
<tr>
<td>Canalsides and Railsides</td>
<td>Moderate negative</td>
</tr>
<tr>
<td>Waterways and Wetlands</td>
<td>Moderate negative</td>
</tr>
<tr>
<td>The Built Environment</td>
<td>Moderate negative</td>
</tr>
<tr>
<td><strong>Species</strong></td>
<td></td>
</tr>
<tr>
<td>Common pipistrelle</td>
<td>Negligible</td>
</tr>
<tr>
<td>Black redstart</td>
<td>Moderate negative</td>
</tr>
<tr>
<td>House sparrow</td>
<td>Minor negative</td>
</tr>
<tr>
<td>Red-list birds</td>
<td>Minor negative</td>
</tr>
<tr>
<td>Amber-list birds</td>
<td>Minor negative</td>
</tr>
<tr>
<td>Amphibians</td>
<td>Negligible</td>
</tr>
<tr>
<td>Odonata – Dragonflies and Damselflies</td>
<td>Negligible</td>
</tr>
<tr>
<td>Terrestrial Invertebrates</td>
<td>Minor negative</td>
</tr>
</tbody>
</table>

5.6.52 Although a number of individual impacts of the proposals have been identified and are set out in the table, in reality the main effects largely arise from the land take of the proposals resulting in loss of “wasteland” habitats with consequent effects on species associated with such habitats.

5.6.53 In the event that the Triangle was not developed, there would be no change which would materially alter the assessment of the significance of the ecological and nature conservation effects of the King’s Cross Central proposals.

5.6.54 The section of the King’s Cross Central site in the vicinity of the site for the King’s Cross Station Enhancement is of negligible nature conservation interest and there would be no cumulative impact on nature conservation interests should the projects go forward together.
5.7 Water Resources

Introduction

5.7.1 This chapter summarises the likely significant effects on water resources of the proposed King’s Cross Central development during its operational stage. It addresses hydrological, flood risk, water quality, surface water drainage and groundwater issues. Effects on water resources at the construction stage are addressed in Part 4. The detailed specialist report, addressing both the construction and operational stages, is provided at Part 15 of this Environmental Statement.

5.7.2 Foul drainage and water supply are covered as part of Urban Services (Part 11) and ecological aspects of water resources are assessed under Nature Conservation (Part 14). In Part 11 the site infrastructure and proposed utilities are outlined. Parameter Plan KXC018 shows on-site utilities, including some aspects of water supply and drainage.

Methodology and Assessment Criteria

5.7.3 The assessment comprised:

- a site survey;
- reviewing historical and existing data including reports, maps, surveys and information available on the Internet;
- review of existing drainage information and proposals as part of the Channel Tunnel Rail Link works;
- identification of hydrological, hydrogeological, flood risk and drainage issues;
- consultation with statutory and key non-statutory bodies;
- consultation with the design team including obtaining predictions of discharges;
- obtaining water quality data from the Environment Agency;
- assessment of impacts (during construction and operation), taking into account mitigation included in the proposals;
- identification of possible further mitigation measures and options where appropriate;

Definition of Significance

5.7.4 The following definitions of significance are used:

- Major – effects of the development of greater than local scale.
- Moderate – effects of the development that may be judged to be important at a local scale (i.e. in the local planning context).
- Minor – effects that are of low importance in the decision making process.
Negligible – effects that are below normal levels of perception and are not considered material.

The following terms are used to identify the time-scale of impacts:

- Short-term, <12 months
- Medium term, 1–5 years
- Long term, +5 years

**Relevant Standards**

Requirements related to flood risk, surface water drainage and water quality and ground water quality are primarily included in the following:

- the Environment Agency produces Indicative Floodplain maps for the UK, which show the areas at risk of flooding due to fluvial and tidal events;
- adoption criteria imposed by both drainage authorities and planning authorities for urban drainage systems require that the ground is not flooded for a 1 in 30 year return period, as stated in "Sewers for Adoption (WRc 2001);
- the Environment Agency classifies water quality in rivers and in some canals including the Regent’s Canal, using the General Quality Assessment scheme (GQA). These range from Grade A (very good quality) to Grade F (very polluted rivers);
- water quality of controlled waters including rivers and aquifers is protected under the Water Resources Act (1991) and the Anti-Pollution Works Regulations (1999). British Waterways also have their own restrictions on works adjacent to their waterways for water quality and engineering reasons;
- the Environment Agency classifies geological strata according to their potential to provide water supplies, i.e. Major, Minor or Non-Aquifer.

**Consultations**

Consultation with Thames Water Utilities Ltd has taken place and as a starting point it was agreed that any flows discharged to the combined sewer system should not exceed the agreed existing maximum combined flows. Thames Water Utilities Ltd have undertaken a feasibility study, including hydraulic modelling, to confirm the capacity of the existing sewers to accommodate the proposed flows and calculations outlining the existing surface water flows have been agreed. The Environment Agency have advised that, should surface water be discharged to combined sewers (as will be the case), then the Agency would not require on-site attenuation to be provided and would not require any reduction in discharge to the sewers.
5.7.8 Both the Environment Agency and London Borough of Camden have expressed their wish to encourage the use of Sustainable Urban Drainage Systems. Taking these aspirations into account, the proposals for the Main Site are to achieve a combined (storm and foul) flow to the existing combined sewers of at least 10% less than existing maximum allowable combined discharge calculated on the principle of equivalent discharge (2547 l/s) (see Main Site Development Specification para 3.40). This would be achieved by reducing surface water runoff by sustainable means. Some reduction would be achieved by the use of green/brown roofs, which would form a minimum of 15% of the area of roofs of new buildings within the Main Site. For the Triangle Site the new drainage infrastructure provided would achieve a peak stormwater discharge to the existing sewers of no more than 67 l/s which is 10% less than the existing, maximum allowable discharge, calculated on the principle of equivalent discharge (74 l/s). Foul water discharge would be to the York Way sewer (see Triangle Site Development Specification para 3.26).

**Existing Situation**

5.7.9 The existing topography of the Main Site is fairly flat, rising gently at a gradient of about 1 in 100 in a northerly direction from a level of +17mOD at King's Cross/St. Pancras to +27.5m OD adjacent to the line of the CTRL embankment. Within this overall profile are local level changes of up to 5 metres, a legacy of the canal and railway developments of the 19th Century. The Triangle Site is bordered by the East Coast Main Line and the Thameslink 2000 Line and York Way and slopes upwards from north to south giving a level change of approximately 5 metres.

5.7.10 There are two strategic sewers serving the site: the Camden Sewer running north to south through the site, and the Fleet Sewer running across the south-west corner. Both are combined sewers carrying both storm and foul flows. The Camden Sewer feeds into the Fleet Sewer just downstream of the site. A third, deep strategic sewer, the Middle Level Sewer, lies just north of the site and runs approximately east to west at a depth of 15m.

5.7.11 The area of the Main Site north of the canal discharges solely to the Camden Sewer. An existing network of track drains and drainage associated with former buildings is recorded and is known to have discharged into the Camden Sewer via several existing connections. The majority of these track drains have already been abandoned. However this former drainage regime provides the basis for future discharges to be assessed.

5.7.12 The area of the site south of the canal was a highly urbanised area, comprising residential, commercial and industrial buildings and roads. Although a significant number of buildings have already been demolished, and hard standings and levels removed and levels changed, the former drainage regime forms the basis for assessment of future discharges, based upon the principle of equivalent discharge.

5.7.13 The Triangle Site was, prior to the CTRL works, partially covered by railway sidings. Despite this area being covered in ballast there were substantial under-track drainage networks which discharged to the Mid Level Sewer. This run-off regime is again the base situation which has been used to assess proposed discharges from the development to the sewer system.
5.7.14 Calculations have been undertaken to estimate the pre-development storm-water discharge to the sewer system, and agreed with Thames Water. The pre-development existing maximum allowable discharge to the combined sewer system (storm-water and foul) has been calculated at approximately 2.5 cumecs (2547 l/s) for the Main Site. For the Triangle Site the existing maximum allowable stormwater discharge has been calculated as 74 l/s.

5.7.15 The closest surface water body to the site is the Regent’s Canal, which crosses the site approximately west-east. Drainage from the site is predominantly to the local sewer network with no discharges being apparent to the canal. British Waterways maintain the canal. The Environment Agency has some responsibility for water quality and flow issues.

5.7.16 The water level of the canal to the west of Pancras lock is at approximately +23mOD and +21mOD to the east, with a freeboard of approximately 0.3m. Water levels fluctuate by approximately 100mm and are controlled by side weirs at each lock. There is a trade discharge consent for cooling water into the Regent’s Canal approximately 250m east of Maiden Lane Bridge. British Waterways hold two water abstraction licences within 250m of the site for surface water abstraction and six more within 1000m.

5.7.17 There is a pond in Camley Street Natural Park, which performs a local drainage function and is in direct hydraulic connectivity with the Regent’s Canal, having two sections of open water connection.

5.7.18 The site lies outside of any indicative floodplain, the nearest river being the Thames which lies 3km to the south.

5.7.19 Water chemical quality for the last decade for the Regent’s Canal is generally ‘poor’. Biological quality is also ‘poor’. Nitrate concentrations are ‘low’ and phosphate concentrations are ‘high’ to ‘very high’.

5.7.20 An Envirocheck Report for the site of July 2002 registered seven pollution incidents within 500m of the King’s Cross Central site; all were Category 3, minor incidents.

5.7.21 The site is underlain by up to 5m of Made Ground overlying 15 to 40m of London Clay, a non-aquifer. Beneath this lies the Lambeth Group with up to 22m of clays, silts, sands and gravels (Non-aquifer/minor aquifer). This overlies up to 5m of Thanet Sand in hydraulic continuity with an undefined depth of chalk, acting as a major aquifer. Water levels within the chalk aquifer are at about –39m AOD, flowing in a southerly direction and having a current rate of rise of approximately 0.3m/year (January 2003). Groundwater quality of the chalk aquifer is good and it is used for water supply throughout the region. There is one groundwater abstraction licence within 1000m of the site.

5.7.22 Within the Made Ground there is a limited perched water table, which is probably not continuous across the site. The perched groundwater is generally contaminated as a result of previous industrial activities (see Part 16: Soils and Contamination).

Baseline 2006/7

5.7.23 CTRL construction will make a number of permanent changes to the topography including a new large embankment carrying the CTRL main line and demolition of the viaduct carrying York Way. Changes to the existing drainage regime will include local re-routing of the Camden Sewer in the northern part of the site and new connections to some existing sewers. Re-routing of York Way, Goods Way and Pancras Road will also
require relocation of the sewers that run beneath these roads. Local re-routing of the Fleet Sewer will be a requirement of the Thameslink 2000 proposals.

5.7.24 As part of the CTRL works, the existing Midland Mainline bridge over the Regent’s Canal will have been widened by approximately 10m.

**Proposals**

5.7.25 As explained in Part 3.2 of this Environmental Statement, the proposed development is defined by Development Specifications for the Main Site and the Triangle Site incorporating a number of Parameter Plans. The Development Specifications define and fix the parameters of the development, and form the basis for the EIA.

*Assumptions made about the proposals in addition to those set out by the Development Specifications*

5.7.26 The following assumptions have been made in addition to Parameters set by the Development Specifications:

- the regulatory authorities including the Environment Agency, Thames Water and local planning authority would perform their normal function in maintaining appropriate discharge or abstraction limits and other water quality aspects;
- the detailed design of drainage systems would meet adoptable standards and basement construction would resist water ingress;
- for extreme rainfall events (larger than 1 in 30 return period) surface ponding of water would be permitted such that critical facilities would not be adversely affected.

**Worst Case**

5.7.27 The assessment has been undertaken for the ‘worst-case’ as follows:

- assuming maximum discharge from the site to existing public sewers consistent with commitments to reduce overall combined storm and foul discharge to the existing combined sewer from the Main Site to 10% below the agreed maximum allowable combined discharge and, for the Triangle Site, to reduce discharge of stormwater to 10% below the agreed existing maximum allowable discharge;
- assuming maximum flooding within the site due to rainfall events (i.e. a drainage system designed to adoptable standards only, with no further provision to reduce frequency of surface ponding)

**Assessments of Effects**

5.7.28 Following is a description of the impacts related to water resources for the entire King’s Cross Central development comprising the Main Site and the Triangle Site during the operational stage.
Predicted Effects of Development

5.7.29 The surface water drainage system would be designed to the current adoptable (i.e. acceptable) performance standards so surface flooding would be avoided for a 1 in 30 year rainfall event. Ponding of surface water would take place for rainfall events of greater magnitude than this and the optimum locations for this would be considered at the detailed design stage. The design of the drainage system would ensure that road and car-parking areas would be preferentially affected and critical facilities would not be affected. The impact would therefore be short term, adverse and of minor significance.

5.7.30 The proposed 10% decrease in total combined (storm and foul) peak discharge to the existing combined sewers from the Main Site and the 10% reduction in stormwater discharge from the Triangle Site would decrease the risk of flooding from sewers. In addition the existing flow constriction in the Camden Sewer would also be removed, and the overall effect would be to provide some minor improvement of the local system. Therefore the impact would be long term, beneficial and of minor significance. The risk of flooding from surface watercourses would not be affected by the King’s Cross Central proposals.

5.7.31 The proposed amenity water features would be closed systems supplied with re-circulated treated water. Any limited overflow would be to the public combined sewer system via the on-site foul network and within the discharge limits for the site. The impact of these features would therefore be of negligible significance.

5.7.32 A decrease in discharge to the combined sewers would result in an increase in available sewer capacity and decreased frequency of overflows to watercourses via Combined Sewer Overflows. The road drainage system would be served by petrol interceptors to prevent hydrocarbons from entering. The overall impacts on water quality are therefore assessed as long term, beneficial and of minor significance.

5.7.33 Pollutants in overland flow on site may be washed into the Regents Canal during an extreme rainfall event causing surface water pollution. This would be avoided by appropriate site levels and edge protection resulting in negligible effects.

5.7.34 The proposals seek to encourage more boats to moor along the canal adjacent to the site. Any discharges to the canal from boats would be regulated by British Waterways as at present. The affect would be a movement of pollution related to the availability of new mooring locations rather than an overall increase. However, related to the baseline for the site itself the impact would be long term, adverse and of minor significance.

5.7.35 Across the site, water would soak into the ground from permeable areas causing possible contaminant migration. However, the proposed remediation of the site combined with a reduction of infiltration of water would result in beneficial impacts of minor significance.

**Effects without the Triangle Site**

5.7.36 If the Triangle Site were not developed, then the effects would not be significantly different from those stated above.
5.7.37 In the absence of the Triangle Site the reduction in stormwater discharges and any changes in water quality would not be significant since the allowable and proposed discharges are small when compared to the Main Site development.

**Effects with King’s Cross Station Enhancement**

5.7.38 The operational impacts of King’s Cross Central alongside the Kings Cross Station Enhancement would not be significantly different than for the King’s Cross Central site alone since the quantum of development and discharge for the station enhancement would be very small in comparison with King’s Cross Central as a whole.

**Opportunities for Further Mitigation Measures**

5.7.39 Further decreases in surface water discharge to the sewer system could be provided by increased use of Sustainable Urban Drainage Systems (SuDS). The Environment Agency generally encourage SuDS to be used wherever possible, with the aim of returning site run-off to its greenfield rate. SuDS may include ponds and swales (grassy ditches used to convey and infiltrate water), permeable paving, green/brown roofs and rainwater harvesting. As discussed in the assessment, a commitment has been made for at least 15% of the new buildings within the Main Site to have such green/brown roofs. Other SuDS measures could be considered as follows:

- permeable paving could be used to infiltrate water into the ground. This could be feasible for completely remediated areas of the site on permeable soils but the clay nature of the soil beneath the Made Ground is likely to limit the application of infiltration drainage systems;

- rainwater harvesting (whereby rainwater is collected from roofs or other surfaces and used to supplement water supply from the mains), could also be considered. This could reduce the run-off discharged to the sewers and reduce water supply required from the mains for non-potable uses. Some treatment may still be required;

- the design event of the surface water drainage system should be considered. It may be possible to design the drainage system for a greater return period than the 1 in 30 year event in order to mitigate surface ponding. This would require additional on-site attenuation, or alternatively, design of the system in conjunction with SuDS measures to reduce the risk of ponding that would occur at greater return periods.

5.7.40 The issues discussed above with regard to reducing the discharge of surface water to the combined sewer could be achieved in part by discharging a proportion of surface water to the Regent’s Canal. This could provide a sustainable solution for the site as it would reduce the combined sewer system from periodic influxes of water and return the water to the environment. Any future assessment of this option would require discussion and commercial agreement with British Waterways and the approval of the Environment Agency to establish the terms and acceptability of any discharge, whether or not surface water attenuation would be required prior to discharge to the canal and the licensing terms related to any discharge consent.
Monitoring

5.7.41 The Environment Agency regularly sample the canal water and this would continue.

Summary

5.7.42 The drainage system would be designed so as not to cause any surface ponding on the ground during a 1 in 30 year event or less. For more extreme events, non-building areas such as roads and car parks would be preferentially ponded, such that critical facilities would not be affected. The impacts of ponding of water on the site by rainfall would be a short-term effect and minor adverse.

5.7.43 A 10% reduction in discharges to the public combined sewer system is proposed compared to existing flows for the Main Site and a 10% reduction of stormwater flows is proposed for Triangle Site. The risk of flooding of nearby areas from sewers would be reduced as a result. This would be a long-term change in risk with minor beneficial impact.

5.7.44 Decreased flows to sewers could also impact on water quality in watercourses due to reduced combined sewer overflows. This would result in a long-term change with minor beneficial impact on water quality.

5.7.45 The proposed amenity water features, including rills and fountains, would be closed circulating systems of treated water, with any overflows to the public combined sewers within the agreed discharge constraints for the site. The impacts would be negligible.

5.7.46 Water quality of the canal could be affected by an increased number of moored boats. This would be regulated by British Waterways and could result in a long term minor, adverse impact locally, although any increase in pollution at the site would be offset by a corresponding decrease elsewhere as a result of boat re-location.

5.7.47 Groundwater quality could be impacted by water soaking into the ground causing long-term migration of contaminants. However, remediation of contaminated ground would result in this being a minor positive impact.

5.7.48 Further environmental benefits could be obtained if surface water were drained to the canal rather than the sewer system (this would require regulatory approval); if SuDS were applied to a greater extent within the site and if the drainage system were designed for a return period higher than 1 in 30 years. These issues can be considered further by means of feasibility studies during detailed design.

5.7.49 If the Triangle Site is not developed, the effects of the Main Site alone would not be significantly different from those of the whole King’s Cross Central site.

5.7.50 With the King’s Cross Station Enhancement, the cumulative effects would not be significantly different.
5.8 Soils and Contamination

Introduction

5.8.1 This chapter summarises the likely significant effects relating to soils and contamination of the proposed King’s Cross Central development during its operational stage. Effects at the construction stage are addressed in Part 4. The detailed specialist report, addressing both the construction and operational stages, is provided as Part 16 of this Environmental Statement.

5.8.2 The past history of the site has resulted in some contamination of areas of ground and groundwater. The extensive site investigations for the CTRL work provide a clear indication of the effect and nature of contamination and groundwater conditions over most of the site (See Figure 5.8.1).

5.8.3 The proposed development would involve excavation and earthworks for foundations, basements and utility and drainage trenches, and earthworks associated with achieving the finished levels of the development. There may also be excavations associated with historic canal basins.

5.8.4 It is likely that some ground remediation would be required as part of the King’s Cross Central redevelopment. As with all developments further detailed site investigation may be required to inform the detailed design of structures and underground services/drainage. However, sufficient information is currently available about the site and the proposals to assess the ‘likely significant effects’ of the scheme.

Methodology and Assessment Criteria

5.8.5 The EIA methodology for soils and groundwater has included the following stages:

- Site visit
- Baseline (including description and evaluation)
- Identification of predicted effects for the ‘worst case’ scenario taking into account mitigation measures included in the proposals
- Assessment of significance
- Identification of further opportunities for mitigation

Definition of Significance

5.8.6 Assessments of significance have been undertaken using the Contaminated Land Exposure Assessment (CLEA) methodology and other appropriate risk assessment methodologies (SNIFFER and CONSIM).
5.8.7 The following significance definitions are used in this section:

Major - effects of the development of greater than local scale

Moderate - effects of the development that may be judged to be important at a local scale (i.e. in the local planning context).

Minor - effects that are of low importance in the decision making process

Negligible effects are those that are below normal levels of perception and are therefore not material.

5.8.8 The above descriptors are applied to both adverse and beneficial effects.

Consultations

5.8.9 Consultations have been held with CTRL regarding existing conditions and CTRL construction, with the London Boroughs of Camden and Islington Environmental Health Officers, and the Environment Agency.

The Existing Situation

5.8.10 The site has been subject to extensive investigation as part of the CTRL works. The coverage of the previous site investigation reports is indicated in Figure 5.8.1. The applicants have also undertaken additional work to better define the work required in the remediation of the former diesel depot. The reports reviewed have been sufficient to inform the likely requirements of the King’s Cross Central Remediation Strategy, and for the purposes of this Environmental Statement.

5.8.11 The results of ground investigations carried out to date indicate that the principal strata underlying the site and their approximate thicknesses are:-

Made Ground generally 1 to 2m, locally 5m
London Clay 15 to 40m
Woolwich and Reading Formation 10 to 15m
Upnor Formation 1 to 7m
Thanet Sand 1 to 5m
Upper Chalk thickness not determined

5.8.12 In order to aid the summary of the existing contamination the site is divided into six areas, as follows (see Figure 5.8.2):-

Area 1 Former Ammunition Factory and Printing Works
Area 2 Part of Former Eastern Gasholder Site
Area 3 Exel Site
Area 4 Railway Lands and part of Cambridge Street Diesel Depot
Area 5  Railway Lands and Sidings (the Triangle)
Area 6  Northern Railway Lands: Warehouse and Engineering Works

Note: Area 6 is land to the north of the CTRL embankment and is therefore outside of the application boundaries. It is included here to enable the assessment of any offsite hazard to the site.

5.8.13  The potential for ground contamination is as follows:

5.8.14  Area 1

   Ammunition Factory
   - Localised areas of high concentrations of metals (copper, lead and zinc);
   - Moderate levels of hydrocarbon/PAH which may have been due to refuelling activities;
   - Potential presence of residual explosives. Some cartridges are understood to have been found. Other raw materials and pre-manufactured components could also be found.

   Former Printing Works
   - No significant contamination identified.

5.8.15  Area 2

   Camley Street Warehouse (northern boundary of zone)
   - Made Ground contaminated by metals (mercury, arsenic, lead and cadmium), diesel oil and PAHs;

   Gasholder Area
   - Moderate contamination of Made Ground (much within top 0.5m) mainly by lead, total cyanide and PAH (coal tar), with localised areas significantly contaminated by arsenic, copper, mercury, lead, thiocyanate, cyanide, volatile organics and PAHs. Coal Tar contamination detected in underlying natural ground;
   - Significant contamination of sludge in gasholders by metals (cadmium and lead), sulphide, total cyanide, oil and coal tar.

   Eastern Corner of Site
   - Diesel contamination of Made Ground.

   Infilled Basin
   - Sources of fill material used unknown. Potential that contaminated material from on-site and off-site sources has been used.
South of Zone – Railway Depot

- Localised hydrocarbon contamination in Made Ground, including PAHs.

5.8.16 Area 3

Exel Site

- Historical land raising may have taken place here, using material containing ash, clinker and slag, contributing to slightly raised levels of metals, sulphates and other inorganic contaminants in the soils;
- Potential presence of coal residues in the Made Ground and localised spills of fuels.

Infilled Basins

- Sources of fill material used unknown. Potential that contaminated material from on-site and off-site sources have been used.

East of the Site

- Historic records indicate an old landfill, however, due to the age of the landfill, the risk of landfill gas generation is not considered to be significant.

5.8.17 Area 4

Railway Lands

- Historical land raising, using material containing ash, clinker and slag has contributed to slightly raised levels of metals, sulphates and other inorganic in the soils.

Diesel Depot

- Heavy diesel contamination of the Made Ground down to the Made Ground/London Clay boundary, within the former diesel depot area. Slight metal (arsenic, mercury, lead and selenium) contamination within ashy sand.

Outside former Diesel Depot

- Contamination limited to metals (copper, lead and zinc) and occasionally arsenic in black ashy sand layer of the Made Ground at slightly elevated concentrations. All tested to have low leaching potential. Also, isolated, localised hydrocarbon spills observed.
5.8.18 Area 5

Railway Lands and Sidings (part of the Triangle Site)

- Moderate to high concentrations of metals (copper and lead) in localised areas of site, mainly within top 0.5m of ashy Made Ground. Isolated pockets of diesel and PAH contamination.

5.8.19 Area 6 (outside the application area)

Railway Lands: Warehouses and Engineering Works

- No significant contamination detected.
- No evidence of burials found within the horse infirmary site.

Groundwater

5.8.20 The contamination in the perched groundwater where present over the London Clay, reflects the contamination in the Made Ground also over the London Clay. The past uses of the area surrounding the development have been mainly residential or commercial and the CTRL earthworks are resulting in removal of much of the significantly contaminated ground on the development boundary. On this basis, it is considered that migration of contaminants from off-site sources via groundwater flow would be limited. The major aquifer in the Upper Chalk, beneath the clay, is protected from the contamination on the site by the London Clay and is relatively uncontaminated. Refer to Chapter 5.7 – Water Resources for more information on groundwater.

Unexploded Ordnance

5.8.21 RLE carried out a Second World War Bomb Study as part of the CTRL project. There is a minor risk that the King’s Cross Central site contains unexploded bombs because the area was a target during World War 2. The RLE study covered some but not all of the King’s Cross Rail Lands. Each phase of the Kings Cross Central development would undertake a specific bomb survey as standard to eliminate the risk to workers and the public. This would be done prior to excavation on site as part of that phase.

Baseline 2006/7

5.8.22 In 2006/7 the site would be contaminated in part and the former rail lands levels would have been reinstated during construction of the CTRL. It is expected that CTRL construction compounds would be removed together with associated fencing and temporary supplies and septic tanks. It is likely that granular platforms for temporary storage areas and some temporary road surfacing would remain. We assume that any contamination caused by construction activities would be removed prior to contractors leaving the site. Otherwise the baseline would be as described above in The Existing Situation.
Proposals

5.8.23 As explained in Part 3.2 of this Environmental Statement, the proposed development is defined by Development Specifications for the Main Site and the Triangle Site incorporating a number of Parameter Plans. The Development Specifications define and fix the parameters of the development, and form the basis for the EIA.

5.8.24 The Main Site Development Specification, Annex A – Supporting Infrastructure Works and Facilities, states that:

“The application seeks permission for a range of supporting infrastructure works and facilities that may be required.”

5.8.25 The items listed include:

“Ground and groundwater treatment, contaminant and remediation works;
Relocation, storage and disposal, within the site, of waste matter arisings from excavations, earthworks, engineering and construction works;”

5.8.26 Proposals for soils and contamination are set out in the Main Site Development Specification at paragraphs 4.53 to 4.58 (site levels and contamination) and 4.73 to 4.77 (basements) and in the Triangle Site Development Specification paras 3.11-3.12 (levels) and Annex B (supporting infrastructure works and facilities).

5.8.27 The relevant Parameter Plans are:-

KXC003: Post CTRL levels
KXC012: Proposed Finished Site Levels
KXC016: Basements
TS002: Post CTRL Layout and Site Levels
TS004: Lower Ground Level
TS005: Ground Level

5.8.28 The Applicants would submit an Earthworks Plan and a Remediation Plan alongside applications for approval of reserved matters for each major phase of the development (Ref. Implementation Strategy paragraph 7.16 (ii)). The plans would implement the remediation strategy set out in this Environmental Statement. Further site investigation would be carried out to inform each Remediation Plan.

5.8.29 In addition, and as explained above, each phase of the Kings Cross Central development would undertake a specific bomb survey as standard to eliminate the risk to workers and the public. This would be done prior to excavation on site as part of the planning of each phase.

5.8.30 The Earthworks Plan for each major phase would accord with the Parameter Plans, and take into account the volume of contaminated material that may need to be removed off site or retained for treatment, during the remediation works.
Remediation Strategy

5.8.31 The following measures would be taken to remove and reduce contamination to an acceptable level:

- removal of 'hot-spots' of contamination, particularly mobile contaminants such as oils and organic material from the former Gasworks, Diesel Depot and Locomotive Refuelling areas;
- on-site treatment to reduce the levels of contamination in certain areas, for example, bioremediation to reduce the levels of contamination in soils;
- cement stabilisation to reduce the combustibility of coal-rich material;
- placing of protective cover above areas of the site with relatively low levels of contamination;
- placing of all services and drainage runs within trenches backfilled with acceptable material; where there is a risk of contamination service trenches would be backfilled with clean materials;
- use of imported topsoils and subsoils for soft landscaped areas where necessary and appropriate;
- any dewatering of perched water in the Made Ground would be discharged to the combined sewer (to be agreed with Thames Water);
- bunds and impermeable barriers would be used to control accidental spillage/movement of contaminants;
- selection of construction materials would be restricted to those suitable for the ground conditions, for example, wrapped copper or ductile iron for water supply pipes instead of polyethylene;
- piling systems would be chosen that would minimise the risks arising from founding in the aquiclude (London Clay).

5.8.32 Remediation would be undertaken in accordance with all relevant legal standards and would be consistent with current industry good practice for construction on brownfield sites, and would include the following as appropriate:

Contaminated Land

- confirmation of the potential for residual ground contamination within any construction site would be completed prior to the start of any piling or excavation work, with the consideration of sources, pathways and receptors;
- sampling and testing of excavated spoil and piling arisings, in order to assess the suitability of materials for reuse on site against site specific criteria;
- stockpiling of contaminated materials would be avoided where practicable. Where it is necessary (e.g. for bioremediation), stockpiles would be located on areas of hardstanding or plastic sheeting to prevent contaminants infiltrating into the underlying ground;
Part 5.8 – Soils and Contamination

- where remediation is required, on-site treatment, including bioremediation, would be carried out wherever practicable;
- any necessary licences would be obtained for the storage, treatment and disposal of waste;
- if a “hot spot” of unforeseen contamination is identified during the course of the work, the Construction Manager would instruct specific investigations in the areas in question. The construction manager would advise the Local Authority and liaise on the appropriate remediation methodology;
- special precautions would be taken if materials containing asbestos are encountered;
- imported landscaping material would be clean and validated by testing at source.

Surface and Groundwater Resources

- all works would be carried out taking full account of the requirements of the Environment Agency’s “General Guide to the Prevention of Pollution of Controlled Waters” and other Environment Agency pollution prevention guidance;
- the handling and storage of potentially hazardous liquids on site, e.g. fuels and chemicals, would be controlled and best practice guidance from the Environment Agency would be applied. Storage tank/container facilities would be appropriately bunded within designated areas and sited as far as practicable from any watercourse or surface drain;
- a Spillage Response Plan would be developed and implemented, in consultation with the appropriate statutory bodies (including the HSE and local Fire/Civil Defence Authority, as well as the Environment Agency and the Local Authority Environmental Health Department). It would set out systems to ensure that pollution impacts upon people, flora, fauna, land, air and water are contained and minimised and that clean-up procedures and spill kits are in place to respond effectively if an incident is discovered;
- all oil interceptors and sediment settlement or other treatment facilities would be regularly inspected and maintained.

Worst Case Scenario

5.8.33 The ‘worst case’ earthworks volumes are based on the proposed levels as indicated on Parameter Plans KXC 012 and TS 005, assuming maximum negative tolerances are applied north of the canal, whilst respecting limits of permitted gradients, and local application of negative tolerances to levels south of the canal as far as boundary level constraints allow. The volume of surplus fill in the likely ‘worst case’ is 745,000m³.

5.8.34 The ‘worst case’ environmental effects would result from the disposal offsite of all heavily contaminated material and the appropriate retention of less contaminated fill for treatment and placement on site. A figure of 65,000m³ has been determined to be the maximum likely volume of contaminated material to be removed from site.
Given that the “worst case” gross volume of material to be taken off site is 745,000m$^3$, if for any reason there was additional contaminated material to be removed, this material would be replaced using site-won inert material and would therefore not result in any net increase in the volume of material being taken off site.

**Assessment of Effects**

**Workers/Visitors**

Much of the proposed development would comprise buildings and hard cover, which would act as a barrier between users of the completed development and any residual ground contamination that may remain in some parts of the site. Moreover, service trenches would be backfilled with clean material. Therefore, the risk of contact between users of the site in the future compared to the baseline conditions would be reduced, resulting in a long-term, minor beneficial effect.

**Dust**

No contaminated material would be placed at finished levels. In situ fill that would be appropriately retained would be covered by hard cover or imported landscaping materials, stabilised by vegetation. The net effect on dust generation would be long term minor, beneficial.

**Watercourses/Groundwater**

The proposals include the permanent removal, treatment or encapsulation of existing sources of ground water and surface water contamination. The potential for future ground or surface water contamination would arise from long term site operational processes such as vehicle maintenance, waste disposal and the placing of contaminated landscaping material. Imported landscaping material would be clean and validated by testing at source. In light of this, the risk to groundwater or watercourses from percolation or run-off from landscaping material is assessed as negligible. The potential risks from vehicle maintenance and waste disposal would be regulated by the relevant legislation and effects are also assessed as negligible.

Contaminants that are aggressive to some building materials, for example sulphates, are present within the Made Ground across the site. Some Made Ground may be retained in situ because levels of contaminants are not sufficiently hazardous to require removal, but they may still be deleterious to the building fabric. Building fabric would be designed to withstand aggressive ground conditions in accordance with current design guidance. In light of this, the effect on building fabric is assessed as negligible.

**Landscaping**

Landscaping materials would be imported if site-won material were unsuitable. Imported material would be validated by testing at source. In light of this, the risk of exposed contamination from landscaping is assessed as negligible.
Storage of Fluids

During operation of the proposed development, it is likely that some bulk storage of fuels or other liquid chemicals would occur, for example for back-up generators. Inappropriate handling and storage procedures could result in spills and leaks of these chemicals impacting upon the ground, the near surface groundwater and surface water courses. The site areas likely to be used for storage would be designed to preclude spillage to soft landscaped areas e.g. through the use of bunds or interceptors. In light of this, the environmental effect of stored fluids would be negligible.

Effects without the Triangle Site

The exclusion of the Triangle Site from the requirement for earthworks and remediation would not result in a significant reduction in the surplus material taken from site and therefore the change in the effects on the environment would be negligible. However, in so far as there would be potential benefits from the removal of any contaminated material, these would not be realised.

Effects with King's Cross Station Enhancement

The King’s Cross Station Enhancement projects are likely to be hard paved with clean imported landscaping material. This is appropriate to the end use and would be a suitable treatment in line with the methodology. The King’s Cross Station Enhancement works would not therefore give rise to any significant cumulative adverse impacts on the environment; rather, they are likely to deliver long term benefits.

Opportunities for Further Mitigation Measures

The volume of material selected for treatment and retention of fill on site would be maximised by review of validation testing of contaminant levels during the works.

Remediation technology is an evolving field. It is very likely that techniques and available options for treatment of contaminated material would improve up to the remediation works stage. There is therefore the potential to increase the practical volume of contaminated fill that can be retained on site by utilising future techniques. All remediation works would be designed in accordance with current best practice at the time and would be subject to the approval of the Local Authority.

Opportunities would be investigated to reuse suitable site-won material as engineering or general fill on sites within a practical distance of the site.

Monitoring

Validation Testing

Existing data and the remediation works would be validated by on going testing of materials and formation levels. Testing would cover groundwater, material at formation levels and any imported placed materials.
5.8.48 The results of the validation testing would form the basis of the Remediation Plan Report for each plot/phase.

5.8.49 Long-term monitoring would not be required because:

- sources of mobile contamination would be removed through the Remediation Strategy;
- no sources of landfill gases are present in the vicinity of the site nor would exist after remediation.

Summary

5.8.50 The past land uses of the King’s Cross Central site have resulted in some contamination of ground and local perched groundwater. The proposed development would involve excavation for foundations, basements and utility trenches. There would also be earthworks associated with achieving the finished levels of the development. It is likely that some ground remediation would be required as part of the redevelopment.

5.8.51 Existing site investigation records have been reviewed, which provide a sufficient record of ground conditions on which to base a Remediation Strategy. The strategy would be developed for the approval of the London Boroughs of Camden and Islington. Decontamination of the site would be validated by testing during and after the remediation works.

5.8.52 The proposals are outlined in The Main Site and The Triangle Site Development Specifications and comprise commercial and residential buildings with basements, roads and hard and soft landscaping.

5.8.53 The likely ‘Worst Case’ for earthworks would be a surplus of earthworks material resulting from the lowest practical finished ground levels.

5.8.54 The likely ‘Worst Case’ for contamination would result from the maximum volume of contaminated material being required to be disposed of off site.

5.8.55 Assessment of the environmental impacts has found that the proposals for remediation and development result in a negligible or beneficial effect in all categories.

5.8.56 The combination of the removal, treatment and encapsulation of residual contaminants during remediation and the mainly impermeable nature of the development would have an overall beneficial effect to the environment.

5.8.57 The exclusion of the Triangle Site from the requirement for earthworks and remediation would not lead to a change in the effects on the environment, which would be negligible. However, in so far as there would be potential benefits from the removal of any contaminated material, these would not be realised.

5.8.58 The inclusion of the King’s Cross Station Enhancement works would not give rise to any significant cumulative adverse impacts on the environment; rather, they are likely to deliver long term benefits.
5.9 **Noise and Vibration**

**Introduction**

5.9.1 This chapter summarises an assessment of the noise and vibration effects that the operation of the completed King's Cross Central development may cause at surrounding properties and locations which are considered to be sensitive to noise and vibration. The noise and vibration effects in the surrounding area due to the construction of the development are described in Part 4. A specialist report on the noise and vibration effects of the development at the stages of both construction and operation is presented in Part 17. The specialist report provides more detail on the effects of the development and also describes how the evolution of the proposals has responded to the noise and vibration from the transportation corridors surrounding the development site and the future rail layouts arising from the CTRL works.

5.9.2 When operational the King's Cross Central development would give rise to noise and vibration due to activities on the site and also traffic on the adjacent road network.

5.9.3 The majority of the development site is located to the west of the future alignment of York Way (the Main Site) with a smaller triangular section of land located to the east of this road (the Triangle Site). Two cases are considered, namely the development of the entire site and construction of the Main Site only. The proposals for the Triangle Site are not considered separately.

**Methodology and Assessment Criteria**

5.9.4 The noise and vibration from activities on the development site, once fully operational, could potentially affect properties located on roads adjacent to the site. In addition, the traffic generated by the operation of the site could affect a wider area. The study area therefore covers York Way and any other road where material changes in traffic are forecast.

5.9.5 The main sources of noise affecting the site are road and rail traffic. These sources will be significantly altered by 2006/7 and, therefore, surveys of the existing conditions have generally not been carried out. The baseline for each source has been established by calculations based on forecast flows and by reference to existing noise data where available.

5.9.6 Road traffic noise levels have been calculated for roads in the vicinity of the site using the methodology given in the Calculation of Road Traffic Noise (Department of Transport, 1988). The traffic flow data for these calculations are taken from Appendix 8C of this Environmental Statement.

5.9.7 The Calculation of Road Traffic Noise methodology allows traffic noise to be calculated as either a 1 hour or an 18 hour (0600 to 2400 hours) noise level. The initial calculation provides a noise level at 10 m from the edge of the carriageway, known as the basic noise level, which is based on the total volume of traffic, the percentage of heavy goods vehicles, the road surface and gradient, and the average speed of the traffic. This value may be used for comparing changes in noise level due to changes in traffic flow conditions.
and therefore has been used to assess changes in traffic noise due to the additional traffic generated during construction and operation of the Kings Cross Central development.

5.9.8 The traffic generated by the completed Kings Cross Central development has been forecast in the transport study (part 5.3) and the changes in noise levels along the roads adjacent to the site have been calculated. In addition, the effects on the wider road network have been reviewed to identify any road where the traffic generated by the development could give rise to a 1 dB or more change in noise level.

Assessment Criteria

5.9.9 The criteria generally used to define the significance of both adverse and beneficial impacts in this Environmental Statement are:

- **Major** – impacts of the development of greater than local scale;
- **Moderate** – impacts of the development that may be judged to be important at a local scale;
- **Minor** – impacts that are of low importance in the decision making process;

5.9.10 A further category of Negligible is used to describe effects which are of such low importance that they are considered not to be material to the decision making process.

5.9.11 In the case of noise the significance of a change is dependant on the degree of the change in noise and the number of receivers affected and these criteria have been interpreted for the fully developed site as follows:

- **Major** – changes in noise level in excess of 10 dB(A) at noise sensitive receivers adjacent to the site, or changes in excess of 5 dB(A) over a wider area;
- **Moderate** – changes in noise level in excess of 5 dB(A) and up to 10 dB(A) at noise sensitive receivers adjacent to the site, or changes in noise in excess of 3 dB(A) and up to 5 dB(A) over a wider area;
- **Minor** – changes in noise level in excess of 3 dB(A) and up to 5 dB(A) at noise sensitive receivers adjacent to the site;
- **Negligible** – changes in noise level of 3 dB(A) or less at noise sensitive receivers.

Consultations

5.9.12 Discussions have been held with the Environmental Health Departments of the London Boroughs of Camden and Islington to establish their policies with respect to noise and vibration.

5.9.13 Comments were received from several organisations following the publication of the Consultation Draft Scoping Report and these have been taken into account in the assessment. For details of these, please refer to the specialist report in Part 17 of this Environmental Statement.
The Existing Situation

5.9.14 The site is bounded by York Way (A5200) to the east (other than in the north-east where the site extends across York Way into the area known as the Triangle Site) and by railways to the west and north. In addition, there are train tunnels beneath the eastern part of the site. The railways cause vibration on parts of the site, but the road traffic does not give rise to perceptible levels of vibration. The southern part of the site is bounded by St Pancras and King's Cross Stations, which are not significant sources of noise.

5.9.15 York Way is a single carriageway road, with the section between Euston Road and Wharfdale Road carrying a one-way northerly flow, with a two-way traffic flow on the remainder of the road that is adjacent to the site. Traffic counts have been undertaken and the 18-hour (0600 – 2400 hrs) traffic flows have been derived. The forecast traffic flows have been used to calculate the basic noise levels at 10 m from the kerb.

5.9.16 There are three concrete plants operated by Castle Cement, Tarmac and Pioneer Willment to the north of the CTRL alignment. Rail access to these plants is from the north east of the site and road access is via an access road opposite the Triangle Site. These plants are currently being relocated to the west to facilitate the construction of the Channel Tunnel Rail Link and therefore a noise survey has not been carried out in this area.

5.9.17 A gas governor is currently located approximately 30 m to the north of the Culross Buildings. This installation is located within an acoustic enclosure designed to limit noise from the governor to a level of 44 dBAeq at the Culross Buildings.

Baseline 2006/7

5.9.18 Peak hour traffic counts were carried out in 2003 as part of the traffic study and these have been used as the basis of the forecasts of 2006/7 baseline traffic flows. These data are shown in Appendix 8C, 2007 Base Traffic Flows, Figures 1 and 2. The baseline traffic flows incorporate the effects of recent changes such as that caused by the introduction of congestion charging and also traffic generated by permitted developments such as the Regent Quarter. These baseline traffic flows have been used as the basis for the calculation of road traffic noise along the roads in the vicinity of the site and the calculated basic noise levels are presented in Table 5.9.1. In addition, the road traffic noise from York Way has been calculated across an open site and presented graphically in Figures 5.9.1 and 5.9.2.

5.9.19 The train noise due to the Channel Tunnel Rail Link and the realigned existing lines has been calculated across the site. This has been carried out on behalf of the Applicants by Rail Link Engineering using the computer model developed for the assessment of the Channel Tunnel Rail Link project. This analysis indicates that the highest noise levels would be created at the western corner of the site by the Midland Main Line trains and at the northern section of the site by the Channel Tunnel Rail Link trains, as incoming trains are braking. Figures 5.9.3, 5.9.4 and 5.9.5 in the noise specialist report show the calculated noise levels across the open site due to trains.
5.9.20 East Coast Main Line trains using King’s Cross Station will continue to pass beneath the eastern side of the site in the Gasworks Tunnels and perceptible levels of vibration will occur above these tunnels. The Thameslink 2000 tunnels will be complete in 2007, but trains will not be in service until the wider Thameslink 2000 scheme proceeds. Thus, there will be no contribution to the baseline noise and vibration levels from this source; however, it is expected that trains will start to operate in these tunnels during the course of the development of the site. It is understood that the fit out of the tunnels will be designed to ensure that structureborne noise levels in buildings near the tunnels will not exceed 40 dB $L_{A \text{max S}}$.

5.9.21 The concrete batching plants on the site are being relocated to a new location north west of the site and to the north of the Channel Tunnel Rail Link lines. The rail access to these plants will be via a new siding on the western side of the Midland Main Line at the western side of the site. Road access will be via a junction with York Way.

**Proposals**

5.9.22 The assessment is based on the proposals set out in the Development Specifications for the Main Site and the Triangle Site.

5.9.23 The King’s Cross Central site is bounded by railway and road transportation corridors and also railway tunnels pass beneath the site. The development proposals have evolved to respond to the noise and vibration created by these sources. In particular, less sensitive land uses are planned along the western boundary of the site, which is in close proximity to the CTRL.

5.9.24 The gas governor would be relocated to Development Zone V, an area reserved for services. It would be installed within a purpose built acoustic enclosure similar to its current enclosure.

5.9.25 Each building would be subject to detailed design and at that stage the environmental noise and vibration at the proposed location would be assessed from the existing analysis and, where necessary, surveyed to allow the design of the building to accommodate any constraints.

**Assumptions made about the proposals**

5.9.26 Noise and vibration issues would be re-addressed at the detailed design/reserved matters stage, as individual buildings or phases of development come forward for approval (by the LPA). The detailed design process and normal planning controls would ensure, therefore, that the design and external appearance of buildings is appropriate and that mitigation measures are incorporated, as necessary.

**Worst Case**

5.9.27 Once the development is completed and occupied, the only significant noise impact on the surrounding area would be due to additional road traffic movements on the roads serving the development. These traffic movements would be at a maximum once the site is fully occupied in the assumed Design Year of 2020. In order to assess a worst case the total additional traffic generated in the assumed design year of 2020 has been compared with the 2007 base year traffic volumes. This assessment assumes that there will be no
growth in traffic on the surrounding road network up to 2020. The calculated changes in noise therefore represent the worst case.

**Assessment of Effects**

5.9.28 The traffic flows predicted as a result of the development in the Design Year (2020) have been added to the forecast flows for 2007 to calculate the change in noise due to the development. The changes in noise have been calculated for the effects of the development of the whole King’s Cross Central site and also the development of the Main Site alone, without the Triangle Site. The predicted changes in noise levels are shown in Table 5.9.1.

**Table 5.9.1 Changes in road traffic noise due to completed development**

<table>
<thead>
<tr>
<th>Road</th>
<th>Basic Noise Level, dB LA_{10, 1hr}</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2007</td>
</tr>
<tr>
<td>Camden Road</td>
<td>73.5</td>
</tr>
<tr>
<td>York Way (north)</td>
<td>72.4</td>
</tr>
<tr>
<td>York Way (south)</td>
<td>71.9</td>
</tr>
<tr>
<td>Grey's Inn Road</td>
<td>74.1</td>
</tr>
<tr>
<td>Agar Grove</td>
<td>70.1</td>
</tr>
<tr>
<td>Market Road</td>
<td>70.7</td>
</tr>
<tr>
<td>Brewery Road</td>
<td>68.5</td>
</tr>
<tr>
<td>Copenhagen Street</td>
<td>69.2</td>
</tr>
<tr>
<td>Warfedale Road</td>
<td>71.1</td>
</tr>
<tr>
<td>Caledonian Road</td>
<td>70.3</td>
</tr>
<tr>
<td>Goods Way</td>
<td>70.4</td>
</tr>
<tr>
<td>Euston Road</td>
<td>76.7</td>
</tr>
<tr>
<td>Midland Road</td>
<td>70.8</td>
</tr>
<tr>
<td>St Pancras Way</td>
<td>70.5</td>
</tr>
<tr>
<td>Pancras Road</td>
<td>71.5</td>
</tr>
<tr>
<td>Royal College Street</td>
<td>67.8</td>
</tr>
</tbody>
</table>

Note: 2020 network flows are assumed to be equal to 2007 flows to allow worst case changes to be evaluated.

5.9.29 The results given in Table 5.9.1 show that the changes in road traffic noise level along any of the roads in the vicinity of the site, due to the operation of the King’s Cross Central development, would be 0.7 dB or less. These changes in noise would not be perceptible and are considered to be of negligible significance.

5.9.30 New plant and machinery on/within King’s Cross Central buildings would be another noise source. Generally, all new plant and machinery installed on any building would be specified to ensure that the noise created at the façade of the nearest noise sensitive building by this plant/machinery would be at least 5 dB less than the background noise, in the absence of construction noise. Alternatively, where the noise sensitive building is a King’s Cross Central building, the same level of protection for building occupants could be achieved through the detailed design of the building envelope/façade.
5.9.31 There would be no sources of vibration within the development that would cause perceptible levels of vibration beyond the site boundary. Road vehicles travelling to and from the site may cause perceptible levels of vibration at receptors close to the road, but this would only occur if the surface of the road was irregular and poorly maintained. Such effects are generally the result of heavy vehicles moving over an irregular road surface and it is anticipated that the traffic generated by the completed development would be predominantly light vehicles. Thus, it is not anticipated that the operation of the development would cause any significant change in vibration from road traffic at properties in the area. The effect would therefore be negligible.

Effects without the Triangle Site

5.9.32 If the Main Site were developed alone without the Triangle Site, there would be a reduction in traffic noise of 0.1 dB on some roads compared with the situation with the whole development. The maximum increase in traffic noise would not exceed 0.7 dB. These changes in noise would not be perceptible and are considered to be of negligible significance.

Effects with King's Cross Station Enhancement

5.9.33 There are currently no forecasts available for the changes in road traffic volumes that may result from the operation of King’s Cross Station Enhancement. However, given the nature of the enhancement, any such changes are likely to be minimal. The effect of the station enhancement is unlikely, therefore, to lead to any material ‘cumulative’ impact, over and above that assessed above for King’s Cross Central.

Effects within the Development

5.9.34 Occupied sites could be affected by noise from other occupied sites used for noise generating activities, such as leisure facilities.

5.9.35 The Mayor’s Ambient Noise Strategy (GLA, 2004) draws particular attention to the potential noise problems within mixed-use development. To avoid such problems the overall zoning of the site has been designed to minimise conflicts between noise sensitive and noise producing uses and this would continue through the further detailed design of the development.

5.9.36 It is an inevitable consequence of mixed-use development that this type of scenario will occur, and PPG24 (in paragraph 13) sets out several mitigation measures to manage the potential noise effects of such developments. These include:

- Engineering – reduction of noise at point of generation
- Lay-out – adequate distance between source and noise-sensitive building or area
- Administrative – limiting operating time of source, restricting activities allowed on site, specifying an acceptable noise limit.

5.9.37 At the detailed design/reserved matters stage, the noise effects of new development on other uses within the development would be addressed, and appropriate mitigation measures incorporated, as part of the normal planning process. It is reasonable to assume that applications for reserved matters for mixed-use development with potential noise implications would only be approved once those issues had been examined and addressed.
Part 5.9 – Noise and Vibration

satisfactorily. In this context, and given the range of mitigation measures that would be available at future detailed design stages, it would be possible for any of the proposed use classes to co-exist, for example residential development adjacent to sports facilities and bars. There are many precedents for this, in London and other city centres across the country.

Opportunities for Further Mitigation Measures

5.9.38 The predicted noise impacts of operation of King’s Cross Central are due to road traffic on the public highway. The impacts are generally considered to be negligible and further mitigation is not necessary.

5.9.39 The main sources of noise which would affect the developed site are the CTRL and other railways to the west and traffic on York Way to the east. Once buildings are completed these would provide a degree of screening to areas of the site further from these sources of noise and, therefore, it would be of some benefit to construct buildings on the perimeter of the site at an early stage.

5.9.40 In the case of the Triangle Site, the Development Brief has encouraged provision of residential development in this area while acknowledging that it is subject to high levels of transportation noise. The noise levels on the façade of Block A cannot be determined at this time as Thameslink 2000 has not published noise data for the section of line alongside this block, but it is likely that the block would fall into Noise Exposure Category C and therefore it is expected that a high standard of acoustic glazing would be required together with an attenuated ventilation system for the residential accommodation. The façade of Block B facing York Way would be exposed to noise levels where the London Borough of Camden would normally not grant planning permission, however, similar attention to the design of the glazing and ventilation of the accommodation in this block would ensure that acceptable standards of internal noise are achieved. Block C would contain mainly non-noise sensitive uses, but the medical centre could contain some noise sensitive rooms and where these are located in the eastern façade they should be designed to provide adequate insulation from the noise from the East Coast Mainline.

5.9.41 Provision of noise barriers alongside the railway on the bridge over the Regent’s Canal would reduce the noise impact of train movements on the public realm areas close to the railway to the north of the canal. This would require further technical development of the design, resolution of any heritage issues and the agreement/co-operation of CTRL.

Monitoring

5.9.42 A noise survey would be carried out at noise sensitive locations surrounding the site once the CTRL project is completed and operational. Due to the extended construction period for the development, further surveys would be carried out to establish baseline noise levels at completed phases of the development.

5.9.43 Monitoring of the changes in road traffic noise that would result from the operation of the development is not considered to be necessary as the predicted effects would be very small and within the range of variation in noise that occurs on a daily basis.
Summary

5.9.44 The main noise impact caused by the operation of the Kings Cross Central development would be the change in traffic noise levels along roads leading to and from the site due to the additional traffic generated by the scheme. The changes in noise level have been calculated for the main access routes in the vicinity of the development and these changes have been found to be not perceptible when either the whole King’s Cross Central site or the Main Site without the Triangle Site are developed. These changes in noise as a result of the development are, therefore, considered to be negligible.

5.9.45 The operation of the development is not anticipated to give rise to any perceptible vibration at locations outside of the development.

5.9.46 The gas governor currently located towards the south of the development site would be moved to a location nearer the Regent’s Canal. This location is in an area reserved for utilities and away from residential properties and is subject to road traffic noise. Consequently noise caused by this equipment would be of negligible significance.

5.9.47 There would be no significant cumulative effects on noise with the King’s Cross Station Enhancement.
Kings Cross Central
Scale: NTS
Figure 5.9.1
London Borough of Camden Standards for Road Traffic Noise
Calculated Noise Levels for 2006/7

The ENGLISH COGGER
partnership
Noise sensitive development in NECs B and C requires noise mitigation commensurate with the ambient noise levels.
55 - 66 dB L_{Aeq}, 16 hour (free-field)

PPG 24 Noise Exposure Category B
Noise mitigation required for noise sensitive developments

45 - 59 dB L_{Aeq}, 8 hour (free-field)

PPG 24 Noise Exposure Category B
Noise mitigation required for noise sensitive developments

London Borough of Islington Standards for Rail Traffic Noise
Calculated Noise Levels for 2008/7
5.10 Air Quality and Climate Change

Introduction

5.10.1 This chapter summarises the likely significant effects on air quality and climate change of the proposed King’s Cross Central development during the operational stage. Effects on air quality during the construction stage are addressed in Part 4. The detailed specialist report, that addresses both the construction and operational stages, is provided at Part 18.

5.10.2 This chapter deals with the effects of local changes in air quality on people and other sensitive receptors during the operational stage of King’s Cross Central, as well as wider-scale effects arising from changes in air quality, including changes in emissions of greenhouse gases.

5.10.3 The King’s Cross Central development would take place within an Air Quality Management Area (AQMA), designated by the London Borough of Camden, and partly within, but mainly adjacent to an Air Quality Management Area declared by the London Borough of Islington. Developments potentially affecting Air Quality Management Areas require particular attention to be paid to air quality impacts and the extent to which they may affect the action plans being implemented by the local authorities.

Methodology and Assessment Criteria

Study Area

5.10.4 The local study area for air quality has been defined as the six 1km x 1km grid squares in which King’s Cross Central is situated, although a wider study area has also been defined, which encompasses a larger proportion of the London Boroughs of Camden and Islington, to help place the local study area in context.

Pollutants

5.10.5 The assessment concentrates on: small airborne particles (PM$_{10}$); nitrogen oxides (in particular nitrogen dioxide); benzene; and carbon dioxide. Nitrogen dioxide, benzene and PM$_{10}$ are the pollutants of concern from a health perspective, while nitrogen oxides emissions contribute to regional impacts such as ozone formation and acid rain, and carbon dioxide emissions are linked to the greenhouse effect and global warming.

Relevant Standards

Carbon Dioxide

5.10.6 The Kyoto Protocol sets the UK a target of reducing greenhouse gas emissions by 12.5% below 1990 levels in 2008-2012. In addition, the Government and the devolved administrations have set a domestic goal to go further than the Kyoto commitment and cut the UK’s emissions of carbon dioxide by 20% below 1990 levels by 2010. Climate Change: The UK Programme (Defra, February 2001), sets out progress so far and
describes how it is expected that this goal will be achieved. It includes measures to stimulate new, more efficient sources of power generation, cut emissions from the transport sector and promote better energy efficiency in the domestic sector.

Other Pollutants

5.10.7 At the national level, the Air Quality Strategy (AQS) for England, Scotland, Wales and Northern Ireland (Defra 2000, Defra 2003a) provides a set of standards and objectives for a range of key pollutants, to protect public health, vegetation and ecosystems. The objectives take account of limit values set by the European Union. Those that are relevant to this assessment relate to benzene, nitrogen dioxide (NO$_2$) and fine particles (PM$_{10}$) and are provided in Tables 5.10.1 and 5.10.2. It is recognised in the Strategy that some of the objectives are stringent and may be difficult to achieve.

Table 5.10.1 Current UK National Air Quality Objectives

<table>
<thead>
<tr>
<th>Pollutants</th>
<th>Time Period</th>
<th>Objective</th>
<th>To be achieved by*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrogen dioxide (NO$_2$)</td>
<td>1-hour mean</td>
<td>200 $\mu$g/m$^3$, with no more than 18 exceedence a year (~ a 99.8%ile)</td>
<td>2005</td>
</tr>
<tr>
<td></td>
<td>annual mean</td>
<td>40 $\mu$g/m$^3$ not to be exceeded</td>
<td>2005</td>
</tr>
<tr>
<td>Fine particles (PM$_{10}$) (measured by the gravimetric method)</td>
<td>fixed 24-hour mean</td>
<td>50 $\mu$g/m$^3$, with no more than 10 exceedences in a year (~ a 90%ile)</td>
<td>2004</td>
</tr>
<tr>
<td></td>
<td>annual mean</td>
<td>40 $\mu$g/m$^3$ not to be exceeded</td>
<td>2004</td>
</tr>
<tr>
<td>Benzene</td>
<td>running annual mean</td>
<td>16.25 $\mu$g/m$^3$ not to be exceeded</td>
<td>2003</td>
</tr>
<tr>
<td></td>
<td>annual mean</td>
<td>5 $\mu$g/m$^3$ not to be exceeded</td>
<td>2010</td>
</tr>
</tbody>
</table>

*The achievement dates are all by the end of the specified year

Table 5.10.2 Provisional Air Quality Objectives for Greater London not included in the Regulations (Defra 2003a)#

<table>
<thead>
<tr>
<th>Pollutants</th>
<th>Time Period</th>
<th>Objective</th>
<th>To be achieved by*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fine particles (PM$_{10}$) (measured by the gravimetric method)</td>
<td>fixed 24-hour mean</td>
<td>50 $\mu$g/m$^3$, with no more than 10 exceedences in a year.</td>
<td>2010</td>
</tr>
<tr>
<td></td>
<td>annual mean</td>
<td>23 $\mu$g/m$^3$ not to be exceeded</td>
<td>2010</td>
</tr>
</tbody>
</table>

# These particular objectives apply in Greater London only. Different objectives apply elsewhere in the UK.

*The achievement dates are all by the end of the specified year
5.10.8 As part of the system of Local Air Quality Management introduced in 1995, local authorities have a particularly important role in implementing the Strategy and must carry out a review and assessment of air quality in their area against the objectives. Where objectives are likely to be exceeded, they have to declare an AQMA and develop a plan in pursuit of meeting the objectives. The minimum permissible size of an AQMA is the zone of likely exceedence, but local authorities may choose to declare areas larger than this.

Local AQMAs

5.10.9 Following the declaration of AQMAs in the London Boroughs of Camden and Islington, Air Quality Action Plans have been published. These Action Plans are specific to each authority and each has taken the form of a package of measures designed to bring about general improvements in local air quality. A brief summary of the key measures contained in each Action Plan is given below.

Camden’s Air Quality Action Plan

5.10.10 Camden’s Air Quality Action Plan defines fifty proposals and includes estimates of their cost effectiveness. It links into the Camden Community Strategy and takes into account other council policies such as the annual Walking and Cycling Plan, Green Travel Plan and Green Transport Strategy.

Islington’s Air Quality Action Plan

5.10.11 Islington’s Air Quality Action Plan also proposes a number of measures to reduce emissions, with the same overall objectives as those described for Camden. The measures proposed are generally similar, with the emphasis on minimising emissions from road transport, although emissions from industry, heating plant and construction sites are also considered.

Mayor of London’s Air Quality Strategy

5.10.12 The Mayor’s Air Quality Strategy (GLA 2002), sets out the approach to be adopted to improve air quality in London. This recognises that the capital has some of the worst air quality in the UK and identifies nitrogen dioxide (NO₂) and small airborne particles (PM₁₀) as the key pollutants. Road traffic is recognised to be the main source of these pollutants.

Definition of Significance

5.10.13 The significance of both existing and future pollutant concentrations is best assessed by reference to the national air quality standards and objectives, established by the Government to protect human health. The objectives are prescribed in the Air Quality Regulations, 2000 (Stationery Office, 2000) and the Air Quality (England) (Amendment) Regulations 2002, (Stationery Office, 2002). A summary of the objectives for the pollutants relevant to this report is provided in the Air Quality and Climate Change Specialist Report (Part 18). There are also 2010 PM₁₀ objectives which are provisional and not set in the regulations.

5.10.14 There are no statutory objectives or limits for emissions of carbon dioxide. However, the Kyoto Protocol sets the UK a target of reducing greenhouse emissions by 12.5% below 1990 levels in 2008-2012. In addition, the Government and the devolved administrations have set a domestic goal to go further than the Kyoto commitment and cut the UK’s emissions of carbon dioxide by 20% below 1990 levels by 2010.
5.10.15 Levels of significance for this assessment have been defined as follows:

Major – small, medium or large change in the concentrations of pollutant(s) in an area where concentrations are expected to be above, or are caused to become above, the objective(s), and where receptors or ecosystems of high sensitivity are exposed in the relevant year.

Moderate - small, medium or large change in the concentrations of pollutant(s) in an area where concentrations are expected to be close to, but remain below, the objective(s), and where receptors or ecosystems of medium sensitivity or greater are exposed in the relevant year.

Minor - small, medium or large change in the concentrations of pollutant(s) in an area where concentrations are expected to be, and to remain, well below the objective(s), and where receptors or ecosystems of low sensitivity or greater are exposed in the relevant year. Also, very small changes in the concentrations of pollutant(s) in an area where concentrations are expected to be above the objective(s).

Negligible significance, i.e. not material to planning, is defined as a very small change in the concentrations of pollutant(s) in an area where concentrations are expected to be, and to remain, well below the objective(s), and where receptors or ecosystems of low sensitivity or greater, will be exposed in the relevant year. Also, any change in the concentrations of pollutant(s) in an area where concentrations are expected to be, and to remain, well below (<50%) the objective(s).

5.10.16 A definition of sensitive receptors and impact magnitude is available in the Air Quality and Climate Change Specialist Report (Part 18).

Assessment Methodology

5.10.16 The assessment methodology involves the following steps:

- definition of existing conditions and conditions at the baseline year of 2006/7;
- prediction of changes in pollutant concentrations at relevant receptors, due to changes in traffic flow;
- prediction of changes in emissions to air from vehicles and heating plant in the local study area;
- prediction of dust-soiling and PM$_{10}$ impacts due to construction activities;
- assessment of the significance of the above impacts.

Baseline Conditions

5.10.17 Information about emissions and concentrations of pollutants in the local and wider study areas has been determined from a number of sources. These are:

- monitoring carried out in the London Boroughs of Camden and Islington;
- air quality review and assessment reports compiled by the London Boroughs of Camden and Islington;
- estimated background concentrations for the local study area from national maps available on the Air Quality Archive (Defra 2004);
- modelled concentrations alongside roads in the local study area;
- estimated emissions from the London Atmospheric Emissions Inventory (GLA 2002).

5.10.18 Meteorological data have been obtained from a weather station at Camley Street Natural Park, which is operated by the London Borough of Camden. The station measures wind speed and direction, temperature, humidity and rainfall.

Traffic

5.10.19 Locations that are sensitive to traffic-related pollution are places where members of the public may encounter poor air quality for the time period of the Government’s objective. For the objectives addressed in this assessment, sensitive locations are residential properties, schools, hospitals, hotels etc. Properties that are closer to pollution sources would be more at risk than those further away and those close to road junctions, would be particularly susceptible.

5.10.20 For the assessment of traffic impacts, six receptors that might be affected by any change in traffic flow, due to the development, have been selected. Receptors 1 and 2 are residential properties on York Way, north and south respectively, of Goods Way. Receptor 3, on Euston Road, is residential accommodation opposite the front of King’s Cross Station. Additional receptors, 4, 5 and 6, which could be residential accommodation within the proposed development, have been included for the “with development” situation. Receptor 4 would be in development zone R, near to York Way and receptor 5 would be in zone F, at the junction of York Way with Goods Way. Receptor R6 is representative of relevant locations within the Triangle Site, near to York Way. The receptors selected are representative of worst-case locations in the area, and concentrations would be lower further from these roads. These receptors and the local study area are shown on Figure 5.10.1.

5.10.21 The methodology set out by the Highways Agency in its Design Manual for Roads and Bridges (DMRB), V1.02 (Highways Agency, November 2003) has been used as the basis for the assessment of the air quality impacts of traffic emissions. The DMRB provides a means of predicting concentrations taking account of the number of vehicles; the proportion of HGVs; the distance from the road to the receptor; and the speed of the vehicles. It also takes account of the effects of legislation on future emissions from vehicles and background concentrations to which the traffic emissions are added.

5.10.22 Figures for baseline traffic and traffic generated by the scheme are shown in Appendix 8C and Part 5.3 on traffic.

Heating plant

5.10.23 At this stage it is not possible to determine the exact form and specification of the heating plant to be used in the new and refurbished buildings. Therefore emissions have been calculated using generic emission factors derived from the national emission factor database available on the Internet. Given that the plant has not been selected, best judgement has been used to select appropriate emission factors. These emissions have been compared with those estimated for 2005, the nearest year to the baseline year of 2006/7 within the London Atmospheric Emissions Inventory.

5.10.24 The emissions calculations are based on ‘worst case’ gas demand estimates, which have been made based on floor area and building type (further details are provided in Appendix 18B of the Air Quality and Climate Change Specialist Report).
Consultations

Initial Consultations

5.10.25 A meeting was held with the London Borough of Camden in June 2001 to discuss the approach to the assessment. At this meeting, it was made clear that the whole of the area had been declared an AQMA for both nitrogen dioxide and PM$_{10}$. It was accepted that there were unlikely to be major air quality impacts associated with the development during the operational phase and that the primary concern would be emissions arising from construction.

5.10.26 A preliminary meeting with the London Borough of Islington in July 2001 confirmed that it saw London Borough of Camden as taking the lead on air quality matters related to the development. There was no specific monitoring in the immediate area alongside the redevelopment lands, but monitoring elsewhere in the Borough has been made available.

5.10.27 Discussions with the GLA in August 2001 noted the Mayor’s developing Air Quality Strategy, which was subsequently published for consultation in September 2001, the final strategy being published in September 2002. The Mayor was also preparing an Energy Strategy, and a consultation draft was published in March 2002 and the final version published in February 2004. This emphasises sustainable building design and measures to minimise energy use and hence to minimise emissions.

Scoping Report

5.10.28 A consultation draft EIA scoping report for King’s Cross Central was published in April 2003. This set out the proposed approach to assessment of the potential air quality impacts of the scheme. It explained how the baseline situation and sensitive receptors would be defined and then discussed how the impacts of the scheme would be assessed. It proposed that the baseline would be 2006/7 when the CTRL construction works are complete and development of the scheme could commence.

5.10.29 A local study area for air quality was defined as the six 1km x 1km grid squares in which the development is to be situated, with a wider study area encompassing a larger proportion of the London Boroughs of Camden and Islington.

5.10.30 As acknowledged by the London Borough of Camden, the future baseline is difficult to determine. Therefore it was proposed that the assessment would focus on the change in emissions in the local study area brought about by the scheme, and the impact this is likely to have upon pollutant concentrations at sensitive receptors. The scoping report set out how the impact of any additional traffic would be assessed using the DMRB methodology (Highways Agency 2003). As the actual boiler plant to be used has not yet been selected, it was determined that best-estimate emission factors for the types of plant likely to be available would need to be used. Emissions from these sources would be assessed in relation to the baseline estimates of emissions in the study area in the London Atmospheric Emissions Inventory, prepared by the GLA.

5.10.31 The potential impact of emissions from diesel locomotives on receptors within the scheme was screened out on the basis of Government guidance (Defra 2003c). This is because only stationary locomotives are potentially significant and even then only when there is relevant exposure within 15m.
Response to Scoping Report

5.10.32 The GLA and the London Boroughs of Camden and Islington suggested that sustainability issues, such as energy efficiency and air quality, should be cross-referenced. Energy efficiency is addressed in the Applicant’s Environmental Sustainability Strategy report. London Borough of Camden also requested that the Air Quality chapter be renamed ‘Air Quality and Climate Change’, which it has been.

5.10.33 The London Borough of Camden pointed out that the whole Borough is now an AQMA and an Air Quality Action Plan is available for reference. This has been obtained from the local authority and is referred to in the Specialist Report (Part 18). Other comments from the London Borough of Camden were that impacts from dust on water quality and health effects associated with nitrogen dioxide should be considered. There is not expected to be a significant impact of deposition of dust on water quality (see section 4.7). The changes in nitrogen dioxide concentrations are assessed in relation to the UK health-based air quality objectives in this report and are discussed and assessed in a qualitative way in the Health Specialist Report.

5.10.34 In the discussion of the baseline conditions, the London Borough of Camden requested that due to the uncertainty in predicting concentrations in 2006/7, the current situation should also be discussed. This is because actual monitoring data can be used to determine existing conditions.

5.10.35 CTRL requested that existing emissions from rail sources be accounted for in the baseline. These sources are included in the London Atmospheric Emissions Inventory, and therefore form part of the baseline assessment.

5.10.36 Following a review of monitoring data in London it was concluded that benzene can be scoped out of further assessment. The section on Existing Situation below sets out the data on which this conclusion is based. The assessment therefore covers local impacts arising from dust, PM$_{10}$ and nitrogen dioxide, and regional/global impacts arising from carbon dioxide, PM$_{10}$ and nitrogen oxides.

5.10.37 It has also been recognised that no specific reference was made in the scoping report, or the responses to it, to air quality impacts on the heritage buildings. The view is that given the past exposure to airborne pollutants from the gas and railway industries, the buildings are clearly robust in respect of the lower predicted future pollution levels. These buildings are therefore not considered further in this report as no significant effects are anticipated.

The Existing Situation

Emissions

5.10.38 Existing emissions in the local study area have been determined from the London Atmospheric Emissions Inventory. Road transport is the dominant source of nitrogen oxides, PM$_{10}$, and benzene. Combustion of gas in domestic and commercial/institutional premises is also important for nitrogen oxides, while it is the dominant source of carbon dioxide. Part B industrial processes, which include the concrete batching plants in the northern part of the local study area, are an important source of PM$_{10}$. Rail emissions play a relatively minor role.
Concentrations

5.10.39 The London Boroughs of Camden and Islington have already identified potential exceedences of the nitrogen dioxide and PM$_{10}$ objectives and the whole of both Boroughs has been declared an AQMA. This is confirmed by monitoring and modelling data, which show generally higher concentrations on approaching the centre of London, with the highest concentrations close to the busiest roads. Action Plans have been prepared for both Boroughs, which set out measures to reduce concentrations within the areas of exceedence.

5.10.40 Monitoring for benzene has been more limited, as concentrations have been well below the 2003 objective in recent years, even at the kerbside. Concentrations are also below the UK 2010 objective and EU limit value, even at the busiest roadside locations. There continues to be a strong downward trend in concentrations, thus there is strong evidence that the benzene objective will not be exceeded. No further consideration is therefore given to benzene in this assessment.

Baseline 2006/7

5.10.41 The future baseline has been difficult to define with any great precision. This is because of the long time-frame being considered, both to the 2006/7 Baseline and the 2020 Design years, and because of the changes taking place that are difficult to quantify. However, the best estimate has been to project measured and estimated concentrations to future years using generic factors provided by the Air Quality Archive produced by the Government (Defra, 2004). These adjust for the expected reduction in concentrations due to improved vehicle and industrial technologies but do not take into account the local changes arising from local authority action plans and other developments within the wider study area, including congestion charging.

5.10.42 The available information suggests that in the wider study area objectives for nitrogen dioxide and PM$_{10}$ will continue to be exceeded in 2007, mostly at roadside locations. This is likely to be the case, even with action plan measures in place. Background nitrogen dioxide concentrations are predicted to be 34 - 52 µg/m$^3$, whereas roadside concentrations are expected to be 38 - 69 µg/m$^3$. Annual mean PM$_{10}$ concentrations are expected to be 22-35 µg/m$^3$ at background sites and 28-40 µg/m$^3$ at roadside locations.

5.10.43 The concrete batching plants are being moved to the north of the CTRL line as part of the CTRL works.

Proposals

5.10.44 The proposals assessed are those identified in the development specifications for the Main Site and the Triangle Site.

Worst Case

5.10.45 In terms of traffic impacts, the ‘worst-case’ situation for the whole King’s Cross Central development would be the one that generates the highest number of total traffic movements, i.e. Scenario 3 set out in Section 5.3, with a major D1 complex (museums, community, health, education etc. uses), alongside B1 business, residential and other land-uses, plus the Triangle Site proposals. Emissions from vehicles are expected to reduce in
future years, therefore the worst-case assessment year is the earliest in which the
development could be completed. Although the development is not expected to be
complete until 2020 at the earliest, the phases built before that date would have an
impact upon air quality. As the extent of development likely in each year is not known at
this time, it has been assumed for the purpose of this assessment that all of the
development would be completed immediately i.e. in 2006/7. This is very much ‘worst-
case’ assumption, that ensures that any potential traffic impacts due to the scheme cannot
be under-estimated.

5.10.46 The worst-case land use combination for gas demand has been determined and this has
been used to calculate the total emissions from heating plant. The total estimated gas
demand including development on the Triangle Site is 90 GWh per year.

Assessment of Effects

Predicted Effects of Development

Traffic

5.10.47 Potential traffic impacts have been assessed at three existing locations, on York Way and
Euston Road, that are likely to experience the worst-case impacts arising from the new
development, including those likely to be experienced on the Triangle Site. Concentrations of nitrogen dioxide and PM_{10} have been calculated for the existing (2002)
conditions and for 2007 and 2020, with and without the development in place. Pollutant
concentrations have also been calculated for three locations likely to be occupied by
residential units within the new development, including the Triangle Site. Results show
that the changes in traffic flow in the study area would result in a very small change in
pollutant concentrations, even at the worst-case locations. However, due to the changes
being in an area where concentrations are expected to be above the air quality
objectives, the significance is assessed as minor adverse.

5.10.48 Concentrations of nitrogen dioxide at all of these locations would be above the statutory
air quality objectives in 2007, either with or without the development. The objectives for
PM_{10} that apply from 2004 are expected to be achieved but the provisional objectives that
apply from 2010 are unlikely to be met either with or without the development.

Heating emissions

5.10.49 Calculated emissions from the heating plant, based on the total estimated gas
consumption across the site, have been compared with those from the 2km x 3km area
in which the proposed development is situated. Nitrogen oxides emissions from the plant
would lead to a very small change in nitrogen dioxide concentrations in the area and the
change in PM_{10} concentrations would also be very small. However, due to the changes
being in an area where concentrations are expected to be above the air quality
objectives, the significance is minor adverse.

5.10.50 Carbon dioxide emissions in the local area would increase by a very small amount (<7%).
However, carbon dioxide is a global pollutant, which does not have any direct local
effects. It is highly likely that if this development did not go ahead, then the emissions
predicted from the site would occur elsewhere and therefore there would not be any net
increase in global carbon dioxide emissions as a result of this scheme. In practice there
may be a slight decrease in emissions because the new buildings on the King’s Cross Central development would be built to higher standards of energy efficiency than those vacated by activities re-locating to the site. It is also likely that a development of similar scale elsewhere would be more reliant on private motor vehicles. Thus the King’s Cross Central development, with its good access to public transport, would be likely to give rise to lower overall carbon dioxide emissions.

5.10.51 The gas demand estimates used for this assessment are based on current building standards. All new buildings would be designed to achieve high BREEAM and EcoHomes ratings, with an aspiration for excellent. In the future, when the development would be built, standards are expected to be even better than those used for this assessment. The actual impact on emissions and thus concentrations could be smaller than predicted.

**Effects without the Triangle Site**

5.10.52 The traffic and heating emissions likely to be generated by the Triangle Site are very small. Therefore the effects of the scheme without the Triangle Site would only be slightly less than the already minor adverse impacts predicted for the development as a whole.

**Effects with King’s Cross Station Enhancement**

5.10.53 Currently, there is no information about the impact of the King’s Cross Station Enhancement on traffic movements in the study area. However, these changes are likely to be very small. Heating emissions from the Station Enhancement schemes would be minimal in relation to other sources in the area. Therefore any cumulative impacts with the King’s Cross Station Enhancement would remain minor adverse.

**Opportunities for Further Mitigation Measures**

5.10.54 There are various measures to reduce travel by private car, which would minimise traffic impacts on air quality. These measures (set out in the applicant’s Green Travel Plan) include;

- appointment of a Travel Plan co-ordinator;
- Travel Information Points within the development;
- promotion of travel information on web pages;
- regular monitoring of travel patterns;
- reducing the need to travel, for example by encouraging occupiers to recruit locally;
- walking and cycling Initiatives for example promoting safe routes to school, incorporating secure cycle parking/storage within buildings and the public realm and facilitating a Bicycle User Group;
- ensuring physical accessibility for all;
- public transport Initiatives for example providing residents with a public transport welcome pack;
- vehicle initiatives, for example setting up a car share scheme, attracting city car club operators and providing charging points for electric vehicles;
- estate management – leading by example.

5.10.55 Energy efficiency measures, which would minimise pollutant emissions, could include:
- measures to improve energy efficiency of buildings for example careful selection of window sizes, envelope thermal performance, building systems and lighting;
- measures to improve energy supply efficiency, for example combined heat and power, combined cooling heat and power and energy supply companies;
- using renewable energy systems, for example photovoltaics, collar hot water collectors, biomass energy and green tariffs.

**Monitoring**

5.10.56 No monitoring is required during the operational phase.

**Summary**

5.10.57 Existing air quality in the area does not comply with the Government’s Air Quality Objectives. Therefore, the London Boroughs of Camden and Islington have both declared Air Quality Management Areas and proposed measures to improve the situation in their areas.

5.10.58 The potential impacts of changes in traffic flows and heating emissions from the King’s Cross Central development on air quality have been assessed. Due to the location of the site, with good public transport links, the scheme is not likely to significantly increase traffic flows in the area, therefore the change in pollutant concentrations, even at worst case locations and using worst case assumptions, would be very small. Emissions to air from natural gas heating plant would lead to a very small increase in local pollutant emissions. These would generally be emitted well above the ground and quickly dispersed, leading to a very small increase in pollutant concentrations at ground level. Even though these changes in pollutant concentrations due to the King’s Cross Central development are predicted to be very small, the overall impact is classified as **minor adverse**, due to its situation in an area where concentrations are expected to be above the air quality objectives in any event.

5.10.59 There would be a very small increase in carbon dioxide emissions in the local area. However, this is a global pollutant, which does not have any direct local effects.

5.10.60 If the Triangle Site is not developed, the effects of the Main Site alone would be slightly less than the minor adverse effects for the whole site.

5.10.61 Cumulative effects with King’s Cross Station Enhancement are anticipated to be very small in relation to traffic emissions. In relation to heating emissions, the effects of both schemes taking place would continue to be of minor adverse significance.
5.11 **Microclimate**

**Introduction**

5.11.1 This chapter summarises the likely significant effects on microclimate of the proposed King's Cross Central development during its operational stage. The detailed specialist report is provided at Part 19.

5.11.2 The term ‘microclimate’ refers to local conditions that may be affected by the proposed development. This section concentrates on two aspects of microclimate; the pedestrian level wind climate and the solar shading effect of buildings and structures on public realm.

5.11.3 Public realm and development form within the King's Cross Central site has already undergone substantial change arising from the CTRL works, which has already changed the pre-CTRL microclimate.

5.11.4 King's Cross Central would significantly increase the extent and variety of public realm within the area. In part, this would be achieved by opening up land to the public that was previously in private ownership north and south of the canal. The success of the public realm would, in part, depend upon the comfort of people using the spaces and routes, where the degree of comfort is affected by wind levels and sunlight at pedestrian level.

**Methodology and Assessment Criteria**

5.11.5 The extent of the study area for microclimate including the wind environment and solar shading studies is limited to the two red-line application areas and immediately adjacent public realm (see Figure 5.11.1).

5.11.6 The term ‘public realm’ encompasses all ground-level areas that would be publicly accessible and include roads, footways, cycleways, and other thoroughfares, and also formal and informal open spaces. For King’s Cross Central, ‘public realm’ would embrace much of the area around and between buildings (Figure 5.11.2).

5.11.7 The environment of the ground plane at which public realm occurs is influenced and controlled by the absence or occurrence of buildings and significant structures that can deflect wind currents or cast shadows. Buildings therefore create particular pedestrian level wind currents and control the degree of sunlight reaching ground level.

5.11.8 The assessment compares the proposed completed scheme for the whole King’s Cross Central site against the 2006/2007 baseline.

5.11.9 The assessment also considers how the wind and solar effects would be different if only the Main Site development was undertaken (without the Triangle Site). The potential for cumulative effects with the King’s Cross Station Enhancement are also identified.
5.11.10 The assessment of environmental wind flows upon the pedestrian level wind environment lies outside the scope of the British Standard for the assessment of wind effects on buildings. A qualitative assessment is therefore provided to review potential impacts of the proposed development on the pedestrian level wind environment.

5.11.11 Building Research Establishment (BRE) guidance has been considered in the assessment of solar shading effects on external spaces. This indicates that the Spring Equinox (March 21\textsuperscript{st}) offers an annual daylight average. However, shade patterns have also been generated for the Summer Solstice (June 21\textsuperscript{st}) and Winter Solstice (December 21\textsuperscript{st}) and represent a maximum and minimum in terms of solar access. For each of these dates shade patterns have been generated for two-hourly intervals during daylight hours. November 21\textsuperscript{st} has also been considered to give a more representative indication of 'winter' sunlight and shade.

5.11.12 A series of transparent ‘sunlight-on-ground’ overlay sheets are available for use in conjunction with the BRE report which enables manual prediction and assessment of specific building and site layouts and resulting shadow characteristics. Since publication of the Littlefair report in 1991, computer modelling technology has advanced significantly and readily enables generation of shading patterns for any given time, date or latitude based on a three-dimensional model. Computer modelling techniques have been adopted for the King’s Cross Central solar shade study and this provides an accurate way of predicting ‘worst case’ (see below) building shadow effects for this large and complex urban site.

5.11.13 The computer model takes into account the post-CTRL layout and levels as set out on Parameter Plans for the Main Site and the Triangle Site, to establish the 2006/2007 solar shade baseline. Parameter Plans defining Principal Public Realm Areas, Development Zones, Access and Circulation, Proposed Finished Site Levels and Maximum Building Heights for the Main Site and the Triangle Site have been used to develop a ‘worst case’ three-dimensional computer model of the proposed development in the Design Year to generate solar shade patterns.

5.11.14 The solar shading assessment considers the importance and sensitivity of the receptor, magnitude and nature of effects, and the significance of effects.

**Definition of Significance**

5.11.15 In the classification of pedestrian level wind environment it is important to account for the fact that perceived comfort of wind flows depend on particular pedestrian activities. It is conventional to assess the pedestrian level wind environment in terms of the so-called Lawson criteria, which are widely accepted by planners and developers in the UK. These criteria aim to categorise the pedestrian level wind environment in terms of suitability for typical pedestrian activities as follows:
### Comfort Levels

<table>
<thead>
<tr>
<th>Comfort Levels</th>
<th>Threshold for mean hourly wind speed exceeded &lt;5% if the time</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1+</td>
<td>Uncomfortable for all users</td>
</tr>
<tr>
<td>C1</td>
<td>Comfortable for walking fast or business walking</td>
</tr>
<tr>
<td>C2</td>
<td>Comfortable for strolling or window shopping</td>
</tr>
<tr>
<td>C3</td>
<td>Comfortable for standing/sitting for short periods</td>
</tr>
<tr>
<td>C4</td>
<td>Comfortable for standing/sitting for long periods</td>
</tr>
</tbody>
</table>

5.11.16 The potential microclimate effects in respect of solar access are assessed in accordance with the following terminology. These levels of significance apply to both adverse and beneficial effects. A further category of ‘negligible’ is used to describe effects which are of such low importance that they are not material to decision making:

- **Major significance** – Effects of the development of greater than local scale (note, as microclimate is a local effect then all effects are by definition, less than major).

- **Moderate significance** – Effects of the development that may be judged to be important at a local scale (i.e. in the planning context).

- **Minor significance** – Effects of low importance in the decision-making process.

5.11.17 Evaluation of the significance of effects applies value judgements about the importance or value of the public realm, and the sensitivity of its users to proposed changes, the magnitude or scale of effect, and the nature or duration of effect.

5.11.18 Public realm within the site at 2006/2007 will be restricted to thoroughfares that are considered to be of low importance/sensitivity due to the transitory nature of usage. Sensitivity is related to the nature and duration of public realm use. Sensitivity to change would generally be low due to the short duration of use and generally non-leisure related activity. Conversely, the sensitivity of the Regent’s Canal and Camley Street Natural Park is considered to be high due to predominantly recreational, and in the case of Camley Street Natural Park, educational functions. Users of the canal would be more sensitive to changes in wind levels and patterns, and solar shading due to the nature of leisure and education activities such as strolling and/or sitting for short or long periods.

### Consultations

5.11.19 The scope of microclimate studies was included in the EIA Consultation Draft Scoping Report issued by the Applicants and the EIA team in April 2003. The London Borough of Camden confirmed that they had no comments to make regarding the scope of the microclimate studies.
5.11.20 Only one other response was received, being from the London Borough of Islington. This confirmed that Islington Council is generally satisfied with the scope of the assessment. However, Islington did note that variables in the proposed scheme must be assessed insofar as they affect microclimate. This comment has duly been addressed by adoption of the ‘worst case’ scenario (see below) for wind and solar effects that could arise from the proposals as set out in the Development Specifications, the Parameters Plans and the Landscape Proposals Plans.

The Existing Situation

5.11.21 Together, the Main Site and the Triangle Site lie within the urban context of central London. St Pancras station and St Pancras Chambers, and King’s Cross station lie outside the site, but provide the dominant built form to the south of the canal. Buildings of between 4 and 9 storeys and some taller buildings occur along the Euston Road. Buildings of predominantly 1 to 3 storeys occur along York Way and to the west of St Pancras station, with the tall structure of the British Library immediately adjacent to St Pancras Chambers.

5.11.22 Buildings of 1 to 6 storeys occupy the site between the stations, these include the Great Northern Hotel, the German Gymnasium, Stanley Buildings and Culross Buildings. The remnant guide frame of Gasholder No.8 and a new gas governor building are evidence of gasworks uses south of the canal. Incidental open space has been created to the south of the canal as a result of the CTRL works, building demolitions and site clearance.

5.11.23 Camley Street Natural Park forms the only significant ‘soft’ area within the immediate vicinity of the site. The remainder of the site and its environs are characterised by hard, paved urban landscape uses.

5.11.24 Public realm and open land comprises incidental and open areas between and around existing buildings including the stations, Great Northern Hotel, German Gymnasium, Stanley Buildings and Culross Buildings to the south of the canal. Regent’s Canal and Camley Street Natural Park form open space, with access to the latter being restricted.

5.11.25 Incidental and open land in front of the Granary and between and around the East and West Coal Drops, and along Wharf Road occur to the north of the Canal. All land to the north of the canal towpath is privately owned and used and access is controlled.

5.11.26 Prevailing winds originate from the south-west, north-east winds tending to occur more frequently during the spring and winter months. The wind pattern is relatively consistent, although high wind speeds are more frequent during winter and spring.

5.11.27 The existing solar environment is affected by the availability, orientation and location of open spaces and by the nature and massing of obstructions such as buildings and other structures including retaining walls.
Baseline 2006/2007

5.11.28 Major enabling works and construction of the CTRL and terminus at St Pancras will continue through to 2006/2007.

5.11.29 A number of new open and incidental open areas will be created or temporarily reinstated by the CTRL and associated works up to 2006/2007. Several of these areas will be made secure prior to commencement of King’s Cross Central and will not therefore form part of the public realm. They include:

- around Gasholder No.8;
- the former Battle Bridge Works;
- land to the north of the Goods Yard Complex;
- the Triangle Site.

5.11.30 Land in private ownership and use to the north of the canal would remain secured at the end of the CTRL works. Outside the area of the CTRL works existing land uses are assumed to continue. This will include public realm along Pancras Road, Battlebridge Road, Goods Way, Camley Street and York Way. Regent’s Canal and Camley Street Natural Park will continue to be publicly accessible.

The Proposals

5.11.31 The Development Specifications for the Main Site and the Triangle Site fix maximum building heights for each development zone across the site. However, these maximum building heights could not be implemented throughout the site due to limits placed elsewhere in the Development Specifications on the quantum of floorspace within each development zone and also limits on maximum massing. The Development Specifications allow for (but do not prescribe) variation in building heights and rooflines, permitting emphasis of routes and creation of new landmarks, nodal points and visual interest.

5.11.32 The influence of development on the microclimate and solar shading of the site has been considered throughout the evolution of the proposals. It has informed site layout in particular. Site layout is acknowledged as an important factor in the degree of sunlight in open spaces.

5.11.33 The King’s Cross Central site occupies a south-facing slope which provides good sunlight levels. This has in part guided the arrangement of proposed development zones and public realm.

5.11.34 The proposed development zones and maximum building heights have been refined throughout scheme evolution to ensure that all public spaces enjoy sunlight for a good part of the day on the mid-season date of March 21st, which provides an average day for the year.
5.11.35 New streets, parks, squares and other principal public realm areas are proposed throughout the Main Site, representing approximately 39% of the Main Site application area. Landscape Proposals Plans define the landscape components for each of these key routes and areas (see Figures 5.11.3 and 5.11.5).

Mitigation Assumed as Part of the Proposals

5.11.36 The quality and amenity of open spaces has been considered throughout the scheme evolution with regard to potential effects upon solar shading and pedestrian level wind patterns. Therefore potential significant adverse effects on solar shading and the wind climate have been minimised through fixing the spatial parameters for development.

5.11.37 The Landscape Proposals Plans show the proposed public realm components, including proposals for tree planting. The introduction of trees throughout the site would provide enhancement of the pedestrian level wind environment through the reduction, dissipation, and mitigation of elevated wind speeds and turbulence. Design of individual buildings at the detailed design stage may also mitigate potential adverse pedestrian level wind environment effects, though this has not been assumed as part of our ‘worst case’ assessment.

Worst Case

5.11.38 Spatial requirements for the delivery of public open space with good solar access is sometimes at odds with the creation of an appropriate pedestrian level wind environment when subject to prevailing south-westerly winds. The location of open space to the south of a proposed building maximises potential for solar access. However, it also creates the opportunity for south-westerly winds to speed-up, that may then create turbulence at ground level close to the proposed building.

5.11.39 The Development Specifications allow for a range of building heights, massing and floor space arrangements.

5.11.40 In respect of the wind environment, the worst case would arise as a result of maximum proposed building heights being constructed that are subject to south westerly winds. This is the worst case because it maximises the opportunity for wind to be deflected downwards and/or create turbulence at lower building levels or at ground level.

5.11.41 For solar shading, the worst case scenario would arise as a result of maximum proposed building heights being implemented in each area, thus casting the maximum shading in terms of length/duration at any given time of the year. For the purposes of modelling, the proposed routes/breaks within the development zones have been ignored. In reality buildings would be broken up by a significant number of new streets, as shown on parameter plan KXC 007 and this would deliver greater solar access over and above that set out in this assessment, below.

5.11.42 Furthermore, the assessment makes no allowance for set-backs or other architectural devices, that may reduce solar shading.

5.11.43 In short, the ES presents a ‘worst case’ assessment of the proposals. The future detailed design and planning process has the potential to deliver an even better set of environmental conditions than assessed here.
Assessment of Effects

5.11.44 It is recognised that the proposed development is likely to generate an overall increase in public pedestrian activity in the area. It is further recognised that pedestrian activity for the proposed site conditions would therefore become more wind and shade-sensitive than the baseline, being more leisure, residential and recreation orientated (involving increased periods of outdoor strolling, standing and sitting).

Wind Environment

Prevailing SW Wind Directions

5.11.45 In the specialist report in Part 19, Appendix 19A, Figure 2.1 illustrates likely wind flow patterns from this direction.

Southern Area

5.11.46 Station Square would create an open space that would allow some speed-up of south-westerly winds before reaching the southern facades of development zone A and eastern arm of development Zone B. It is likely this would create downdraughts at the façades, which in turn would be expected to accelerate into the Boulevard. Tree planting proposed within the Boulevard would reduce and dissipate the accelerated wind speeds. Wind conditions would therefore be suitable for the proposed uses including leisurely strolling and shopping along the Boulevard.

5.11.47 Downdraughts may occur from exposed upper levels at the north-west of development zone B, on Pancras Road. Downdraughts could accelerate around the corner onto Goods Way and cause wind conditions that are unsuitable for leisurely strolling – if necessary this could be readily addressed as part of the future design of building façades. On the north side of Goods Way, the fencing and soft landscaping at the southern boundary of Camley Street Natural Park would mitigate wind conditions within the park. The proposed development would shelter the remainder of Goods Way from prevailing south-westerly winds.

5.11.48 Pancras Square would be relatively sheltered from south-westerly winds, by the enclosing built form.

Regent’s Canal

5.11.49 Some funnelling of lower-level south-westerly winds may occur but wind conditions are likely to remain suitable for leisurely strolling.

Northern Area

5.11.50 The Northern Area would be relatively exposed to south-westerly winds approaching the site due to the openness of the land in front of the Granary, which would be transformed into Granary Square.

5.11.51 Downdraughts would continue to occur on the south façade of the Granary building, with wind speeds increasing along the façade, resulting in relatively windy conditions in front of the Granary. The establishment of Granary Square and diversification of uses would increase the sensitivity of this space. Tree planting within Granary Square, as shown on the Landscape Proposals Plan, is likely to dissipate wind speeds reaching the
Granary façade and help create a wind environment suitable for the planned recreational uses.

5.11.52 Within the lower areas in the vicinity of the Coal Drops the wind conditions are likely to be relatively benign and suitable for outdoor seating through much of the year.

5.11.53 On the north side of the Coal Drops there would be the potential for downdraughts from the Eastern Coal Drops to accelerate around the corner, resulting in relatively high wind speeds at a small area around the building base. This could be addressed at the detailed building design stage to create appropriate conditions for ingress / egress.

5.11.54 Near the gasholders there would be the potential for downdraughts, from the southern façade of development zone T, to accelerate around the corner of the buildings. Flow channelling between adjacent blocks could result in relatively high wind speeds for a short distance along Canal Street. Proposed tree planting along the western side of Canal Street would help to reduce this effect.

5.11.55 On the north side of the gasholders there is the potential for re-circulating winds, causing wind driven litter accumulation.

5.11.56 Around the north-western site boundary, downdraughts from the western façades are likely to funnel between the development zone T and the CTRL embankment, resulting in relatively high pedestrian level wind speeds. This area would be used for servicing of the buildings and as an emergency access. Nevertheless the pedestrian level wind conditions would be expected to remain comfortable as a general thoroughfare.

5.11.57 Proposed development and tree planting along the western frontage of York Way would shelter pedestrian users from south-westerly winds. This would improve the pedestrian level wind environment when compared with the existing conditions, and York Way would be suitable for leisurely strolling.

5.11.58 Varying built form and massing within the Main Site would dissipate prevailing south-westerly winds approaching the Triangle Site. As a result of this leeward position, the Triangle Site would be relatively sheltered from prevailing south-westerly winds.

NE Wind Directions

5.11.59 Likely wind flow patterns for winds approaching the site from the north-east are illustrated in the Specialist Report Part 19, at Appendix 19A, Figure 2.2.

Southern Area

5.11.60 Within the Southern Area wind conditions for prevailing north-easterly winds are likely to be relatively benign due to shielding effects of the proposed buildings to the north and south of the canal.

Regent's Canal

5.11.61 Some funnelling of lower-level north-easterly winds may occur but wind conditions are expected to remain suitable for strolling and angling.

5.11.62 Parameter Plans KXC006 and KXC007 and Landscape Proposals Plan LPP108 show the proposal to open archways alongside the canal, adjacent to the Coal Drops. With the arches closed, the lower areas in the vicinity of the Coal Drops are likely to experience relatively benign winds. Opening the arches is likely to cause localised deterioration in the
Part 5.11 - Microclimate

wind conditions immediately adjacent to the arches only. This could be mitigated at the detailed design stage. In any event, the applicants consider that any localised impact on wind conditions would be more than outweighed by the benefits of improving links between the towpath and the Goods Yard complex.

Northern Area

5.11.63 In the Northern Area, winds flowing over and around the low-level East and West Handyside canopies are likely to accelerate around the south-east corner of the Granary resulting in relatively windy conditions in Granary Square. A relatively large area of recirculating winds could cause wind driven litter accumulation, close to the south façade of the Granary building. However, this effect would be mitigated by proposed tree planting in this area (and proper management/maintenance of the space). The resulting wind environment would be suitable for the planned recreational uses.

5.11.64 On the north side of the Coal Drops there would be the potential for some downdraughts from the Eastern Coal Drops, to accelerate around the corner resulting in some high wind speeds at a small area around the building base. However, wind conditions would generally be expected to remain suitable for strolling.

5.11.65 At the north-east of the site, downdraughts from the exposed north-eastern façade of the taller developments are likely to cause relatively high wind speeds on York Way. Proposed tree planting along the western edge of York Way would dissipate wind speeds to make this area suitable for leisurely strolling, throughout the year.

5.11.66 Proposed buildings along the western frontage of York Way are likely to create minor downdraughts caused by north-easterly winds. This would be dissipated by proposed tree planting along the western pavement (see Landscape Proposals Plan), resulting in improved conditions that are suitable for leisurely strolling.

5.11.67 There is the potential for the Triangle Site to experience accelerated north-easterly winds, caused by downdraughts and flow acceleration at the exposed building corners. The proposed public realm area at the southern boundary of the Triangle Site would be sheltered from north-easterly winds and wind conditions here would be suitable for leisurely strolling and sitting.

5.11.68 North-easterly winds may be deflected towards Canal Street by the buildings on the northern boundary of the Triangle Site. The proposed tree planting along Canal Street would help to dissipate these flows and create adequate shelter.

Effects without the Triangle Site

5.11.69 Should the Triangle Site Development not proceed, accelerated wind flows could be experienced by the Main Site development fronting onto York Way. Proposed tree planting along the western edge of York Way would dissipate wind speeds to make this area suitable for leisurely strolling, even during winter and spring. The effect on York Way is therefore broadly the same, albeit development of the Triangle Site would offer some local benefits.
Effects with King’s Cross Station Enhancement

5.11.70 Closure of the gap between King’s Cross Station and the Great Northern Hotel to provide a King’s Cross Station Enhancement concourse would reduce channelling of south-westerly winds, improving pedestrian level conditions to the north, and at the entrance to the Boulevard. Conditions would be suitable for leisurely strolling.

5.11.71 For north easterly winds, flows along the Boulevard would be deflected and dissipated by the proposed concourse and wind conditions would remain suitable for leisurely strolling.

5.11.72 Implementation of the King’s Cross Station Enhancement would also enable the removal of the temporary concourse. This would give rise to minor wind turbulence at the base of the south facing elevation.

Solar Shading

Southern Area

5.11.73 The existing stations and the Great Northern Hotel would continue to cast shade upon parts of Pancras Road, Station Square and the western end of Goods Way from early afternoon onwards in spring and summer. New development would be concentrated to the north of Station Square, defining new public realm areas including the Boulevard, Pancras Square and Canal Square.

5.11.74 Public realm areas including Station Square, the Boulevard and Pancras Road to the south of the canal would generally enjoy good levels of solar access during spring and summer. The low sun angle in winter would cast long shadows, often created by existing buildings such as the stations and the Great Northern Hotel. The enclosed nature of Pancras Square means that it would receive sunlight during mid morning to early afternoon, except during winter.

5.11.75 The orientation of Goods Way and Canal Square would limit solar access for much of this area of public realm. Intermittent springtime sunlight would be gained throughout the day between breaks in the development form to the south with full sunshine during late afternoon. This would increase during the summer particularly in the area of Canal Square and at the easternmost end of Goods Way, with full solar access along the whole of Goods Way from early afternoon onwards. Goods Way would however receive very little sunlight during the winter, except for the eastern end towards York Way.

5.11.76 Use of public realm to the south of the canal is envisaged to include sitting, leisurely strolling and brisk walking within the Squares and Boulevard, with brisk walking along Pancras Road and Goods Way (either side of Canal Square). The solar shading assessment demonstrates that levels of solar access would be suitable for the proposed uses.

5.11.77 The proposed development south of the canal would establish extensive new public realm for mixed active and passive uses, with a principal north-south orientation that optimises solar access. It is considered that the overall solar shading effect for the Southern Area is Permanent Beneficial, of Minor significance.
**Regent’s Canal**

5.11.78 The Regent’s Canal and towpath would continue to provide a recreational facility, and that facility would be enhanced by the proposed King’s Cross Central development, including increased access to the Goods Yard complex. New development form directly within the Regent’s Canal corridor would be restricted to the relocation of the gas governor building, and the construction of new bridges over the canal and development in Zones G and F.

5.11.79 Proposed development to the south of Goods Way would increase shading of the canal during spring, autumn and winter. However, good levels of solar access would be gained along (changing) stretches of the Regent’s Canal towpath and water body, depending upon the time of day and time of year, increasing further in summer. Solar access would be poor in winter to the east of Camley Street Natural Park, but good to the west. The opening up of access between the Goods Yard area and the canal would locally reduce early morning shading along the towpath by the removal of sections of wall.

5.11.80 Generally, the solar shading assessment shows that the canal would continue to enjoy sunlight levels appropriate to the continued and proposed uses. However, some deterioration of solar access would occur during winter.

5.11.81 Camley Street Natural Park provides a recreational and educational facility adjacent to the canal. Public access is restricted to identified opening times. Uses within the park include strolling and sitting for short to long periods, pond-dipping etc.

5.11.82 In Spring some overshadowing of southernmost part of Park would occur through late morning until noon. This would give way to full solar access from mid morning onwards in summer. In winter, early to mid morning shading from proposed development to the south of Goods Way would extend across much of the park, giving way to good solar access from early afternoon onwards.

5.11.83 Overall, Camley Street Natural Park would enjoy good levels of solar access at differing times of day throughout the year.

5.11.84 The overall effect on the Regent’s Canal (incorporating Camley Street Natural Park) is assessed as a Permanent Adverse effect, of Minor significance.

**Northern Area**

5.11.85 Existing buildings within the Goods Yard complex would continue to cast shade locally, including the Granary, the East and West Transit Sheds, Fish and Coal Offices, Eastern and Western Coal Drops, Regeneration House and the Handyside Canopies. New development would be concentrated principally to the north and north-east of the Goods Yard complex. The proposed built form would define new public realm including the Gas Holders area, Market Square and Long Park. The area in front of the Granary would be transformed into Granary Square, and the open space between the Coal Drops would be opened up to public access.

5.11.86 The computer modelling indicates that Granary Square, the upper Coal Drops and the Gas Holders area would receive good to excellent levels of solar access throughout spring, summer and autumn, reducing during the winter when shadows would be cast by the proposed development to the south of the canal. The routes that would provide breaks in development zone B (B4 and B5) to the south would allow additional levels of solar access.
5.11.87 Buildings that flank and define the Market Square and Long Park would create some shading of the public realm, but the extent would be mitigated by the generally north-south orientation and tapering form of the area. Both Market Square and Long Park would enjoy good solar access from mid/late morning through to mid afternoon throughout the year. Streets and other breaks in the development zones either side (as shown on Parameter Plan KXC007) would allow increased solar access across the space.

5.11.88 The east-west orientation of Goods Street would limit solar access to this area of public realm. Intermittent springtime sunlight would be gained throughout the day between breaks in the development form to the south; this would increase during the summer. Goods Street would receive low levels of direct sunlight during the winter.

5.11.89 The curving form and flanking development would restrict solar access along Canal Street, with limited sunlight from midday to mid afternoon during spring and autumn, and improved levels during summer.

5.11.90 Use of public realm to the north of the canal is envisaged to include sitting and leisurely strolling within the Squares and the Coal Drops, with active play within Long Park and the Gas Holders area. Brisk walking and strolling are envisaged along Canal Street and Goods Street. The solar shading assessment demonstrates that levels of solar access would be suitable for the proposed uses.

5.11.91 New development to the north of the York Way junction with Goods Way would define the western edge of the road, and would create new road junctions and other points of access with the King's Cross Central site.

5.11.92 The north-south orientation of York Way ensures that existing good levels of solar access would continue throughout the day in spring, summer and autumn. Proposed development would create wintertime shading in the afternoons.

5.11.93 It is envisaged that the importance of York Way as a pedestrian thoroughfare (brisk walking and leisurely strolling) and the quality of its environment generally would be increased by implementation of the King’s Cross Central proposals. The solar shading assessment demonstrates that levels of solar access would be suitable for the proposed uses.

5.11.94 The existing vacant Triangle Site would be transformed by the King’s Cross Central development to define the eastern edge of York Way at this location. Mixed-use buildings would enclose an elevated private amenity space. New public realm would be created along the southern edge of the Triangle Site, on Randell’s Road frontage adjacent to the proposed health and fitness/medi-centre/community uses.

5.11.95 It is envisaged that the public realm would be used for sitting and leisurely strolling. The space would be suitable for the proposed uses, enjoying good solar access at the southern edge of the site, providing a Permanent Beneficial effect of Moderate significance.

5.11.96 In summary, establishment of extensive new public realm for mixed active and passive uses on former vacant land within the Northern Area, along a principal north-south orientation optimises solar access. East-west orientated routes would have less solar access. The overall effect on the Northern Area (including the Triangle Site) is assessed as Permanent Beneficial of Minor significance.
Effects Without the Triangle Site

5.11.97 Should the Triangle Site remain undeveloped, levels of solar access to the Main Site would remain the same. Therefore, the effect without the Triangle Site would still be Permanent Beneficial of Minor significance.

Effects with King’s Cross Station Enhancement

5.11.98 At the operational stage of King’s Cross Central with the King’s Cross Station Enhancement, the southern part of Station Square would continue to be shaded by the existing structures of King’s Cross Station, the Great Northern Hotel and St Pancras station throughout much of the day during spring. The introduction of a concourse within this area would slightly extend shadow northwards. However, the northern part of Station Square would continue to receive good levels of solar access from mid morning to mid afternoon in spring and autumn, extending through to late afternoon in summer.

5.11.99 The King’s Cross Station Enhancement would enable the removal of the temporary concourse which would improve solar access south of the station.

5.11.100 Overall, the effect on solar access with the King’s Cross Station Enhancement is considered to be Permanent Beneficial of Minor Significance, i.e. the same as for the development without the King’s Cross Station Enhancement.

Opportunities for Further Mitigation Measures

5.11.101 The assessment of microclimatic effects has been based upon the Development Specifications with their accompanying Parameter Plans and Landscape Proposals Plans. It is acknowledged that in many cases, detailed building and landscaping design could further enhance the wind environment and solar access. For example, building set backs at upper levels could be used to increase levels of solar access. In particular areas, this would increase sunlight to the public realm; it could also minimise adverse down-draught wind effects.

5.11.102 Thus individual building designs and groups affect the pedestrian level wind environment of their immediate surroundings. Further mitigation of potential adverse effects at and around the base of buildings, particularly at entrances, should be considered at the detailed design stage. For example, wind conditions at Pancras Road/Goods Way could be readily addressed as part of the future design of building façades.

Monitoring

5.11.103 The management of the public realm would provide a framework for ongoing monitoring of the effectiveness of the mitigation of pedestrian level wind environment. Such monitoring would identify the need for management and maintenance of tree planting which dissipates and reduces wind speeds throughout the site.

5.11.104 Solar shading effects result from the form, orientation and layout of built developments. As these elements are substantially fixed, ongoing monitoring of solar shading is not anticipated.
Summary

5.11.105 The site lies within the urban context of central London and buildings within and adjacent to the site influence wind flow patterns at pedestrian level and cast shadow upon nearby public realm.

5.11.106 The public realm comprises thoroughfares within and around the site typically used for brisk walking, and the Regent’s Canal, and Camley Street Natural Park which are used for recreation (sitting, leisurely strolling and other activities). Camley Street Natural Park is the only significant ‘soft’ area within an otherwise hard, paved townscape. The wind climate is typical for central London, with prevailing winds from the south-west and north-east. The site occupies a gentle south-facing aspect.

5.11.107 King’s Cross Central would provide a substantial increase in public realm. Leisure, residential and recreation-oriented uses would have increased sensitivity to wind and solar shade. The relationship between proposed open spaces and new development would affect the pedestrian level wind environment and degree of solar shade.

5.11.108 Some localised increases in wind speed would arise from the proposed site layout particularly where open space would be located to the windward side of substantial structures. Nevertheless, pedestrian level wind conditions would be comfortable for the proposed uses throughout the site.

5.11.109 Downdraughts may occur from exposed upper levels at the north-west of development zone B, on Pancras Road. Downdraughts could accelerate around the corner onto Goods Way and cause wind conditions that are unsuitable for leisurely strolling – if necessary this could be readily addressed as part of the future design of building façades.

5.11.110 Proposed development and tree planting along the western frontage of York Way would shelter pedestrian users from south-westerly winds. This would improve the pedestrian level wind environment when compared with the existing conditions, and York Way would be suitable for leisurely strolling.

5.11.111 Varying built form and massing within the Main Site would dissipate prevailing south-westerly winds approaching the Triangle Site. As a result of this leeward position, the Triangle Site would be relatively sheltered from prevailing south-westerly winds.

5.11.112 All areas of public realm would receive some degree of sunlight throughout the day during spring, summer and autumn and would therefore be suitable for the proposed uses. Solar access would reduce during winter. Principal new open spaces including Station Square, Granary Square, and Long Park would enjoy good levels of solar access, particularly during spring, summer and autumn.

5.11.113 The projected shade patterns for King’s Cross Central are typical of city streets and squares with some shade at different times of the day (depending on orientation) and less sunlight in the winter as a result of the low sun. Areas in shadow would still receive daylight even though they would not receive direct sunlight.

5.11.114 Without the Triangle Site development, there would be accelerated wind flows at the Main Site fronting onto York Way although the proposed tree planting would dissipate wind speeds. Levels of solar access to the Main Site would remain the same.
5.11.115 With the King’s Cross Station Enhancement, wind conditions for pedestrians would be better to the north of the proposed concourse and there would be minor wind turbulence at the base of the south facing elevation of the station. For solar shading, the introduction of the concourse would slightly extend shadows northwards. Solar access would be improved to the south of King’s Cross Station with the removal of the temporary concourse.
Principal Public Realm Areas at Completion
Figure No. 5.11.1
Drawing No. JWR.0625.205-1
The figures illustrate the shading effect of the development zones using the maximum building heights shown on Parameter Plan KXC 014. The figures do not take account of the size of the spaces and the routes that would provide breaks in the development (see Parameter Plan KXC 007, Access and Circulation) - in some cases these breaks would allow additional levels of solar access.

Figure 5.11.2
Solar Shading Pattern
March 21st 2020
JAVR005-191-1
5.12 Urban Services

Introduction

5.12.1 This chapter summarises the effects of the proposed Kings Cross Central development on the existing utility network and waste services during its operational stage. Effects on urban services at the construction stage are addressed in Part 4 and the relevant topic-based specialist reports. The detailed Urban Services specialist report, addressing both the construction and operational stages, is provided at Part 11.

5.12.2 Surface water drainage is discussed in Part 15 Water Resources.

Methodology and Assessment Criteria

Assessment

5.12.3 Due to the nature of urban services the study area extends beyond the planning application boundaries to include sections of the existing utility network, which would be likely to form the points of supply to the proposed development.

5.12.4 The assessment comprised:

- site visits;
- reviewing existing utility records to establish a preliminary baseline;
- estimate of utility demands for the proposed development;
- extensive consultation with the utility companies to confirm the capacity of existing networks and to establish the works that may be required on and off site to meet the predicted demands and also to establish the ability to meet the demands in phases to reflect the potential build out programme;
- assessment of impacts, including during construction and during operation, taking into account mitigation included in the proposals; and
- identification of possible further mitigation measures and options, where appropriate.

Definition of Significance

5.12.5 The following definitions of significance are used:

- Major – effects of the development of greater than local scale.
- Moderate – effects of the development that may be judged to be important at a local scale (i.e. in the local planning context).
- Minor – effects that are of low importance in the decision making process.
- Negligible – effects that are below normal levels of perception and are thus not material to planning.
Consultations

5.12.6 Unlike other aspects of the environmental assessment the impact of the proposed development on utility networks is generally not assessed against nationally or locally specified criteria. Impact is typically addressed in terms of the works required to provide the utility demands and the resultant physical changes required to existing networks to provide the new demand and any issues relating to residual utility capacity.

5.12.7 Extensive consultation has been conducted with all the relevant statutory utility providers and agreement reached on technically feasible means of providing the relevant utility supplies to the site. The statutory consultees include the Environment Agency and the London Boroughs of Camden and Islington.

Context to Utility Provision

Power

5.12.8 The incumbent electricity infrastructure company is EDF Energy. EDF Energy together with National Grid Company have both been consulted and the applicants have concluded there is no viable opportunity to utilise the existing buried National Grid Transco 400kV high voltage circuits located in the northern towpath of the Regent’s Canal to supply to the site.

5.12.9 EDF Energy and alternative providers have identified the most viable means of providing the required electrical supply to the site. Supplies to support a proportion of the site would be available from the Longford Street sub-station. Bulk supply serving either the complete development, or the major proportion not served from Longford Street, would be available from the City Road primary sub-station.

Gas

5.12.10 During consultation with Transco, the provider of gas infrastructure, various alternative supply arrangements and phasing options have been discussed. Transco has identified a range of flexible gas supply solutions from adjacent low-pressure mains dependant on the site supply requirements. An independent gas transporter has not identified any potentially beneficial alternative means of providing supplies.

Potable Water

5.12.11 Thames Water Utilities Ltd, the existing water supplier within the area has identified several constraints relating to providing a water supply, including identifying a suitable source of water, the strategic distribution of that water within the London network, and the local issue of conveying sufficient water to the site. Thames Water Utilities Ltd has established that as a result of several schemes, one of which is King’s Cross Central, a combination of reinforcement measures would need to be implemented, including relining existing mains. These works are considered by Thames Water Utilities Ltd to be part of their own network development.

5.12.12 Thames Water Utilities Ltd has also identified the need for local works to the surrounding infrastructure in order to supply the site.

5.12.13 The Applicants have held preliminary discussions with WaterGrid (a joint venture between Anglian Water, Bristol Water and British Waterways) to investigate alternatives to traditional "mains" supply. There could be options in due course to take supply from
the Regent's Canal or boreholes, either on or off site and there may be sustainability benefits in doing so. No decisions have yet been taken to pursue any of these alternative options, which may or may not be practicable, depending upon later detailed studies. Any alternative supply would require separate approvals and consents from the appropriate regulatory authorities. For all of these reasons, alternative supply options are not considered further as part of this Environmental Statement.

**Foul Drainage**

5.12.14 Thames Water Utilities Ltd is also the incumbent drainage authority providing public storm and foul drainage to the area, typically via existing combined sewers.

5.12.15 On the basis that existing stormwater flows from the former Kings Cross Railway Lands previously discharged to the existing combined sewers, Thames Water Utilities Ltd has confirmed there is adequate capacity to accommodate the proposed foul flows from the site without the need for off site works – see section 5.7 Water Resources which explains storm water drainage proposals and the existing combined sewer discharges.

**Waste**

5.12.16 Municipal waste is collected by the local authorities and managed by the North London Waste Authority. New waste management routes may become available during the life of the development.

**Communications**

5.12.17 Information has been collected from possible telecommunications providers to establish what existing equipment is located in the surrounding area. BT Telewest Broadband, Cable and Wireless and NTL, MCI Inc. and EasyNet provided details of the telecomms infrastructure in the area.

5.12.18 In addition BT conducted a study of the capacity of both the network and local exchange.

5.12.19 Other telecommunications providers (including – Your Communications, Thus, Level 3, 186k, Fibrenet, Infolines, Consol, Viatel, Call Communications) have either not responded to initial enquiries or have responded but with no information, so have been presumed to hold no equipment in the area.

**The Existing Situation**

5.12.20 The primary existing networks for power, water, gas and telecommunications are located along the routes of the main highways; York Way at the Eastern site boundary; Pancras Road in the south-west; and Goods Way crossing the site. Secondary networks connect to existing buildings in the southern part of the site, between Battlebridge Road and Euston Road. The substantial portion of the site lying to the north of the Regent's Canal is sparsely serviced, the only significant element being an electricity substation near the Granary which serves Exel's properties. A combination of existing relatively small diameter local foul sewers and large diameter combined sewers are located along existing roads.

5.12.21 A major gas governor has been relocated to a new position on the site at the junction of Pancras Road and Battle Bridge Road as part of the CTRL works.
Baseline 2006/7

5.12.22 The CTRL project will have its own power supply for traction and signalling, with infrastructure contained within the CTRL corridor. Known changes which affect the baseline are:

- relocation of sections of the utilities network as part of the re-routing of York Way, Pancras Road and Goods Way has recently been completed;
- LUL’s works at the southern end of the site may result in some minor changes to the utilities layout;
- an enhanced water supply along Coach Road.

Study Limitations

5.12.23 The following limitations have been identified during the course of compiling the baseline:

- information on the location of utilities in surrounding streets has been compiled from several sources of varying age and status. The accuracy of this information has not yet been confirmed by intrusive route proving exercises; and
- telecommunication providers have provided limited information about services around the site.

Proposals

5.12.24 As explained in Part 3.2 of this Environmental Statement, the proposed development is defined by Development Specifications for the Main Site and the Triangle Site incorporating a number of Parameter Plans. The Development Specifications define and fix the parameters of the development and form the basis of the assessment of effects on urban services.

5.12.25 The estimation of new utility demands for the Main Site and the Triangle Site has been based on appropriate unit rates for the different types of buildings and includes a further provision to serve the public realm (e.g. street lighting) The overall demands for power, gas, water and telecoms together with the forecast foul discharges have been discussed and agreed with the respective utility companies. They are based on a set of realistic worst-case assumptions. Further sensitivity testing has indicated the extent and nature of the works that may be required off site, shown indicatively on Context 001, and that the on site trench sizes used to calculate the import and export of materials, are robust enough to accommodate the full range of build out scenarios allowed by the Development Specifications.
Assumptions and Study Parameters

5.12.26 The following assumptions and study parameters form part of the assessment of the proposed development and its ‘worst-case’ impacts on urban services:

- utility works on and off site during all phases of development and also during any future maintenance would be undertaken in accordance with the New Road and Street Works Act for adopted highways and privately owned roads alike;
- all activities relating to the phasing and installation of on-site utilities would be co-ordinated;
- the base build installation would employ water efficient fittings wherever possible. For example commercial office buildings would be fitted with dual or low flush toilets;
- measures to mitigate the impact of installing new utilities on-site would include specification of working hours, consideration of noise when selecting plant and directing vehicles along agreed local access routes. Method Statements for specific activities would be produced.

5.12.27 Other assumptions and study parameters are set out in the Urban Services specialist report at Part 11 of this Environmental Statement.

Worst Case

5.12.28 There is no single “worst case” development scenario for urban services. Instead an individual worst case for each type of service has been assessed as described in the Assessment of Effects section.

Off Site

5.12.29 The majority of impacts would be due to off-site works within the local area which are referred to in Part 4 of this Environmental Statement and in the Urban Services specialist report at Part 11. Off site “Worst case” works would include:

- new power supplies to be provided from City Road and from Longford Street substations (both operated and owned by EDF Energy), which includes new 132kV and 11kV buried cables along existing public roads;
- new water supply connections from an existing main at Royal College Street via new mains and via a main in Coach Road (underneath new St Pancras Station Platform Extension) and from a main in Caledonian Road via Copenhagen Street;
- new gas supply points from York Way via the junction at the northern end of the site and the junction at Copenhagen Street, east of the site;
- multiple points of connection of foul discharge from the site via new and existing connections to the existing and diverted combined public sewer network;
- new connections for telecomms from either the BT Tower, Clerkenwell or Euston telephone exchanges requiring additional comms infrastructure within existing public roads; and
- direct connections to the Triangle Site from existing infrastructure or via new utility connections from the Main Site.
On Site

5.12.30 Within the site, in addition to utility diversions required as a result of road re-alignment to Goods Way and Pancras Road, and utility works along York Way, further diversions and abandonment of existing utility supplies to buildings to be retained may be carried out. The most significant proposed diversionary works comprise:-

- diversion of the Camden Sewer;
- relocation of the district gas governor and extension of the associated large diameter low and medium pressure gas supply mains;
- abandonment of existing building utility connections; and
- general utility diversions along Goods Way and Pancras Road.

Assessment of Effects

Utility Supplies

5.12.31 The assessment of effects considers each of the utility supplies individually and the various effects the provision of new supplies would have on the existing utility supply network. Effects such as noise, dust and traffic disruption are considered in Part 4 Construction Effects and the relevant topic based specialist reports. The full assessment in Part 11 considers effects both during construction and during operation. This section identifies only those effects and impacts related to operation of the utility supplies to the site.

Power

5.12.32 The worst case is assumed as providing new power supplies to the site from two different existing supply points, initially from a substation at Longford Street for the early stages of development, and then taking more substantial supplies from the City Road substation.

5.12.33 From Longford Street, approximately 1.5km to the east of the site, at least two and potentially 3 or 4 11kV cables would need to be buried along existing road corridors to the site, which would then be looped between buildings to form part of an on-site ring main. EDF Energy has confirmed that at present Longford Street has 20MVA of spare capacity and sufficient space to expand the facilities to provide supplies to King’s Cross Central.

5.12.34 The impact of utilising power supply from Longford Street is considered as long term, negative and minor on the basis that the existing spare capacity would be fully utilised by King’s Cross Central and therefore unavailable for existing customers, local new customers and background load growth.

5.12.35 New 132kV cables would also be laid from City Road, approximately 3km from the site. EDF Energy has confirmed that the City Road grid supply point is known at this stage to have significant spare capacity both spatially and in terms of electrical supply. As part of these works a new on site 132kV/11kV main substation would be provided together with further 11kV ring mains.
5.12.36 The impact of operating the 11kV distribution on site, in conjunction with the 132kV/11kV primary substation and new supplies to the site from the City Road substation would have a negligible effect long term on the existing and proposed utilities network and would provide future opportunities to enhance local capacity and supply (positive impact)

*Gas Supplies*

5.12.37 National Grid Transco has identified that gas supplies to the north of the site could be provided along the existing roads adjacent to and through the site. Resilience to the gas supply could be provided at points of entry to the site via Pancras Road and York Way at the northern end of the site if necessary.

5.12.38 South of the canal, supply would be obtained from the low-pressure mains that are supplied from the district gas governor.

5.12.39 The operational impact of the gas supply is considered to be negligible since it would not affect existing supplies and would be part of the planned infrastructure.

5.12.40 The relocation of the gas governor and the impact on other services would be complex and would require significant space and could take approximately two years to complete. The operation of the governor would have the same long-term effects as the existing plant; therefore the effects would be negligible.

*Potable Water*

5.12.41 The “worst case” scheme for supply of potable water supply to King’s Cross Central would be via Thames Water mains.

5.12.42 In addition to the requirement for local works, given the quantum of development and absence of spare capacity in the immediate network, the water supply solution would require further work remote from the site. Thames Water Utilities Limited has confirmed that these works would form part of their regulated network development enhancement.

5.12.43 The introduction of new supplies to the site is considered to be of long term local benefit since existing spare capacity is very limited and the reinforcement of the Thames Water network with increased availability of supply via new mains would provide a degree of enhancement.

*Foul Drainage*

5.12.44 The proposed drainage strategy is to separate storm and foul flows within the site and only to combine the discharges at the point of connection to existing sewers.

5.12.45 Agreement has been reached with Thames Water that the overall combined flow (storm and foul flows) would not exceed existing flows. This approach is often referred to as one of “equivalent discharge”. However in accordance the commitment set out in the Development Specification (paragraph 3.40) it is proposed that peak combined flows from the Main Site would be reduced by 10% below the existing “equivalent” flow.

5.12.46 Foul sewage from the Triangle Site would discharge, independently from the Main Site, to an existing local combined sewer in York Way.
5.12.47 The issues associated with the proposed foul flows from the site including quantum of discharge, capacity of existing pipes within and outside the site and any capacity issues at the sewage treatment plant have all been discussed with Thames Water. The impact of the operation of the site with respect to foul discharge is considered to be negligible since the flows would be within the overall quantity of flows currently being discharged. The separation on site of storm and foul flows would be a minor positive impact, as it would reduce peak combined flows to the Camden Sewer.

Waste

5.12.48 In the main, waste would fall into either domestic or industrial and commercial waste categories for disposal. It is estimated that the development could generate up to some 1,800 tonnes per annum of domestic waste and up to some 21,500 tonnes per annum of commercial waste when fully developed at current rates of waste production, as a worst case.

5.12.49 Domestic waste would be collected and disposed of by the London Boroughs of Camden and Islington. Current waste disposal techniques followed by the London Boroughs of Camden and Islington include kerbside collection of recyclable wastes, collection of green waste and white goods, and provision of recycling centres. The waste streams not suitable for recycling/recovery and the residual wastes from the recycling facilities are either sent to landfill or to Edmonton for energy recovery through incineration.

5.12.50 Industrial and commercial waste would be the responsibility of the building occupants and would be collected by appropriately licensed waste management companies and either recycled/recovered or sent to landfill for final disposal.

5.12.51 All waste management would be regulated by the requirements of the Environmental Protection Act 1990 Part II including the ‘Duty of Care’.

5.12.52 Further steps could be taken to reduce waste generation (see further mitigation).

Communications

5.12.53 The operation of the additional communications services to the King’s Cross Central development would utilise spare capacity at existing exchanges and is considered to have a negligible impact on existing and proposed services.

Effects without the Triangle Site

5.12.54 The difference in effects without the Triangle Site development would be negligible in terms of the quantum of utility demand, typically in the range of a 1-4% reduction. This would not have any material effect on the off site reinforcement works but would avoid the need for minor utility building connections from supplies in York Way or across York Way from the site, and also discharging foul flows to the local York Way combined sewer. The removal (or delay) of these works would not affect the overall assessment findings.
Effects with Kings Cross Station Enhancement

5.12.55 The introduction of enhancement works to King’s Cross Station at the southern end of the site would require significant levels of co-ordination of both above and below ground works. However utility supplies to the two schemes are considered at this stage to be independent from each other. Therefore, other than the physical co-ordination of the below ground utilities, the station enhancement works are unlikely to affect the operation of Kings Cross Central urban services. The worst case would be some diversionary works. Any impact would be negligible.

Opportunities for Further Mitigation Measures

5.12.56 For all urban services the most significant impacts would be as a result of the off-site construction works which are addressed in Part 4.

5.12.57 Utility providers are already aware of several other significant schemes within North London, and are likely to be required to provide additional resources to address the associated future utility demands. A strategic review of all existing utilities by the respective utility companies may result in identification of opportunities for further upgrades or enhancements of utility supplies that would avoid future disruption along the proposed routes.

5.12.58 All utility companies could consider the use of economic alternatives where appropriate in order to mitigate the impact of the works proposed.

5.12.59 Advanced technical solutions could be considered when providing new infrastructure. These may further reduce any residual impact of providing new utility supplies to the site.

5.12.60 Consideration could be given to the practicability of relining existing water mains and reducing leakage from existing pipe networks in conjunction with expanding and increasing the capacity of the network in order to supply the site.

5.12.61 Various mechanisms to reduce waste could be introduced including encouraging re-use, and making recovery of waste possible by providing easily accessible facilities for commercial and household recycling and composting.

Monitoring

5.12.62 No specific monitoring of utilities is proposed as part of the operation of the development.

Summary

5.12.63 The assessment of effects on urban services has considered the ‘worst case’ for each of the utility supplies individually and the various impacts the provision of new supplies would have on the existing utility supply network. Effects such as noise, dust and traffic disruption are considered under the other relevant specialist topics and the Construction section (Part 4).
Power

5.12.64 New supplies to the site would be provided from Longford Street and City Road substations.

5.12.65 The supply from Longford Street would utilise existing spare capacity and therefore this would not be available for other sites elsewhere or existing customers requiring expansion. Therefore there would be some minor negative long-term effect related to utilising the spare supply for one project.

5.12.66 The new bulk supply to the site would be provided from the City Road substation that at present has significant space and electrical spare capacity. The provision of new supplies to the site with a resultant new primary substation on site is considered to provide a benefit to the local area surrounding Kings Cross since it would provide the potential for further additional capacity to supply other developments and load growth.

Gas

5.12.67 New gas supplies to the site would be provided from existing low pressure mains close to the site. Existing spare capacity within the local network is adequate to provide for the increased demands and therefore the impact is assessed as negligible.

5.12.68 Operation of the relocated gas governor would not be any different from that of the existing gas governor and therefore the impact is assessed as negligible.

Potable Water

5.12.69 New supplies to the site would require upstream reinforcement of the existing Thames Water resource and distribution network. Thames Water Utilities Ltd has confirmed that these works would be part of their regulated network development enhancement. Enhancement of the existing local network would provide opportunities for others, with a minor positive impact.

Foul Drainage

5.12.70 New foul flows from the site would be within the combined storm and foul flows to be discharged from the site. This overall combined flow from the Main site would be at least 10% less than the agreed existing peak flows and therefore the impact is considered to be negligible. Foul flows from the Triangle site would be discharged to a local sewer in York Way. (Note future storm water flows from the Triangle site would be at least 10% less than the agreed existing peak stormwater flows.

Waste

5.12.71 It is estimated that up to 1,800 tonnes of domestic waste and 21,500 tonnes of commercial waste could be generated by the development per annum.

5.12.72 Domestic waste would be collected and disposed of by the London Boroughs of Camden and Islington. Industrial and commercial waste would be collected by appropriately licensed waste management companies. This would be managed and disposed of through the facilities that are available at the time. Waste management would be regulated by the requirements of the Environmental Protection Act 1990 Part II including the ‘Duty of Care’.
5.12.73 Various mechanisms to reduce waste could potentially be introduced such as encouraging re-use, and making recovery of waste possible by providing facilities for commercial and household recycling and composting.

Communications

5.12.74 The operation of the additional communications services to the Kings Cross Central development would utilise spare capacity at existing exchanges. This capacity would not be able to be utilised by other developments. The operational impact on urban services would be negligible.

5.12.75 The difference in effects without the Triangle Site development would be negligible in terms of the quantum of utility demand, typically in the range of a 1-4% reduction. This would not have any material effect on the off site reinforcement works but would avoid the need for minor utility building connections from supplies in York Way or across York Way from the site, and also discharging foul flows to the local York Way combined sewer. It is considered that the removal (or delay) of these works would not affect overall assessment findings.

5.12.76 The introduction of enhancement works to King’s Cross Station at the southern end of the site would require significant levels of coordination of both above and below ground works. However utility supplies to the two schemes are considered at this stage to be independent from each other. Therefore, other than the physical coordination of the below ground utilities, the station enhancement works are unlikely to affect the operation of Kings Cross Central urban services.
5.13 Inter-relationships and cumulative effects

Inter-relationships

5.13.1 Schedule 4, Part I (3) of the EIA Regulations requires an Environmental Statement to include a description of the aspects of the environment likely to be significantly affected by the development, including “the inter-relationship between the [environmental] factors”. These inter-relationships are addressed throughout the Environmental Statement and some of the main ones are explained here. For example, heritage issues are inextricably linked to considerations of townscape and views. To reflect the importance of these relationships, the topics have been assessed in conjunction with one another in this Environmental Statement in Parts 5.1 and 9.

5.13.2 There are also clear inter-relationships between a number of individual socio-economic factors and indeed between these factors and community health. These relationships are fully acknowledged in the relevant sections of the Environmental Statement (Socio-economics, Parts 5.4 and 12; Health, Parts 5.5 and 13). The creation of homes, jobs and a safer environment are likely to bring health benefits to the local population. Thus a number of socio-economic factors are considered to be determinants of health. These are unemployment, ethnicity and unemployment, educational attainment, proportion of homes judged unfit to live in, domestic burglary rate (crime) and social capital. Other determinants of health, also referred to in Parts 5.5 and 13, are environmental factors which are considered in other relevant parts of the Environmental Statement. These are air quality (Parts 5.10 and 18), road traffic accidents (Part 5.3) and noise (Parts 5.9 and 17).

5.13.3 Changes in traffic levels (both road and rail) (assessed in Part 5.3) result in changes to the environment. For example they lead to changes in noise (Parts 5.9 and 17) and/or air quality conditions (Parts 5.10 and 18). Changes in traffic induced levels of noise and air quality may also contribute to effects on health, as discussed above. At the same time, there may be indirect beneficial effects on health through changes in accessibility to public transport, leading to improvements in access to jobs, community facilities and recreation.

5.13.4 There would be the potential for effects on soils, water and air quality during the construction stage when contaminated materials and excess spoil would be removed from site and there is the risk of effects from dust and pollution of watercourses. The Construction section (Part 4) explains how these potential effects would be controlled through implementation of a Code of Construction Practice incorporating measures designed to limit any temporary effects of construction within acceptable standards. Each of the specialist reports included in the ES considers the effects of construction and these are brought together in the Construction section (Part 4).

Cumulative effects

5.13.5 As explained in Part 1.3 there are no other major projects coming forward within the plan-led system which, if consented, have the potential for significant cumulative impacts with King’s Cross Central, other than the potential for such effects with the completion of LUL Phase 2 (Northern Ticket Hall and associated infrastructure) and the emerging proposals for the King’s Cross Station Enhancement.
5.13.6 The ongoing LUL Phase 2 works are due to be complete by 2007 but are the subject of a current review that may affect the timing of their completion. It is possible, therefore, that the works to complete the project (scheduled to last 3 years) could still be underway in 2007, alongside the development of King’s Cross Central.

5.13.7 If the King’s Cross Station Enhancement proposals go-ahead, there is a range of possible timescales, including the following:-

a) construction could commence following completion of the LUL Phase 2 (Northern Ticket Hall etc) works with construction of the Station Enhancement expected to last a maximum of 4 years; or

b) the proposals for King’s Cross Station Enhancement could be combined with the LUL Phase 2 (Northern Ticket Hall) into an integrated project, with construction of that integrated project likely to take less than the 7 years identified above for the two projects to take place one after the other.

5.13.8 It is considered unlikely that an integrated project ((b) above) would have greater overall construction effects (in terms of either magnitude or duration) than the two projects carried out in sequence, one after the other: if anything an integrated project is likely to have less construction effects in terms of magnitude and duration. The Environmental Statement has therefore considered (a) above (construction of King’s Cross Station Enhancement following completion of the LUL works) and the potential for it to give rise to cumulative construction effects alongside King’s Cross Central. In order to assess the potential ‘worst case’, this assessment has considered what the effects would be if the peak construction activity from King’s Cross Central coincided with the peak construction activity from LUL Phase 2/King’s Cross Station Enhancement.

5.13.9 Potential cumulative effects are considered for each of the individual EIA topics and summarised in Parts 4 and 5.
# 6.1 Glossary of Terms

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambient Noise</td>
<td>The total noise in a given place at a given time - usually a composite of sound from varying sources at varying distances (cf Background Noise and Residual Noise, qv).</td>
</tr>
<tr>
<td>Archaeological Excavation</td>
<td>An archaeological excavation is the process by which soil is removed to reveal and study structural remains of habitation, commercial, industrial, agricultural and religious activity, and scientifically recover objects/ environmental evidence associated with these types of land use. Structural remains may be substantial 'positive' features such as walls or 'negative' features such as pits, quarries, post holes and trenches.</td>
</tr>
<tr>
<td>Artefact or Find</td>
<td>A natural or man-made object or structure used or made by man, for whatever purpose, of organic or inorganic material, and of any age. For the purpose of this document natural organic and inorganic materials in the soil which are useful for the archaeological interpretation are considered to artefacts and often called ‘ecofacts’.</td>
</tr>
<tr>
<td>A-weighting dB(A)</td>
<td>Varies with frequency. The sound pressure level determined when using the frequency - weighting network A. The A weighting network, modifies the electrical response of a sound level meter so that the sensitivity of the meter varies with frequency in approximately the same way that the sensitivity of the human hearing system. The human ear has a non-linear frequency response; it is less sensitive at low and high frequencies and most sensitive in the range 1 to 4KHz. The A weighting is applied to measured or calculated sound pressure levels so that these levels correspond more closely to the response of the human ear. A-weighted sound levels are often denoted at dB(A).</td>
</tr>
<tr>
<td>Background Noise</td>
<td>The level of noise underlying all fluctuating noises reaching a given location. This therefore tends to be dominated by the more distant, non-local sources and events. It is approximated by measurement of the LA90 (cf Ambient Noise, Residual Noise, qv).</td>
</tr>
<tr>
<td>Baseline Conditions</td>
<td>The condition of aspects of the environment that are likely to be significantly affected by the proposed development. Used as a basis against which to assess impacts.</td>
</tr>
<tr>
<td>Biodiversity</td>
<td>The variety of life on earth or any given part of it.</td>
</tr>
<tr>
<td>British Geological Survey (BGS)</td>
<td>Information of the geology of a site. Geological features which are considered to be of national importance are designated as SSSIs.</td>
</tr>
<tr>
<td>Character Area</td>
<td>A geographic area with a distinctive character.</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
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<td>----------------------------------------------</td>
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<tr>
<td>Conservation Area</td>
<td>Area designated by the Local Planning Authority as being of special architectural or historic interest, the character of which it is desirable to preserve or enhance.</td>
</tr>
<tr>
<td>Cumulative (effects)</td>
<td>Cumulative effects occur when the effects of the proposed scheme are considered in relation and/or in addition to effects that may occur from other independent proposals or developments.</td>
</tr>
<tr>
<td>dB</td>
<td>Decibel (unit of measurement for sound pressure levels). Threshold of hearing is OdB(A). Threshold of pain 120dB (A).</td>
</tr>
<tr>
<td>Environment Agency</td>
<td>Non-departmental public body, sponsored by the Department for Environment, Food and Rural Affairs and the National Assembly for Wales. Role is to protect and improve the environment (air, land and water) in England and Wales.</td>
</tr>
<tr>
<td>EIA</td>
<td>Environmental Impact Assessment. The process by which the identification, prediction and evaluation of the key impacts of a development is undertaken. The results of an EIA are reported in an Environmental Statement to inform the public and the decision-making process.</td>
</tr>
<tr>
<td>EIA Regulations</td>
<td>Term used in this Environmental Statement to refer to The Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999.</td>
</tr>
<tr>
<td>English Heritage (EH)</td>
<td>The governmental appointed independent agency for advising the Department of Culture Media and Sport and the public on heritage matters, policies, archaeological and conservation advice.</td>
</tr>
<tr>
<td>Epidemiology</td>
<td>Investigation of the distribution and causes of disease.</td>
</tr>
<tr>
<td>Equivalent Continuous Sound Level (Leq)</td>
<td>Leq expresses the total A-weighted sound energy received at a particular location over any stated period of time as the sound pressure level which would have been measured had the sound energy been received at a constant rate throughout. Thus Leq is an exponentially averaged sound level for the stated time period.</td>
</tr>
<tr>
<td>Environmental Statement (ES)</td>
<td>The report of an EIA.</td>
</tr>
<tr>
<td>Ground Investigation</td>
<td>Works that determine the depth and properties of soil strata beneath the site.</td>
</tr>
<tr>
<td>Ground Water</td>
<td>Naturally occurring water beneath the ground surface.</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
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<tr>
<td>-------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Hertz (Hz)</td>
<td>A unit of frequency (qv). One Hertz is equal to one cycle per second.</td>
</tr>
<tr>
<td>Hot Spot</td>
<td>A highly localised concentration of contaminant within soil resulting from spillage or former industrial activity.</td>
</tr>
<tr>
<td><strong>In situ</strong></td>
<td>International and nationally important archaeological sites and those sites where structural remains are required or can be interestingly incorporated into the development scheme in situ conservation may be required. This aims to preserve the remains from further and rapid decay by minimal intervention but so they continue to be part of our heritage. It may be done by reburial to re-establish pre-existing ground condition or by physical and chemical consolidation of exposed remains. If left exposed restoration may be required to help in elucidation of the remains and for aesthetic reasons</td>
</tr>
<tr>
<td>Inter-relationship</td>
<td>Inter-relationships are mutual or inter-connections between the effects that may arise upon one or more environmental factors.</td>
</tr>
<tr>
<td>Landform</td>
<td>Combination of slope and elevations producing the shape and form of the hard surface.</td>
</tr>
<tr>
<td>Landscape/townscape Feature</td>
<td>A prominent eye-catching element e.g. church spire or dramatic building.</td>
</tr>
<tr>
<td>Life expectancy</td>
<td>An expected time to live as calculated on the basis of statistical probabilities.</td>
</tr>
<tr>
<td>Limiting long-term illness</td>
<td>A self assessment of whether or not a person has a limiting long-term illness, health problem or disability which limits their daily activities or the work they can do, including problems that are due to old age.</td>
</tr>
<tr>
<td>Listed Building</td>
<td>Building included in the Statutory List of Buildings of Special Architectural or Historic Interest published by the ODPM.</td>
</tr>
<tr>
<td>Made Ground (or Fill Ground)</td>
<td>An engineering term to describe soils formed and deposited by the activities of man. &quot;Fill&quot; can be of any age and any composition. Fills of pre 20th Century age are of potential archaeological value and hence requiring appropriate professional archaeological study and examination. Fill may be contaminated if associated with industrial processes.</td>
</tr>
<tr>
<td>Mitigation Measure</td>
<td>Measures designed to avoid, reduce, remedy or compensate for adverse effects from development and also to enhance the beneficial effects.</td>
</tr>
<tr>
<td>Morbidity</td>
<td>An incidence of ill health; a diseased condition or state.</td>
</tr>
<tr>
<td>Mortality</td>
<td>The incidence of death in a population.</td>
</tr>
<tr>
<td>Nationally Notable (Scarce) Category A (NaNotableA)</td>
<td>Taxa which do not fall within RDB categories but which are none-the-less uncommon in Great Britain and thought to occur in 30 or fewer 100km squares of the National Grid.</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
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</tr>
<tr>
<td>Nationally Notable (Scarce) Category B</td>
<td>Taxa which do not fall within RDB categories but which are none-the-less uncommon in Great Britain and thought to occur in between 31 and 100 10km squares of the National Grid.</td>
</tr>
<tr>
<td>(Nb – Notable B)</td>
<td></td>
</tr>
<tr>
<td>Noise</td>
<td>Sound which is unwanted by the recipient. Implies a value judgement.</td>
</tr>
<tr>
<td>Non-Statutory Sites of Importance for Nature Conservation</td>
<td>Usually Local Authority designations for land use planning purposes. Recognised as being of local importance, but they afford no statutory protection. E.g. Site of Nature Conservation Interest (SNCI), Site of Importance to Nature Conservation (SINC), Area of Scientific Interest (ASI), Site of Scientific Interest (SSI).</td>
</tr>
<tr>
<td>Non Technical Summary (NTS)</td>
<td>Summarises the principal findings of the ES. The document should be written in a way that enables the non-specialist reader to understand the main environmental impacts.</td>
</tr>
<tr>
<td>Phase 1 Survey</td>
<td>A survey method devised by English Nature's predecessors, the Nature Conservancy Council, to record semi-natural vegetation and wildlife habitat over large areas of countryside.</td>
</tr>
<tr>
<td>Planning Policy Guidance (PPGs)</td>
<td>Publications from the Office of the Deputy Prime Minister setting out Government policy at the national level.</td>
</tr>
<tr>
<td>Public Open Space</td>
<td>Any land laid out as a public garden or used for the purposes of public recreation or any land being a disused burial ground. It usually belongs to a local authority or is held as a charitable trust.</td>
</tr>
<tr>
<td>Remediation Strategy</td>
<td>The implementation plan of works designed to reduce levels of contamination in the soil to levels suitable for safe development.</td>
</tr>
<tr>
<td>Residual Noise</td>
<td>The noise in a given place at a given time other than the particular noise being measured or considered (cf Ambient Noise qv).</td>
</tr>
<tr>
<td>Scoping</td>
<td>The process of identifying the potentially significant impacts of a development.</td>
</tr>
<tr>
<td>Site Investigation (for soils)</td>
<td>Works that determine the depth and properties of soil strata beneath the site.</td>
</tr>
<tr>
<td>Social capital</td>
<td>Described as comprising trust, reciprocity, local identity, civic engagement and community cohesion.</td>
</tr>
<tr>
<td>Soil Guideline Value (SGV)</td>
<td>An intervention value for the concentration of a contaminant in the regulatory framework for the assessment of risks in relation to land-use.</td>
</tr>
<tr>
<td>Surface Water</td>
<td>Naturally occurring water on the ground surface.</td>
</tr>
<tr>
<td>Townscape Character</td>
<td>A distinct pattern or combination of elements that occurs consistently in parts of the townscape.</td>
</tr>
<tr>
<td>Unitary Development Plan (UDP)</td>
<td>A detailed set of policies designed by a Local Planning Authority to guide the future physical development of an area.</td>
</tr>
<tr>
<td>Visual Amenity</td>
<td>The value of a particular area or view in terms of what is seen.</td>
</tr>
<tr>
<td>Visual Impact Assessment (VIA)</td>
<td>Measurement of the adverse or beneficial effects a development would have on views.</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Watching Brief</td>
<td>Usually not all of the archaeological resource is found as a result of Desk Study, Evaluation, and Archaeological Excavation works. Other remains are typically found during engineering site development works and in unexpected areas. Here the Archaeological Contractor is provided with time and facilities to watch and intervene in the engineering works and recover the chance discovered resource. The watching team are usually members of the Archaeological Contractor's excavation team, so their site experience can be used to maximum advantage.</td>
</tr>
<tr>
<td>Zone of Visual Influence (ZVI)</td>
<td>This provides a representation often computer generated (usually presented as a Map with markings or colourings) of the spatial extent over which a proposed development, or part of it, may be visible.</td>
</tr>
</tbody>
</table>
## 6.2 List of Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AADT</td>
<td>Annual average daily traffic flow</td>
</tr>
<tr>
<td>ALG</td>
<td>Association of London Government</td>
</tr>
<tr>
<td>AOD</td>
<td>Above Ordnance Datum</td>
</tr>
<tr>
<td>APA</td>
<td>Archaeological Priority Areas</td>
</tr>
<tr>
<td>AQMA</td>
<td>Air Quality Management Area</td>
</tr>
<tr>
<td>AQS</td>
<td>Air Quality Strategy</td>
</tr>
<tr>
<td>BMA</td>
<td>British Medical Association</td>
</tr>
<tr>
<td>BREEAM</td>
<td>Building Research Establishment Environmental Assessment Method</td>
</tr>
<tr>
<td>BS</td>
<td>British Standard</td>
</tr>
<tr>
<td>BTO</td>
<td>British Trust for Ornithology</td>
</tr>
<tr>
<td>BW</td>
<td>British Waterways</td>
</tr>
<tr>
<td>CA</td>
<td>Conservation Area</td>
</tr>
<tr>
<td>CABE</td>
<td>Commission for Architecture and the Built Environment</td>
</tr>
<tr>
<td>CCS</td>
<td>Congestion Charging Scheme</td>
</tr>
<tr>
<td>CDM</td>
<td>Construction Design &amp; Management (Regulations)</td>
</tr>
<tr>
<td>CHP</td>
<td>Combined Heat and Power</td>
</tr>
<tr>
<td>CIZ</td>
<td>Central Impact Zone</td>
</tr>
<tr>
<td>CLEA</td>
<td>Contaminated Land Exposure Assessment</td>
</tr>
<tr>
<td>CO₂</td>
<td>Carbon dioxide</td>
</tr>
<tr>
<td>CPB</td>
<td>Community Planning Brief</td>
</tr>
<tr>
<td>CoCP</td>
<td>Code of Construction Practice</td>
</tr>
<tr>
<td>CRTN</td>
<td>Calculation of Road Traffic Noise</td>
</tr>
<tr>
<td>CSNP</td>
<td>Camley Street Natural Park</td>
</tr>
<tr>
<td>CSO</td>
<td>Combined Sewer Overflows</td>
</tr>
<tr>
<td>CTRL</td>
<td>Channel Tunnel Rail Link</td>
</tr>
<tr>
<td>dB(A)</td>
<td>Decibels (A-weighting)</td>
</tr>
<tr>
<td>DCMS</td>
<td>Department of Culture, Media and Sport</td>
</tr>
<tr>
<td>DEFRA</td>
<td>Department of the Environment, Food and Rural Affairs</td>
</tr>
<tr>
<td>DETR</td>
<td>Department for Environment, Transport and the Regions</td>
</tr>
<tr>
<td>DfEE</td>
<td>Department for Education and Employment</td>
</tr>
<tr>
<td>DfES</td>
<td>Department for Education and Skills</td>
</tr>
<tr>
<td>DMRB</td>
<td>Design Manual for Roads and Bridges</td>
</tr>
<tr>
<td>DOE</td>
<td>Department of Environment</td>
</tr>
<tr>
<td>EA</td>
<td>Environment Agency</td>
</tr>
<tr>
<td>EH</td>
<td>English Heritage</td>
</tr>
<tr>
<td>EHO</td>
<td>Environmental Health Officer</td>
</tr>
<tr>
<td>EIA</td>
<td>Environmental Impact Assessment</td>
</tr>
<tr>
<td>EN</td>
<td>English Nature</td>
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<tr>
<td>ES</td>
<td>Environmental Statement</td>
</tr>
<tr>
<td>EU</td>
<td>European Union</td>
</tr>
<tr>
<td>FTE</td>
<td>Full Time Equivalent</td>
</tr>
<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>GLA</td>
<td>Greater London Authority</td>
</tr>
<tr>
<td>GLAAS</td>
<td>Greater London Archaeological Advice Service</td>
</tr>
<tr>
<td>GLIAS</td>
<td>Greater London Industrial Archaeological Society</td>
</tr>
<tr>
<td>GLSMR</td>
<td>Greater London Sites and Monuments Record</td>
</tr>
<tr>
<td>GP</td>
<td>General Practitioner (Medical)</td>
</tr>
<tr>
<td>GQA</td>
<td>General Quality Assessment (Environment Agency classification for water)</td>
</tr>
<tr>
<td>HAZ</td>
<td>Health Action Zone</td>
</tr>
<tr>
<td>HDV</td>
<td>Heavy duty vehicle (greater than 3.5 tonnes)</td>
</tr>
<tr>
<td>HE</td>
<td>High Explosive</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Description</td>
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<tr>
<td>--------------</td>
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</tr>
<tr>
<td>HIA</td>
<td>Health Impact Assessment</td>
</tr>
<tr>
<td>HIMP</td>
<td>Health Improvement and Modernisation Plan</td>
</tr>
<tr>
<td>HSE</td>
<td>Health and Safety Executive</td>
</tr>
<tr>
<td>IFA</td>
<td>Institute of Field Archaeologists</td>
</tr>
<tr>
<td>IMD</td>
<td>Index of Multiple Deprivation</td>
</tr>
<tr>
<td>IT</td>
<td>Information Technology</td>
</tr>
<tr>
<td>LBC</td>
<td>London Borough of Camden</td>
</tr>
<tr>
<td>LBI</td>
<td>London Borough of Islington</td>
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<tr>
<td>LCR</td>
<td>London and Continental Railways</td>
</tr>
<tr>
<td>LNR</td>
<td>Local Nature Reserve</td>
</tr>
<tr>
<td>LPA</td>
<td>Local Planning Authority</td>
</tr>
<tr>
<td>LPAC</td>
<td>London Planning Advisory Committee</td>
</tr>
<tr>
<td>LRC</td>
<td>London Regeneration Consortium</td>
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<tr>
<td>LUL</td>
<td>London Underground Limited</td>
</tr>
<tr>
<td>LWT</td>
<td>London Wildlife Trust</td>
</tr>
<tr>
<td>m OD</td>
<td>metres Ordnance Datum (+ above) (- below)</td>
</tr>
<tr>
<td>MSCP</td>
<td>Multi Storey Car Park</td>
</tr>
<tr>
<td>NEC</td>
<td>Noise Exposure Categories</td>
</tr>
<tr>
<td>NHS</td>
<td>National Health Service</td>
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<td>NLL</td>
<td>North London Line</td>
</tr>
<tr>
<td>NLWA</td>
<td>North London Water Authority</td>
</tr>
<tr>
<td>NO₂</td>
<td>Nitrogen dioxide</td>
</tr>
<tr>
<td>NOₓ</td>
<td>Nitrogen oxides</td>
</tr>
<tr>
<td>NRSWA</td>
<td>New Road and Streetworks Act</td>
</tr>
<tr>
<td>OD</td>
<td>Ordnance Datum</td>
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<td>ODPM</td>
<td>Office of the Deputy Prime Minister</td>
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<td>ONS</td>
<td>Office for National Statistics</td>
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<tr>
<td>OS</td>
<td>Ordnance Survey</td>
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<td>PAH</td>
<td>Polyaromatic Hydrocarbon</td>
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<td>PCT</td>
<td>Primary Care Trust</td>
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<tr>
<td>PM</td>
<td>Parachute Mine</td>
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<tr>
<td>PM₁₀</td>
<td>Particulate Matter (below 10 m⁻³)</td>
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<tr>
<td>PPG</td>
<td>Planning Policy Guidance</td>
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<tr>
<td>PPP</td>
<td>Public Private Partnership</td>
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<tr>
<td>PTAL</td>
<td>Public Transport Accessibility Level</td>
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<td>RLE</td>
<td>Rail Link Engineering</td>
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<tr>
<td>SAHSU</td>
<td>Small Area Health Statistics Unit</td>
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<td>SIAM</td>
<td>Surface Interchange and Access Meeting (for King's Cross)</td>
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<td>SGV</td>
<td>Soil Guidance Value</td>
</tr>
<tr>
<td>SPG</td>
<td>Supplementary Planning Guidance</td>
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<tr>
<td>SRA</td>
<td>Strategic Rail Authority</td>
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<td>SUDS</td>
<td>Sustainable Urban Drainage Systems</td>
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<td>TA</td>
<td>Transport Assessment</td>
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<td>TFL</td>
<td>Transport for London</td>
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<tr>
<td>TOC</td>
<td>Train Operating Company</td>
</tr>
<tr>
<td>UWWTD</td>
<td>Urban Waste Water Treatment (EC Directive)</td>
</tr>
<tr>
<td>UXB</td>
<td>Unexploded Bomb</td>
</tr>
<tr>
<td>Vdv</td>
<td>Vibration dose value</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organisation</td>
</tr>
<tr>
<td>WIZ</td>
<td>Wider Impact Zone</td>
</tr>
<tr>
<td>UK</td>
<td>United Kingdom</td>
</tr>
<tr>
<td>ZVI</td>
<td>Zone of Visual Influence</td>
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</table>
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May 2004
## Appendix 8A Key Scoping Responses Table

### Consultation Draft Scoping Report: Summary of Main Issues Raised By Consultees

<table>
<thead>
<tr>
<th>Topic</th>
<th>Issue</th>
<th>Raised by Consultees</th>
<th>How addressed in ES</th>
</tr>
</thead>
<tbody>
<tr>
<td>General</td>
<td>Concern about using a 2006/7 baseline.</td>
<td>English Heritage, London Borough of Camden, London Borough of Islington</td>
<td>As development would not be taking place before 2006/7, and by then there would have been substantial changes to the site and its environs, the appropriate baseline is 2006/7. The current 2003 baseline is not appropriate because conditions will change significantly up to the proposed start of works. There are difficulties in accurately identifying the 2006/7 baseline conditions which are overcome through a careful assessment process. In particular, the EIA is grounded in current site conditions that can be surveyed (and checked). For this reason the existing situation is described first, then the changes that are anticipated to take place by 2006/7 identified together with any uncertainties.</td>
</tr>
<tr>
<td>General</td>
<td>Distinction between main topics and those to be addressed to a lesser extent.</td>
<td>Greater London Authority, London Borough of Camden</td>
<td>The distinction between these two categories was based on professional judgement and the results of consultation. However, in the ES these categories are not distinguished.</td>
</tr>
<tr>
<td>Topic</td>
<td>Issue</td>
<td>Raised by Consultees</td>
<td>How addressed in ES</td>
</tr>
<tr>
<td>-----------</td>
<td>------------------------------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>General</td>
<td>The scheme should incorporate sustainable design and construction, particularly in relation to energy efficiency and use of renewable energy and waste.</td>
<td>Greater London Authority, Judd Street Residents Association, London Borough of Islington</td>
<td>This is addressed in the Environmental Sustainability Strategy submitted with the planning applications.</td>
</tr>
<tr>
<td>General</td>
<td>Rethink terms of significance. Minor significance is defined as not noteworthy/material equating to no significance.</td>
<td>London Borough of Islington</td>
<td>This is amended in the ES. Major, Moderate and Minor levels of significance are those which are material to a planning judgement. Negligible significance is used for effects that are not material.</td>
</tr>
<tr>
<td>General</td>
<td>Definition of the most likely case.</td>
<td>Primary Care Trust</td>
<td>The ES has focussed on the worst case.</td>
</tr>
<tr>
<td>Construction</td>
<td>Reference should be made to the protection of heritage resources.</td>
<td>English Heritage</td>
<td>Addressed in the ES</td>
</tr>
<tr>
<td>Construction</td>
<td>Include the effect of vibration damage on heritage.</td>
<td>English Heritage</td>
<td>Addressed in the ES</td>
</tr>
<tr>
<td>Construction</td>
<td>Additional effects: Mud on roads Traffic safety and legibility re changing construction routes Use of ground water Protection of nature conservation Waste management and sustainable construction</td>
<td>London Borough of Camden</td>
<td>Addressed in the ES and/or the Environmental Sustainability Strategy.</td>
</tr>
<tr>
<td>Topic</td>
<td>Issue</td>
<td>Raised by Consultees</td>
<td>How addressed in ES</td>
</tr>
<tr>
<td>------------------------------</td>
<td>------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>Construction</td>
<td>Construction impact zone boundary is too limited.</td>
<td>London Borough of Islington, Primary Care Trust</td>
<td>Reviewed and addressed in the ES.</td>
</tr>
<tr>
<td>Construction</td>
<td>Include health and safety of construction workers.</td>
<td>Primary Care Trust</td>
<td>Addressed in the ES</td>
</tr>
<tr>
<td>Construction</td>
<td>Include effects from light pollution and 24 hour working practices.</td>
<td>Primary Care Trust</td>
<td>Addressed in the ES</td>
</tr>
<tr>
<td>Construction</td>
<td>Include cost to business delay due to transport disruption.</td>
<td>Primary Care Trust</td>
<td>Addressed in the ES</td>
</tr>
<tr>
<td>Construction</td>
<td>Include increased social isolation due to a general deterioration in the local environment.</td>
<td>Primary Care Trust</td>
<td>Addressed in the ES</td>
</tr>
<tr>
<td>Construction</td>
<td>Include effects on health due to prolonged construction.</td>
<td>Primary Care Trust</td>
<td>Addressed in the ES</td>
</tr>
<tr>
<td>Cultural Heritage and Townscape</td>
<td>Views are addressed that are no longer relevant and new views have emerged.</td>
<td>English Heritage</td>
<td>Addressed in the ES</td>
</tr>
<tr>
<td>Cultural Heritage and Townscape</td>
<td>Retention of the unique character of the canal.</td>
<td>King’s Cross Conservation Area Advisory Committee</td>
<td>The ES assesses and defines safeguarding mitigation proposals for retaining the historic character but also integrating it with the historic buildings in the Goods Yard and generally how to improve public access and safety.</td>
</tr>
<tr>
<td>Topic</td>
<td>Issue</td>
<td>Raised by Consultees</td>
<td>How addressed in ES</td>
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<td>-----------------------------------------------------------------------</td>
<td>----------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Cultural Heritage and Townscape</td>
<td>The study area for cultural heritage needs to be enlarged.</td>
<td>London Borough of Camden, London Borough of Islington</td>
<td>The EIA addresses the relevant part of the Regent’s Canal Conservation Area and relevant conservation areas outside the site. The EDAW ‘Edge Condition’ study has informed the KXC development scheme and the ES and has put the red line defined site boundary in context of surrounding heritage and other related subjects.</td>
</tr>
<tr>
<td>Cultural Heritage and Cultural Heritage and Townscape</td>
<td>Main effects at construction to include:</td>
<td>London Borough of Camden</td>
<td>Addressed in the ES in sections concerned with effects and mitigation. The ES and Initial Conservation Plans supporting the ES also address conservation methods, maintenance, and management. Safeguarding actions are also addressed in the Code of Construction Practice. As a result of consultation a new chapter has been added to the ES dealing with archaeology effects and mitigation</td>
</tr>
<tr>
<td></td>
<td>Salvage of historic building materials</td>
<td></td>
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<td></td>
<td>Ground works and above ground works and the effect of dilapidation of buildings through closure and non use</td>
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<td></td>
<td>Programme of recording</td>
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<td></td>
<td>Archaeological watching brief</td>
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<td></td>
<td>Good practice in site security and construction works</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Work methods and practices to minimise risk to buildings/structures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Topic</td>
<td>Issue</td>
<td>Raised by Consultees</td>
<td>How addressed in ES</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>----------------------------------------------------------------------</td>
<td>----------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Cultural Heritage and Townscape</td>
<td>Main effects at operation to include: Resource as a public asset Loss of views, vistas and panoramas of heritage buildings and landmarks Additional potential mitigation measures Provision of high quality views Re use of gasholder no. 8 To be beneficial as a high density urban quarter, needs high quality building design, layout, grain, open spaces, street furniture, public art, lighting and signage and public realm Effects due to increased scale and height</td>
<td>London Borough of Camden</td>
<td>Addressed in the ES and many other documents submitted in support of the planning application. The ES and Initial Conservation Plans supporting the ES also address townscape effects and mitigation, conservation methods, enhancement of the assets, and maintenance and management of the heritage resources.</td>
</tr>
<tr>
<td>Transport</td>
<td>Assess the impact on public transport.</td>
<td>King's Cross Conservation Area Advisory Committee Member</td>
<td>Addressed in the ES</td>
</tr>
<tr>
<td>Transport</td>
<td>Traffic forecasting and modelling to be agreed with SIAM group.</td>
<td>London Borough of Islington</td>
<td>The Transport Assessment is co-ordinated with SIAM information.</td>
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<tr>
<td>Transport</td>
<td>Include the effects on pedestrians.</td>
<td>Network Rail</td>
<td>Addressed in the ES</td>
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Appendix 8A – Key Scoping Responses Table
<table>
<thead>
<tr>
<th>Topic</th>
<th>Issue</th>
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<th>How addressed in ES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport</td>
<td>Include effects of disruption to transport services, particularly public transport.</td>
<td>Primary Care Trust</td>
<td>Addressed in the ES</td>
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<tr>
<td>Transport</td>
<td>Logistics need to be considered.</td>
<td>Transport for London</td>
<td>Addressed in the TA</td>
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<tr>
<td>Transport</td>
<td>Include an increased dwell time for public transport due to increased numbers of people boarding/alighting</td>
<td>Transport for London</td>
<td>Addressed in the ES</td>
</tr>
<tr>
<td>Socio-economic</td>
<td>Include the effect of increased opportunities for local training, recruitment and employment. Also, retail effects. Mitigation measures for crime, unemployment and social isolation/alienation to be investigated.</td>
<td>London Borough of Camden</td>
<td>Addressed in the ES, Retail Impact Assessment and Regeneration Strategy.</td>
</tr>
<tr>
<td>Socio-economic</td>
<td>Include the gentrification and displacement of people.</td>
<td>Primary Care Trust</td>
<td></td>
</tr>
<tr>
<td>Health</td>
<td>Identify opportunities for enhancement.</td>
<td>Primary Care Trust</td>
<td>Addressed in ES</td>
</tr>
<tr>
<td>Health</td>
<td>Include the following construction effects:</td>
<td>Primary Care Trust</td>
<td>Addressed in ES and Regeneration Strategy</td>
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<tr>
<td></td>
<td>Light pollution</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Disturbance from 24 hour working</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vibration</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Disturbance of vermin</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Displacement of crime and anti social behaviour</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Increased fear of crime and anti social behaviour</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health</td>
<td>Include the following operation impacts:</td>
<td>Primary Care Trust</td>
<td>Addressed in ES and Regeneration Strategy</td>
</tr>
<tr>
<td></td>
<td>Change in crime and anti social behaviour</td>
<td></td>
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<tr>
<td></td>
<td>Employment in poor quality jobs</td>
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<td></td>
<td>Increased pressure on public sector services</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Increased pressure on voluntary sector services</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Displacement of voluntary sector due to increase in property values.</td>
<td></td>
<td></td>
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<tr>
<td>Health</td>
<td>Suggest additional potential mitigation measure of providing community facilities for both existing and new residents to counter disenfranchisement.</td>
<td>Primary Care Trust</td>
<td>Addressed in the ES</td>
</tr>
<tr>
<td>Topic</td>
<td>Issue</td>
<td>Raised by Consultees</td>
<td>How addressed in ES</td>
</tr>
<tr>
<td>------------------------------</td>
<td>-----------------------------------------------------------------------</td>
<td>----------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>Health</td>
<td>Provision needs to be made for a new GP practice as there is no capacity in existing services to accommodate demand.</td>
<td>Primary Care Trust</td>
<td>Addressed in the ES</td>
</tr>
<tr>
<td>Nature Conservation</td>
<td>Habitat creation for Black Redstarts.</td>
<td>English Nature</td>
<td>Addressed in the ES</td>
</tr>
<tr>
<td>Nature Conservation</td>
<td>Mitigation measures to include:</td>
<td>London Borough of Camden</td>
<td>Addressed in the ES</td>
</tr>
<tr>
<td></td>
<td>Habitat creation opportunities for species other than Black Redstart.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Recolonisation opportunities for species that existed prior to the CTRL works</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Opportunities presented by phasing i.e. temporary nurseries or habitats</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nature Conservation</td>
<td>Consideration of a wider range of mitigation measures.</td>
<td>London Borough of Islington</td>
<td>Addressed in the ES</td>
</tr>
<tr>
<td>Water resources</td>
<td>Incorporate Sustainable Urban Drainage Systems.</td>
<td>EnvironmentAgency</td>
<td>Addressed in the ES and Environmental Sustainability Strategy</td>
</tr>
<tr>
<td>Soils and Contamination</td>
<td>Assessment of significance should draw from the Contaminated Land Exposure Assessment methodology and other appropriate risk assessments for contaminants not covered by CLEA.</td>
<td>London Borough of Camden</td>
<td>Addressed in the ES</td>
</tr>
<tr>
<td>Soils and Contamination</td>
<td>Include airborne contamination in construction/excavation dust.</td>
<td>London Borough of Camden</td>
<td>Addressed in the ES</td>
</tr>
<tr>
<td>Soils and Contamination</td>
<td>Include effects on health and wellbeing of construction workers who may come into contact with contaminated material.</td>
<td>Primary Care Trust</td>
<td>Addressed in the ES and Code of Construction Practice.</td>
</tr>
<tr>
<td>Soils and Contamination</td>
<td>Address the health and safety of construction workers in relation to contamination.</td>
<td>Primary Care Trust</td>
<td>Addressed in the ES.</td>
</tr>
<tr>
<td>Noise and Vibration</td>
<td>Include the effect of vibration on the existing historic fabric.</td>
<td>English Heritage</td>
<td>The effects of demolition are addressed in the ES.</td>
</tr>
<tr>
<td>Noise and Vibration</td>
<td>Address ground borne noise with reference to the Council’s standard.</td>
<td>London Borough of Camden</td>
<td>Addressed in the ES</td>
</tr>
<tr>
<td>Topic</td>
<td>Issue</td>
<td>Raised by Consultees</td>
<td>How addressed in ES</td>
</tr>
<tr>
<td>---------------------</td>
<td>----------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------</td>
<td>-----------------------------------</td>
</tr>
<tr>
<td>Noise and Vibration</td>
<td>Include noise maps.</td>
<td>London Borough of Camden, London Borough of Islington</td>
<td>Addressed in the ES</td>
</tr>
<tr>
<td>Noise and Vibration</td>
<td>Assess the effects of noise within the site.</td>
<td>London Borough of Camden</td>
<td>Addressed in the ES</td>
</tr>
<tr>
<td>Noise and Vibration</td>
<td>Concern that noise effects on local residents from the construction works is mitigated.</td>
<td>Maiden Lane</td>
<td>Addressed in the ES</td>
</tr>
<tr>
<td>Noise and Vibration</td>
<td>Assess noise from proposed entertainment and leisure uses separately.</td>
<td>Primary Care Trust</td>
<td>Addressed in the ES</td>
</tr>
<tr>
<td>Air Quality and Climate Change</td>
<td>Chapter on Air Quality to also consider Climate Change</td>
<td>London Borough of Camden</td>
<td>Addressed in the ES</td>
</tr>
<tr>
<td>Air Quality and Climate Change</td>
<td>Include effects from: emissions from construction vehicles and plant dust on water quality and health effects of nitrogen dioxide</td>
<td>London Borough of Camden</td>
<td>Addressed in the ES</td>
</tr>
</tbody>
</table>
Appendix 8B: Other Initiatives and Development Schemes That Could Result in Potential Changes to the Site and its Surroundings by 2006/2007

The information contained in this appendix adds to that provided in section 2.2 describing the key ongoing developments and transport schemes that could result in changes to the site and its environs by 2006/7. This appendix identifies and briefly describes other initiatives and development schemes that might also lead to changes albeit to a lesser degree. For example, they might be less likely to proceed, be further away or have a lesser effect on the baseline.

Locations of these initiatives and schemes are shown on Figure 2.2.1 with the exception of the Swathe (see below).

Kings Cross Canal Action Plan
This is an aspirational document prepared by the King's Cross Partnership and British Waterways. It involves a package of (unfunded) enhancement works. Some of these might be implemented alongside the King’s Cross Central proposals.

The Swathe
The area or “swathe” running from King’s Cross Central (Euston Road) to Finsbury Park is identified by the London Development Agency as a Priority Area. The King's Cross Central development is a cornerstone of this initiative. There is no firm programme of works and intentions as yet.

The overall programme objective is:

“To influence the development of the three hubs in the area – King’s Cross, Arsenal and Finsbury Park – so that they can play a key role as a driver for the central London economy, and to ensure that they provide real benefits to local people and local businesses.” (London Development Agency, Kings Cross Finsbury Park Priority Area)

(Note that as The Swathe is a general area, it is not shown on Figure 2.2.1.)

176-178 York Way (incorporating 57-65 Randells Road)
This site is located to the south east of the Triangle Site and currently consists of a garage, car repair shop and playground. A draft planning brief is being prepared by the LBI for a five storey mixed use scheme. The developer, Buschow Henley is interested in the site and they are waiting for the brief before proceeding with any plans.

Former Kings Cross Coach Station
An updated planning brief is being prepared for mixed use development with some residential uses. No planning application as yet.

200 Pentonville Road
A planning application has been submitted for a mix of affordable, key worker, student and private accommodation by developer TK Bennetts. A decision has not been made on the planning application.

Travel Lodge
A new Travel Lodge is being constructed towards the northern end of Grays Inn Road, to the south east of the King's Cross Central site. This is anticipated to be complete by 2006.
Development of land behind the British Library and other sites/spaces in the area

Part of this site is being used for temporary CTRL office accommodation and a construction site until 2007. It is identified in the Camden UDP for mixed use with residential, leisure and BI uses. A Development Brief for the site was adopted in October 2003.

Euston Station

A development brief is being prepared for the enhancement of Euston Station with mixed use development. The brief has not yet been issued for consultation and a planning application for this scheme has not been submitted.

Brunswick Centre

A planning application was approved in January 2002, although a new scheme has since been submitted. This scheme comprises the refurbishment of the existing centre, expansion of the existing supermarket, together with changes to the office and retail components.

Camden Town Tube Station

This proposal entails the enlargement and modernisation of Camden Town Station, which is approximately 900m west of King’s Cross Central. The application (including an Environmental Statement) is to be considered by the Secretary of State as an appeal (due to the submission of a Transport and Works Act Order, effectively “calling in” the Conservation Area application and the lodging of a non-determination appeal to enable both applications to be considered together).

Star Wharf

The Star Wharf site is located at 38-40 Pancras Road. A planning application has been approved by LBC for a mixed-use development comprising office, retail and residential uses, however modifications are still under discussion.
Appendix 8C

Traffic Data (provided by Arup)

12-18 Hour Flows

Technical Note 05c

Figure 1  Future Base – AM Peak (vehicles)
Figure 2  Future Base – PM Peak (vehicles)
## Traffic Flow Conversions

<table>
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<th></th>
<th>Enter Figure</th>
<th>Peak Hour Flow</th>
<th>Daily 16 Hour</th>
<th>Daytime 12 hour</th>
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<td>1861</td>
<td>1861</td>
<td>28678</td>
<td>23988</td>
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<tr>
<td>A5200 York Way (north)</td>
<td>1427</td>
<td>1427</td>
<td>21990</td>
<td>18394</td>
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<tr>
<td>Agar Grove</td>
<td>853</td>
<td>853</td>
<td>13145</td>
<td>10995</td>
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<tr>
<td>Goods Way</td>
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<td></td>
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<td>Base+Main Site &amp;Triangle</td>
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# King's Cross Central - Traffic Flows

## Summary of AAWT, 16 and 12-hour Flows - Future Baseline Situation

<table>
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<th>Daily 16 Hour</th>
<th>Daytime 12 Hour</th>
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<td>A5203 Camden Road</td>
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<td>28678</td>
<td>23988</td>
<td>19969</td>
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<tr>
<td>A5200 York Way (north)</td>
<td>1427</td>
<td>21990</td>
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<td>Agar Grove</td>
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<td>Goods Way</td>
<td>912</td>
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<td>19941</td>
<td>16680</td>
<td>13885</td>
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<td>A501 Euston Road</td>
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<td>59282</td>
<td>49588</td>
<td>41278</td>
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</table>

## Summary of AAWT, 16 and 12-hour Flows - Future with KXC Development

<table>
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<th>Peak Hour Flow</th>
<th>Daily</th>
<th>Daily 16 Hour</th>
<th>Daytime 12 Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>A5203 Camden Road</td>
<td>1886</td>
<td>29063</td>
<td>24311</td>
<td>20237</td>
</tr>
<tr>
<td>A5200 York Way (north)</td>
<td>1480</td>
<td>22807</td>
<td>19077</td>
<td>15880</td>
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<tr>
<td>Agar Grove</td>
<td>853</td>
<td>13145</td>
<td>10995</td>
<td>9153</td>
</tr>
<tr>
<td>Goods Way</td>
<td>926</td>
<td>14270</td>
<td>11936</td>
<td>9936</td>
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<tr>
<td>A520 York Way (south)</td>
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<td>20973</td>
<td>17543</td>
<td>14604</td>
</tr>
<tr>
<td>A501 Euston Road</td>
<td>3976</td>
<td>61270</td>
<td>20973</td>
<td>51251</td>
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</table>

## Summary of AAWT, 16 and 12-hour Flows - Future with KXC Dev with The Triangle

<table>
<thead>
<tr>
<th>LINK</th>
<th>Peak Hour Flow</th>
<th>Daily</th>
<th>Daily 16 Hour</th>
<th>Daytime 12 Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>A5203 Camden Road</td>
<td>1887</td>
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<td>24323</td>
<td>20248</td>
</tr>
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<td>A5200 York Way (north)</td>
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<td>Agar Grove</td>
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<td>13145</td>
<td>10995</td>
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<tr>
<td>Goods Way</td>
<td>926</td>
<td>14270</td>
<td>11936</td>
<td>9936</td>
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<tr>
<td>A520 York Way (south)</td>
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<td>21374</td>
<td>17878</td>
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<tr>
<td>A501 Euston Road</td>
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</table>

**Note:**

All flows based on AM peak hour flows
# King's Cross Central - Traffic Flows

## Summary of AAWT, 16 and 12-hour Flows - Future Baseline Situation

<table>
<thead>
<tr>
<th>LINK</th>
<th>Peak Hour Flow</th>
<th>AAWT</th>
<th>Daily 16 Hour</th>
<th>Daytime 12 Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goods Way to Wharf Road</td>
<td>1020</td>
<td>15718</td>
<td>13148</td>
<td>10945</td>
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<tr>
<td>Wharf Road to Copenhagen St</td>
<td>1075</td>
<td>16566</td>
<td>13857</td>
<td>11535</td>
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<tr>
<td>Copenhagen St to Brewery Rd</td>
<td>926</td>
<td>14270</td>
<td>11936</td>
<td>9936</td>
</tr>
</tbody>
</table>

## Summary of AAWT, 16 and 12-hour Flows - Future with KXC development

<table>
<thead>
<tr>
<th>LINK</th>
<th>Peak Hour Flow</th>
<th>AAWT</th>
<th>Daily 16 Hour</th>
<th>Daytime 12 Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goods Way to Wharf Road</td>
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<td>13681</td>
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<tr>
<td>Wharf Road to Copenhagen St</td>
<td>1501</td>
<td>23130</td>
<td>19348</td>
<td>16106</td>
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<tr>
<td>Copenhagen St to Brewery Rd</td>
<td>1061</td>
<td>16350</td>
<td>13676</td>
<td>11385</td>
</tr>
</tbody>
</table>

**Note:**

All flows based on AM peak hour flows
1. INTRODUCTION

Arup produced a technical note in August 2003 that provided the predicted future base traffic flows for the main links in the Kings Cross Area to be used for various aspects of the Environmental Impact Assessment for the proposed Kings Cross Central project. The future year represents a situation where the CTRL and associated station/road improvements are complete and committed development traffic flows are on the road network. This will be used to provide the comparison between the future base year situation and the future year with Kings Cross Central development.

1.1 Future Base traffic flows

The predicted future traffic flows on the road network have been built up from a number of data sources and traffic models that provides an indication of the likely traffic movements on the local road network in the future. The approach for the determination of the future base year has been discussed and agreed with the London Boroughs of Camden and Islington as well as Transport for London. The future information is built up from the following information:

- September 2003 Classified Manual traffic counts at the major local junctions on the road network;
- Traffic associated with the predicted CTRL development derived from RLE reports and the current SATURN model (2018);
- P&O development Traffic Impact Assessment;
- Battlebridge Station development Traffic Impact Assessment; and
- the predicted future flows do not allow for any traffic growth associated with future increase in rail passengers at Kings Cross Station.

The committed developments have the potential to be fully operational by the year 2007 therefore this is the earliest that the ‘future’ situation can occur. The recent analysis of traffic flows since 2001 show that traffic flows have generally reduced due to the Congestion Charging Scheme, therefore it has been assumed that there will be zero growth between 2003 and the future year other than the committed development listed above. The assumed future AM and PM peak hour traffic flows for the local road network are provided on the attached Figures 1 and 2.

1.2 Daily Flows and HGV proportions

The predicted future weekday traffic flows have been converted in to Daily, 16 Hour and 12 Hour flows using factors provided by the London Borough of Camden to enable various aspects of the EIA to be carried out. The HGV proportions observed in the 2003 survey have been used to estimate the likely values on the main links in the future. It was noted that some of the observed HGV proportions were higher than expected mainly due to the CTRL construction traffic and were reduced accordingly using the 2001 surveys where appropriate. The Daily values as well as the approximate HGV proportions are provided in Table 1 overleaf.
Table 1 – Summary of Daily Flows and HGV proportions – Future Baseline Situation

<table>
<thead>
<tr>
<th>LINK</th>
<th>Daily Flows (vehicles) - two-way with LBC factors</th>
<th>Proportion HGV</th>
</tr>
</thead>
<tbody>
<tr>
<td>A5203 Camden Road</td>
<td>28678</td>
<td>9 %</td>
</tr>
<tr>
<td>A5200 York Way (north)</td>
<td>21990</td>
<td>9 %</td>
</tr>
<tr>
<td>Agar Grove</td>
<td>13145</td>
<td>10 %</td>
</tr>
<tr>
<td>A520 York Way (south)</td>
<td>19941</td>
<td>10 %</td>
</tr>
<tr>
<td>A501 Euston Road</td>
<td>59282</td>
<td>10 %</td>
</tr>
<tr>
<td>Goods Way</td>
<td>14054</td>
<td>8 %</td>
</tr>
</tbody>
</table>
FIGURE 1 - Future Base - AM peak (vehicles)
FIGURE 2 - Future Base - PM peak (vehicles)