



King's Cross Station Enhancement Project

Environmental Scoping Report

September 2003

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FINAL REPORT

Network Rail

King's Cross Station Enhancement Project

September 2003

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I ABOUT THE SCOPING STUDY

I.I THE PURPOSE OF THIS REPORT

- 1.1.1 This Scoping Report has been prepared following a preliminary investigation into the environmental opportunities and constraints presented by the proposed King's Cross Station Enhancement Project (the "proposed project"). This report is intended to inform consultees of the topics that are to be covered or otherwise in the Environmental Impact Assessment (EIA) and described in the Environmental Statement (ES), which will accompany the planning application. It also describes how each topic will be assessed during the EIA. This report has been prepared by Environmental Resources Management (ERM) on behalf of Network Rail (NR).
- 1.1.2 In order to construct and operate the proposed project, NR will need to apply to the London Borough of Camden (Camden) to obtain planning permission and listed building consent. *Figure 1.1* shows the approximate project area.
- 1.1.3 The purpose of the scoping study is to establish the scope and methodology for the EIA, based on a consideration of the potential environmental effects and opportunities arising from the construction and operation of the proposed project. Although the undertaking of a scoping study is not a statutory requirement, it is generally recognised as good EIA practice ⁽¹⁾. This report has been produced in accordance with the guidance provided by the European Commission ⁽²⁾.
- 1.1.4 The output of the Scoping Report will feed into and inform the ongoing proposed project design. The intention is that this interaction will assist in the development of an environmentally sensitive design for the proposed project.
- 1.1.5 The Scoping Report will form a basis of common reference for consultation about the scope and methodology for the EIA. A list of those bodies and organisations to be consulted about the EIA is set out in *Annex A*.

(2) ERM (June 2001) Guidance on EIA: Scoping, Prepared for the European Commission.

⁽¹⁾ See, for example, Department of the Environment (1995) Preparation of Environmental Statement for Planning Projects that require Environmental Assessment: A Good Practice Guide.



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Kings Cross Station Enhancement Project

I.2 THE SCOPING PROCESS

- 1.2.1 The objective of the scoping process is to identify environmental issues which might arise during the construction and operation of the proposed project and which should be therefore addressed in more detail as part of the EIA.
- 1.2.2 During the scoping process, potential environmental issues are given a preliminary examination in order to determine whether any might be wholly or partially omitted from the EIA as not likely to cause significant effects (ie scoped out). Those issues, which are not scoped out, will form the basis of the EIA and will be reported in the ES.
- 1.2.3 It should be emphasised that the scoping of issues is reversible, in that as the project design develops and it becomes apparent that a significant effect may arise, the environmental issues will be readmitted to the EIA as appropriate.
- 1.2.4 It is not the purpose of scoping to undertake detailed measurement, calculation or assessment of potential impacts. Detailed assessment will be carried out when the EIA of the scheme is undertaken.

I.3 EIA TEAM

I.3.1 ERM have assembled the following team of experienced professionals to undertake the EIA of the proposed project:

• EIA Co-ordination.	ERM.
• Planning and Land Use.	ERM.
• Construction and Operation	onal Noise. ERM.
• Socio-economics.	ERM.
Construction Dust.	ERM.
• Waste Management.	ERM.
• Contaminated Land.	ERM.
• Water Resources.	ERM.
• Townscape and Urban De	sign: John McAslan and Partners.
• Pedestrian and Traffic Mov	<i>rement:</i> Arup.
• Archaeology.	MoLAS.
• Cultural Heritage.	CGMS & ERM.
• Protected Species.	Carter Ecological.

I.4 REPORT STRUCTURE

- 1.4.1 The remainder of this Scoping Report is organised in five further sections:
 - *Section 2*: briefly describes the proposed project and the options considered for a new concourse;
 - Section 3: describes the broad principles of the EIA methodology and defines the scope of the EIA;
 - Section 4: sets out the environmental issues to be addressed in the EIA;
 - Section 5: explains the methodologies that will be used to assess the significance of these environmental issues; and
 - Section 6: describes how the ES will be prepared.

2 PROJECT DESCRIPTION

2.1 INTRODUCTION

- 2.1.1 The current layout of King's Cross Station is disjointed and is characterised by restricted passenger accumulation areas. Passenger facilities and station operations at King's Cross Station need to be replaced and modernised to meet the needs of the station now, and to accommodate future growth.
- 2.1.2 The number of passengers using future train services require well planned concourse facilities within which to arrive, gather tickets and train information, wait comfortably, circulate from one destination to the next, and interchange between transport modes. Front-of-house passenger support facilities and back-of-house station facilities need to be carefully planned to best utilise available land at the station, and to ensure efficient operations.
- 2.1.3 In addition to the increased number of passengers within the station, emerging development proposals immediately to the north of the station ⁽¹⁾ indicate that in future, if these other developments are granted planning permission and go ahead, there will be increased pedestrian flows in and around King's Cross Station, in particular moving between Euston Road and the proposed development to the north.
- 2.1.4 The King's Cross Station building, designed in 1850 by Lewis Cubitt, is one of the most significant examples of railway architecture in the country, and it falls wholly within Camden's King's Cross Conservation Area. The Station comprises the main train shed, a suburban train shed to the west, the Eastern and Western Ranges, and a 1970s addition of a southern concourse. The Station is Listed Grade 1 ⁽²⁾, and is in close proximity to the Grade 1 listed St Pancras Station and the Grade 2 listed Great Northern Hotel (GNH), both to the west.

2.2 DESCRIPTION OF PROJECT ELEMENTS

- 2.2.1 The proposed project comprises three main elements:
 - new passenger concourse facilities;
 - new station operational facilities; and
 - refurbishment of listed buildings.

(2)A 'listed building' is one that is included on the Lists of Buildings of Special Architectural or Historic Interest, issued by the Department of Culture, Media and Sport (DCMS).

⁽¹⁾ Notably the King's Cross Central (KXC) development being promoted by the joint venture Argent St George. Network Rail and Argent St George are in continued discussion to ensure that the interfaces of the projects are understood and to allow proper consideration of effects in the EIA.

2.2.2 These components are described in more detail below.

Passenger Concourse Facilities

- A new western concourse sized to suit expected rail passenger requirements will be constructed. The concourse will be designed to accommodate peak passenger flows and to provide access to the Underground and other onward modes of transport.
- Concourse space standards have been established consistent with currently accepted health and safety practice and to provide for accumulation areas within the concourse under normal conditions, queues at ticket office and delay conditions.
- The existing southern concourse will be demolished following its replacement by the new western concourse.

Station Operational Facilities

- A new track and platform, designated platform 0, will be constructed utilising a former carriage road at ground level under the Eastern Range.
- Station servicing facilities and On Board Services (OBS) facilities will be provided to replace existing arrangements along with associated access provisions.
- The taxi drop-off and pick-up facility for King's Cross Station will be centred on Pancras Road to the west.

Heritage/Listed Buildings

- The listed station buildings will be refurbished to an appropriate standard having regard for advice given by English Heritage and Camden.
- English Heritage and Camden's primary aspiration to reveal the existing southern façade of the listed station (and create an open plaza in front of the station in place of the existing southern concourse), is to be adopted as a project aspiration, but is to be balanced against the operational requirements for the management of passenger movements around and through the main southern façade.
- The Bomb Gap, within the western range of King's Cross Station, will be reconstructed with an external treatment sympathetic to the existing elevation.

2.3 CONCOURSE OPTIONS CONSIDERED

- 2.3.1 Six different options were considered for the siting of the new King's Cross Concourse.
 - southern mezzanine level concourse;
 - northern mezzanine level concourse;
 - grade level southern concourse within existing Main Shed;
 - grade level southern concourse outside existing Main Shed;
 - below grade concourse; and
 - grade level western concourse.

Southern Mezzanine Level Concourse

- 2.3.2 This option involved creating a new main concourse within the existing Main Shed at a mezzanine level. This mezzanine level concourse would be suspended over the platforms at the southern end of the Main Shed and would extend northwards from the southern façade to approximately half way along the length of the platforms. This main concourse would then link with a secondary Western Concourse located on the southern end of the suburban train shed via a pedestrian link through the Western Range of King's Cross Station.
- 2.3.3 Passengers and staff would be able to move around the station between the existing ground level areas and the new mezzanine level concourse via a series of escalators and lifts. These would link up from the station entrances and down to the platforms as required.

Northern Mezzanine Level Concourse

- 2.3.4 The creation of a new mezzanine level concourse to the north of the Main Shed would involve suspending a new concourse over the northern ends of the platforms. The entrance to this concourse would be from the west of the Suburban Shed.
- 2.3.5 As would be the case for the southern mezzanine concourse, passengers and staff would be able to move between the existing ground level areas and the new mezzanine level concourse via a series of escalators and lifts.

Grade Level Southern Concourse within Existing Main Shed

2.3.6 This option would involve creating a new southern concourse within the existing Main Shed. In order to accommodate the new southern concourse it would be necessary to move the platform buffer stops north by 135 m. The platforms would also have to be extended northwards by a similar amount.

2.3.7 The main entrance to this concourse would be through the southern façade with a link through the western range to a small secondary western concourse built at the southern end of the Suburban Shed.

Grade Level Southern Concourse outside Existing Main Shed

2.3.8 This option would involve an almost like-for-like replacement of the existing arrangement, but would vary in that it would occupy a larger footprint and would connect to a secondary western concourse in front of the western range and the Suburban Shed. Passenger and staff movements would be predominantly via the southern façade and through the western range.

Below Grade Concourse

2.3.9 Creation of a below grade concourse would involve creating a main concourse below ground to the west of the Main Shed and to the north of the new London Underground Northern Ticket Hall. Connections would be made up to the platforms and down from the station entrances to enable passenger and staff movement.

Grade Level Western Concourse

- 2.3.10 A grade level western concourse could be created between the Main Shed and the Great Northern Hotel. This new concourse would link to the platforms in the Main Shed by creating walkways through the western range. It would also connect directly to the southern end of the Suburban Shed.
- 2.3.11 A description of the key issues that were considered in assessing the suitability of the options is provided in *Table 2.1*.

Table 2.1Key Issues Associated with the New Concourse Options

Southern Mezzanine Level Concourse• Heritage issues as a result of mezzanine level being constructed within the listed train shed.Level Concourse and the platforms would be operationally unacceptable. • The concourse would have poor connections with other transport modes. • Providing the link from mezzanine to platforms will require a reduction in the number of platforms within the Main Shed from eight to six.Northern Mezzanine Level Concourse• Multiple level changes between the station entrance, concourse and the platforms are operationally unacceptable. • The concourse would have poor connections with other transport modes, in particular London Underground. • Providing the link from the mezzanine to platforms will require a reduction in the number of platforms within Main Shed eight to six.Grade level southern concourse within existing Main Shed• Ideal operational solution for King's Cross Station. • Solution not ideal for suburban shed which takes 40% of station's passengers. • Buffers and platforms would need to be moved northwards by 135 m. • Land acquisition and major and expensive civils works required north of the station throat with associated disruption to station operation. • The concourse would have poor connections with other transport modes.Grade level southern concourse outside existing Main Shed• Main Shed southern façade not revealed and does not create urban space south of station as required by Camden. • Southern concourse are a is too small to accommodate the required concourse size. • The feasibility of constructing the new concourse while at the same time demolishing the existing concourse would have poor connections with other transport modes.Below grade concourse concourse will have poor connections with other transport modes.• M	Option	Key Issues
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 Below grade concourse Multiple level changes between the station entrance, concourse and the platforms are operationally unacceptable. The concourse would have poor connections with other transport modes. Grade level western concourse Potential conflict with Great Northern Hotel. Minor alterations required to move buffers on platforms 5 to 8 northwards by 10 m. 		demolishing the existing concourse would be very difficult to coordinate.
glatforms are operationally unacceptable. • The concourse would have poor connections with other transport modes. Grade level western concourse • Potential conflict with Great Northern Hotel. • Minor alterations required to move buffers on platforms 5 to 8 northwards by 10 m.	Below grade concourse	• Multiple level changes between the station entrance, concourse and the
 The concourse would have poor connections with other transport modes. Grade level western concourse Potential conflict with Great Northern Hotel. Minor alterations required to move buffers on platforms 5 to 8 northwards by 10 m. 		platforms are operationally unacceptable.
 Grade level western Potential conflict with Great Northern Hotel. Minor alterations required to move buffers on platforms 5 to 8 northwards by 10 m. 		• The concourse would have poor connections with other transport modes.
• Minor alterations required to move buffers on platforms 5 to 8 northwards by 10 m.	Grade level western	• Potential conflict with Great Northern Hotel.
1	concourse	 Minor alterations required to move buffers on platforms 5 to 8 northwards by 10 m.

- 2.3.12 An option evaluation exercise was undertaken for the potential locations for the new concourse. The exercise followed a criteria based approach using a rating mechanism to characterise the likely effect of each of the alternative schemes with regard to a range of environmental issues, in addition to issues such as cost and operability. The environmental issues which were considered included the following:
 - urban design;
 - heritage and listed building effects;
 - noise;
 - light pollution;
 - local air quality;
 - biodiversity;

- road traffic implications;
- potential site contamination; and
- water environment.
- 2.3.13 The exercise identified that a new grade level western concourse would best meet the operational requirements while minimising detrimental environmental effects and optimising positive effects. This option was therefore taken forward for further development.

2.4 CONSTRUCTION WORKS

2.4.1 Construction works are expected to commence in 2007, subject to obtaining the necessary consents and funding, and will take approximately four years to complete. Platform 0 works may be progressed prior to 2007 to allow greater operational flexibility while concourse building and listed building refurbishment is undertaken.

3 OVERALL APPROACH TO THE EIA

3.1 INTRODUCTION

3.1.1 This section describes the broad principles of the EIA methodology. In so doing, it describes the approach that will be used to identify and evaluate significant effects, and mitigate adverse significant environmental effects, where practicable. It also defines the scope of the EIA.

3.2 BASIS OF THE ASSESSMENT

- 3.2.1 The significant environmental effects of the project will be evaluated for each relevant environmental topic (eg cultural heritage, townscape, noise etc) by comparing baseline environmental conditions (ie the situation without the proposed project) with the conditions that would prevail were the project to be constructed and operated.
- 3.2.2 The environmental impacts of the project are predicted in relation to environmental receptors, that is, people (eg residents of buildings, users of facilities, employees of businesses etc), and built resources (eg a listed building) and natural resources (eg a site of ecological interest). The duration of the impact is also a key determinant in evaluating whether it leads to a significant effect. Each identified effect will be considered in relation to its duration before concluding whether or not it is significant.
- 3.2.3 The key receptors in the vicinity of the proposed project are described in *Table 3.1*.

Table 3.1Key Receptors in Vicinity of Proposed Project

Receptor Type	Receptor Name
Environmental receptor	 Residential properties on York Way and Euston Road.
	Users of King's Cross Station.
	Employees of businesses at King's Cross Station and along Euston Road
	and York Way.
Built resources	King's Cross Station.
	Great Northern Hotel.
	St Pancras Station.
	King's Cross Conservation Area.
Natural Resources	• Bats within buildings (Great Northern Hotel and King's Cross Station).

3.2.4 For the purposes of the EIA, the project baseline year is assumed to be 2007 because this is the intended year of commencement of the construction works. It is also the year that the current London Underground works and the forthcoming works to St Pancras Station to accommodate the Channel Tunnel Rail Link will be completed. As noted above, platform 0 may be completed ahead of the remaining works and thus form part of the baseline in 2007. To ensure that the EIA considers a realistic worst case, the impacts from platform 0 will be assessed on the basis of (a) construction prior to 2007, and (b) construction contemporaneously with the concourse.

3.3 DEFINING THE SIGNIFICANCE OF ENVIRONMENTAL EFFECTS

- 3.3.1 The EIA Regulations require an ES to report the significant environmental effects only. While there is no statutory definition of what constitutes a significant effect, it is clear that the primary purpose of identifying the significant effects of a project is to inform the decision-maker, in this case the local planning authority, such that an informed decision can be reached on the planning application. On this basis, a significant effect has been defined for the purposes of this project as an effect that, either in isolation or combination with others, should in the opinion of the EIA team be taken into account in the decision-making process.
- 3.3.2 This definition will provide a common framework within which to predict the significance of effects for all environmental topics arising from the King's Cross Concourse Project. Within this framework, a set of criteria for each environmental topic will be used in order to predict any significant effects arising from the scheme (see *Section 5*).
- 3.3.3 Following their identification, significant effects will be classified on the basis of their nature and duration, as follows:
 - Site-specific effects comprise effects which result from a geographically localised impact and which are significant primarily at a neighbourhood or district level.
 - Wider effects comprise effects which are individually significant at a regional level, but which are unlikely to be significant locally.
 - **Positive effects**. Effects that have a beneficial influence on receptors and resources.
 - **Negative effects**. Effects that have an adverse influence on receptors or resources.
 - **Temporary effects**. Effects that persist for a limited period only, due for example to particular construction activities (eg noise from construction plant). Where possible, the likely duration of effects will be identified.

- **Permanent effects**. Effects, which result from an irreversible change to the baseline environment (eg landtake) or which persist for the foreseeable future (eg noise from operation).
- **Direct effects**. Effects that arise from the impact of activities that form an integral part of the project (eg new infrastructure).
- **Indirect effects**. Effects that arise from the impact of activities not explicitly forming part of the project (eg increased road traffic in neighbouring boroughs due to changes in road layouts).
- Secondary effects. Effects that arise as a result of an initial effect of the scheme (eg reduced amenity of a community facility as a result of construction noise).
- **Cumulative effects**. Effects which arise from the combination of different effects at a specific location, the recurrence of effects of the same type at different locations and the interaction of different effects over time.

3.4 MITIGATION OF ENVIRONMENTAL EFFECTS

3.4.1 For each significant adverse effect identified, the specialists undertaking the EIA will propose mitigation measures, consistent with good practice in their respective field, to be agreed with NR. Agreed mitigation will be taken forward as part of the project. Residual effects (assuming agreed mitigation is in place) will be classified as non-significant or still significant, as appropriate.

3.5 THE TEMPORAL SCOPE OF THE EIA

- 3.5.1 The temporal scope of the EIA for construction will be 2007 to 2010, although as noted platform 0 may be completed prior to 2007. The temporal scope will also take into account the time of day during which works are undertaken, notably whether they are undertaken during daytime or night-time periods.
- 3.5.2 For the operational phase, the temporal scope will relate to scheme opening in 2010. For certain environmental topics, where effects are dependent on longer-term considerations such as traffic growth (which can affect, for example, emissions from road traffic), natural or planned restoration of vegetation (which can affect, for example, townscape) and future development (which can affect, for example, socio-economic outcomes), the operational phase will extend beyond the scheme opening, to take account of the longer term nature of effects which might occur.

3.5.3 The existing environment will be described in the ES from contemporary information prior to the present CTRL/LUL works, and at a point in mid-2003.

3.6 SPATIAL SCOPE OF THE EIA

- 3.6.1 The geographical coverage of the EIA takes into account the following factors:
 - The physical extent of the proposed works, defined by the limits of land to be acquired or used (temporarily or permanently).
 - The nature of the baseline environment and the manner in which environmental effects are likely to be propagated.
 - The pattern of governmental administrative boundaries, which provide the planning and policy context for the project.
- 3.6.2 The significance of effects can vary spatially. For example, any potential effects on archaeology would be likely to be confined to those areas physically disturbed by construction works, whilst the effects of noise or visual intrusion could be experienced at some distance. In addition, potential effects may only be significant locally (eg in the immediate vicinity if the site), whilst others may be significant at a wider level, as described above.

3.7 TECHNICAL SCOPE OF THE EIA

- 3.7.1 The range of environmental topics to be addressed in the EIA is referred to as its technical scope. Potential environmental issues have been evaluated as part of the scoping exercise in order to determine whether any might be wholly or partially omitted from the EIA on the grounds that they will not give rise to significant effects (ie they may be 'scoped out'). The basis on which issues have been scoped in or out is explained in *Section 4*.
- 3.7.2 An assessment will be undertaken by specialists for each of the environmental topics that have not been scoped out of the EIA.
- 3.7.3 Scoping out of an environmental issue is reversible, in that as the scheme design develops and it becomes apparent that a significant effect may arise, the environmental issue in question will be readmitted to the EIA, as appropriate.

3.8 DEFINITION OF 2007 PROJECT BASELINE

- 3.8.1 The baseline year of 2007 assumes that only those projects, which already have planning permission, will be included. The 2007 baseline will therefore incorporate the following:
 - King's Cross Station will have the basic layout as it is today (2003);
 - Channel Tunnel Rail Link (CTRL) works are assumed to be completed;
 - London Underground works are assumed to be completed;
 - Pancras Road will have the layout as proposed under the CTRL works;
 - traffic flows on local road network will be as predicted by CTRL for their year of opening with Platform '0' complete⁽¹⁾; and
 - taxi facilities will be located at the western side of the station.

3.9 DEFINITION OF 2010 PROJECT BASELINE (YEAR OF OPENING)

- 3.9.1 For the year of opening the following assumptions have been made:
 - King's Cross Station will be operating with a new western concourse;
 - the southern concourse will be removed;
 - CTRL works will be complete;
 - London Underground works will be complete;
 - Pancras Road will have the CTRL layout⁽²⁾;
 - traffic flows on local road network will be as predicted by CTRL for their year of opening with growth factor to 2010;
 - taxis will be located at the western side of the station;
 - Platform '0' complete; and
 - there will be a new OBS building and access.

(2) Provision will also be made for an amended Pancras Road layout to accommodate KXC proposals.

⁽¹⁾ Additionally, the position with Platform 0 not constructed at this time will be addressed, so that a worst case assessment can be predicted.

Environmental Resources Management

4 ENVIRONMENTAL ISSUES TO BE ADDRESSED IN THE EIA

4.1 INTRODUCTION

- 4.1.1 Schedule 3 of the EIA Regulations notes that the ES should describe the likely significant effects of the scheme, with reference to its possible impacts on:
 - human beings;
 - fauna;
 - flora;
 - soil;
 - water;
 - air;
 - climatic factors;
 - material assets (including architectural and archaeological heritage);
 - landscape; and
 - the inter-relationship between the above factors.
- 4.1.2 For the purpose of scoping, this checklist has been refined with reference to EIA good practice⁽¹⁾. In addition, recent guidance published by the Environment Agency on the scoping of EIA projects, which includes specific guidance notes on a range of project types including railway stations⁽²⁾, has been taken into account. Reference has also been made to guidance prepared for the European Commission on the scoping of EIAs⁽³⁾. This guidance includes a scoping checklist for determining the scope of EIAs.
- 4.1.3 The preliminary inventory of potential issues to be covered in the EIA is summarised in *Box 4.1*.
- 4.1.4 These issues have been examined in order to identify which should be included in the EIA and which are unlikely to be significant and can, therefore, be scoped out.

⁽¹⁾ See, for example, Department of the Environment (1995) Preparation of Environmental Statement for Planning Projects that require Environmental Assessment: A Good Practice Guide.

⁽²⁾ Environmental Agency (May 2002) A Handbook for Scoping Projects and Associated Guidance Note K 5 Scoping the Environmental Impacts of Railways and Railway Stations.

⁽³⁾ ERM (June 2001) Guidance on EIA: Scoping, Prepared for the European Commission.

Planning and Land Use. The scheme may either conflict or conform to planning policies at the national, regional and local level. The scheme may also impact on, or complement, existing land uses in the area.

Townscape and Urban Design. The introduction of new features of infrastructure can cause permanent impacts which could be either positive or negative. Temporary visual impacts can also occur during construction. Effects are likely to be greatest in areas designated for their landscape or townscape value.

Archaeology and Cultural Heritage. Construction projects can affect archaeological sites where earthworks are necessary and can sometimes result in disturbance to features of archaeological importance. Listed buildings and conservation areas and their setting are also likely to be affected.

Construction and Operational Traffic and Pedestrian Movement. Works activity can generate additional road traffic movements associated with site personnel movements and HGVs. Severance will also be considered with regard to the fact that construction worksites may be obstacles to pedestrian and vehicular movement. Pedestrian movements at operational stage are a likely key issue in some project elements

Noise (construction and operation). Construction works can give rise to noticeable changes in noise. During operation, the rearrangement of the station layout may lead to changes in noise from road traffic. There may also be operational noise effects associated with the introduction of a new platform '0' on the eastern side of the station.

Socio Economics. Construction of the project can create jobs within the construction industry and sectors supporting it. Levels of economic activity and employment may be stimulated through the recruitment of a proportion of the construction workforce from the local community. The new concourse may be a contributory factor, along with other developments, for increased economic activity compared to the existing situation.

Construction Dust Deposition. Construction activity can give rise to dust deposition at nearby receptors, which results in nuisance from soiling, etc.

Construction Waste. Excavation will be necessary during construction and there will be high levels of spoil generation. Waste will also be generated during the demolition of the existing southern concourse and intervention works, if any, on the Great Northern Hotel.

Contaminated Land. Where earthworks and excavation are necessary during construction there is sometimes a potential for contaminated land to be encountered where works take place in areas with current or previous industrial land uses.

Protected Species. The works may give rise to the disturbance of habitats occupied by bats.

Water Resources. Potential water impacts may relate to intrusion into the groundwater by excavations during construction and from the creation of impermeable surfaces during operation.

Preliminary investigation of the potential environmental effects of the proposed project has concluded that the topics described in *Box 4.2* can be excluded from the EIA.

Box 4.2 Topics Scoped Out of the EIA and Rationale for Their Exclusion

Severance during Operation. Traffic generated during operation is not expected to result in a significant change in the existing traffic flow on the local road network. Therefore, severance resulting from changes to traffic flow during operation has been scoped out. Also, although pedestrian movements are likely to be a key issue in some project elements, severance of pedestrian movements is not considered likely to occur.

Severance from Construction Traffic. Construction generated traffic is not expected to result in significant changes to the layout of the local road network or require new dedicate haul roads to be constructed. Therefore, severance resulting from these types of road layout changes during construction has been scoped out.

Operational Waste. It is anticipated that the operational phase of the proposed scheme will generate similar quantities and types of waste to those generated by the current concourse and associated facilities. The assessment of operational waste impacts has therefore been scoped out of the EIA.

Ecology – other than protected species. Due to the nature of the existing townscape environment, the footprint of the proposed project will not impact on any ecological resources, such as designated sites. Therefore, consideration of ecological issues, with the exception of bats, has been scoped out of the EIA.

Vibration during Construction and Operation. Significant effects arising from vibration during construction and operation are not expected to arise. Percussive piling techniques will not be used during construction. Train movements associated with the new platform 0 are the only potential source of operational vibration, but these are not expected to materially change existing levels of vibration.

Construction and Operational Air Quality. Traffic levels on the local road network are expected to change by less than 10% during both construction and operation of the proposed project. Guidance issued by the former DTLR proposes that traffic related air quality issues can be scoped out of the assessment if the scheme changes traffic flows by less than 10%. Although there may be nuisance caused by the deposition of dust generated by the construction activities. It is considered that construction activities are unlikely to result in increased exposure to inhalable airborne dust that could give rise to significant health effects.

Climate Change. The construction and operation of the proposed project will not result in the generation of significant levels of greenhouse gases. This issue has, therefore, been scoped out of the EIA.

Micro-climate. The microclimate around the station as a result of the proposed project will not change significantly from that currently prevailing in the vicinity of King's Cross Station.

4.2 SUMMARY

4.2.1 The Scoping Report has identified potential effects during both the construction and operational phases of the project and will be addressed in detail during the EIA process. Of these, some will be short term, prevailing for a specific period during the construction phase (eg construction noise impacts); others may persist in the longer term, either as permanent effects arising from the presence of the new infrastructure (eg landtake) or as effects associated with the use of the proposed project (eg operational noise effects). Mitigation and other protective measures agreed by NR will be designed into the proposed scheme to reduce or ameliorate adverse significant effects.

4.2.2 The key environmental issues that have been identified during the scoping exercise are summarised in *Table 4.1* below.

Issue	Const	Construction		Operation	
	Significant	Significant	Significant	Significant	
	effect unlikely	effect possible	effect unlikely	effect possible	
Planning and Land Use		√+/-		√+/-	
Townscape and Urban Design		✓-		√+/-	
Archaeology and Cultural Heritage		√ +/-		√ +/-	
Traffic and Pedestrians		✓-		√+	
Noise during Construction and		✓-		√ +/-	
Operation					
Socio-Economics		√ +		√+	
Construction Dust Deposition		✓-		√+	
Construction Waste		✓-	X		
Contaminated Land		✓-	X		
Protected Species		✓-		✓-	
Water Resources		✓-		✓-	
Severance during operation	X		X		
Severance from construction traffic	X		X		
Operational Waste	X		X		
Ecology – other than protected species	X		X		
Vibration during Construction and	X		X		
Operation					
Construction and Operational Air Quality	X		X		
(including airborne dust)					
Climate Change	X		X		
Micro-climate	X		X		
✓ Topic included in EIA					
+ positive effect.					

Table 4.1Potential Environmental Issues

- negative effect.

+/- both positive and negative effects possible.

X Topic scoped out.

4.2.3 The issues that are considered to be unlikely to have significant effects have been scoped out of the EIA. In certain cases, this may require further substantiation and study as part of the on-going EIA, as noted in preceding sections. It should be emphasised that the scoping out of a topic is reversible, in that as the scheme design develops and it becomes apparent that a significant effect may arise, environmental topics will be readmitted to the EIA as appropriate.

5 METHODOLOGIES FOR ASSESSING ENVIRONMENTAL IMPACTS

5.1 INTRODUCTION

- 5.1.1 As explained in *Section 2*, the EIA Regulations require an ES to report on those environmental effects that are considered likely to be significant.
- 5.1.2 A significant effect has been defined for the purposes of this project as an effect that either in isolation or combination with others, should - in the opinion of the EIA team - be taken into account in the decision-making process.
- 5.1.3 This definition will provide a common framework within which to predict the significance of effects for all environmental topics. A set of criteria for each environmental topic identified in *Table 4.1* for inclusion in the EIA will be used in order to predict any significant effects arising from the scheme. These criteria are described below.
- 5.1.4 The prediction methods set out in the following sections are based on previous experience of similar Environmental Impact Assessments, and ERM's professional judgement. In addition, account has been taken of pertinent statutory requirements, Government advice and professional guidance on best practice.

5.2 BASIS OF THE ASSESSMENT

5.2.1 For each relevant environmental topic (eg cultural heritage, townscape, noise etc), the environmental effects of the scheme will be predicted by comparing baseline environmental conditions (ie the situation without the proposed scheme) with the conditions which would prevail were the scheme to be constructed and operated, taking account the temporal and spatial scopes defined in *Sections 3.5* and *3.6* respectively. The predicted effects will then be evaluated to determine whether they are significant.

5.3 PLANNING AND LAND USE

Methodology

 5.3.1 The methodology will comprise a review of the Unitary Development Plans (UDPs) for the London Boroughs of Camden and Islington (and proposed modifications), other appropriate policy documents and guidance (eg Supplementary Planning Guidance, Regional Planning Guidance, Planning Policy Guidance notes, etc) and development proposals. The review will aim to establish:

- the presence of any sensitive land uses adjacent to the site;
- the relationship between the scheme and planning policies;
- the relationship between the scheme and other development proposals; and
- any temporary and permanent effects on land, property and development proposals arising from construction and operation of the proposed scheme (eg land take and impairment of access to property).

Evaluation Criteria

- 5.3.2 The significance of planning effects will be determined on the basis of a consideration of:
 - the extent of conflict/conformity of the scheme with relevant planning policies, taking into account the nature and status of a planning policy;
 - the extent of conflict/conformity of the scheme with development proposals; and
 - the extent of land take, taking into account the importance of the area in terms of its resource value, the quality of the land affected and the importance of the functions of buildings and land which will be affected.
- 5.3.3 A judgement of the significance of the effect will then be made through value judgements based on an understanding of the local area and the planning context.

5.4 TOWNSCAPE AND VISUAL IMPACTS

Methodology

5.4.1 The assessment will be prepared in accordance with good practice, as described in the *Guidelines for Landscape and Visual Impact Assessment* produced jointly by the Landscape Institute and the Institute of Environmental Management and Assessment ⁽¹⁾. This methodology is applicable both to the assessment of short-term impacts during the construction of the project, and also to long-term impacts during its operation.

> (1) The Landscape Institute, Institute of Environmental Management and Assessment. (2002). Guidelines for Landscape and Visual Impact Assessment, Second Edition. Spon Press

- 5.4.2 A review will be undertaken of OS maps, planning documents, existing townscape assessments for the area, ESs for other nearby developments, leaflets and other sources of local information which may be identified by consultees or through field work, visits to local libraries, *etc.*
- 5.4.3 The EIA team will carry out detailed field work to identify the baseline character and identify potential impacts. The findings of site visits will be recorded by annotating plans and taking photographs. Field survey forms may also be used.
- 5.4.4 A clear distinction will be drawn between effects on *townscape character and resources* and *visual impacts*, as described below:
 - Townscape effects relate to the change the proposed project has on the physical and other characteristics of the townscape and its resulting intrinsic character and quality.
 - Visual effects relate to changes to views from visual receptors (eg residents, workers, tourists *etc*) and to the amenity experienced by those people (sometimes referred to as visual impact receptors).

Evaluation Criteria

5.4.5 Whether an effect is significant depends both upon the *sensitivity* of the townscape or viewer to change, and on the *magnitude* of change. Definitions of receptor sensitivity and magnitude of change are presented in *Table 5.1* and *Table 5.2*. An indication of significant effects is presented in *Table 5.3*.

Evaluation of Receptor Sensitivity

- 5.4.6 The *sensitivity* of the townscape depends upon its inherent nature, quality, condition and ability to accommodate change, and on any specific values (such as townscape designations) that may apply.
- 5.4.7 The sensitivity of viewers depends upon their viewing opportunity. Hence, a resident with a permanent view is considered to be of higher sensitivity than an office worker or traveller with only a passing interest in the environment.
- 5.4.8 Sensitivity is to be described as low, moderate or high. The following definitions, as detailed in *Table 5. I*, apply.

Table 5.1Definitions of Receptor Sensitivity

Sensitivity		Definition
Low	Townscape	A townscape that is not valued for its scenic quality and is tolerant to change.
	Visual	Viewers with a passing interest in their surroundings, <i>eg</i> motorists or workers in industrial premises.
Moderate	Townscape	A moderately valued townscape, perhaps a locally important townscape, tolerant of some change.
	Visual	Viewers with a moderate interest in their environment such as users of recreational facilities.
High	Townscape	A townscape of particularly distinctive character or one that is highly valued for its scenic quality.
	Visual	Viewers with proprietary interest and prolonged viewing opportunities, such as residential receptors.

Evaluation of Impact Magnitude

5.4.9 The *magnitude* of the change to townscape or visual receptors depends upon the nature and scale of the development. The magnitude of change will be described as being *low, moderate or high.* The following definitions, as detailed in *Table 5.2*, apply.

Table 5.2Definitions of Magnitude of Change

Magnitude of Change		Definition
Low	Townscape	A virtually imperceptible change in components of the townscape.
	Visual	Few viewers affected by minor changes in views.
Moderate	Townscape	Moderate changes in townscape components.
	Visual	A moderate number of viewers affected by moderate changes in views.
High	Townscape	A notable change in townscape characteristics over an extensive area.
	Visual	A large number of viewers affected by major changes in view.

Determination of Significant Effects

5.4.10 *Significant effects* will be determined by cross-referencing the sensitivity of the townscape or viewer with the magnitude of change expected as a result of the development. Thus a *significant effect* will usually occur where both sensitivity of the townscape or viewer and the magnitude of the change are high.

Significant effects can be either *positive* or *negative*, and short or long term. *Table 5.3* defines significance, as may be expected, in broad terms.

Table 5.3Determination of Significant Effects

	High magnitude of townscape or visual change	Moderate magnitude of townscape or visual change	Low magnitude of townscape or visual change
High townscape or viewer sensitivity	Significant	Significant	Significant/Not significant
Moderate townscape or viewer sensitivity	Significant	Significant	Significant/Not significant
Low townscape or viewer sensitivity	Significant/Not significant	Significant/Not significant	Not significant

5.4.11 The assessment of significance requires the application of professional judgement and experience as significance can be subjective. Each example will therefore be assessed on a case-by-case basis.

5.5 ARCHAEOLOGY AND CULTURAL HERITAGE

Methodology for Archaeology

5.5.1 Engineering information on the design and construction of the scheme will be critically examined alongside details of the known, estimated or suspected extent of historic features in order to establish whether, by its location or nature, a feature is likely to be affected by the works. Reference will be made to Planning Policy Guidance (PPG)16⁽¹⁾ in determining the level of consultation and investigation required.

Methodology for Cultural Heritage

5.5.2 The assessment of cultural heritage will take account of the advice given in PPG15⁽²⁾, which complements the guidance given in PPG16. Effects will be considered on the overall character of the historic environment and also on individual historic buildings and structures and their settings. Historic buildings and structures include statutorily listed buildings and other buildings or structures identified by the Local Authorities as of historic interest.

(1) Planning Policy Guidance Note 16: Archaeology.

⁽²⁾ PPG15: Planning and the Historic Environment, September 1994.

Evaluation Criteria for Archaeology & Cultural Heritage

- 5.5.3 The significance of archaeological and cultural heritage effects is determined by two variables:
 - the sensitivity of the receptor; and
 - the magnitude of change upon the receptor.
- 5.5.4 The determination of the sensitivity of the receptor (site importance) is based mainly on existing designations but allows for professional judgements, where features are found, which do not have any formal national or local designation (see *Table 5.4*).

Table 5.4: Criteria used to Determine Sensitivity of the Receptor

Sensitivity of	Equivalent to:
Receptor	
High	Sites of National Importance; Scheduled Monuments; Grade I and II* Listed Buildings;
	World Heritage Sites
Moderate	English Heritage Registered Park and Garden; Conservation Area; Sites of Regional or
	County Importance; Grade II Listed Buildings
Low	Locally Important Sites; Sites with a local value for education or cultural appreciation;
	Sites which are so badly damaged that too little remains to justify inclusion into a higher
	grade.
Negligible	Sites or features with no value or interest; Sites which are so badly damaged that too
	little remains to justify inclusion into a higher grade.

5.5.5 The determination of the magnitude of change is based on the level of change and the current state of survival/condition of the receptor (see *Table 5.5*). The survival of archaeological deposits within any given area is often uncertain, as is their exact extent. The magnitude of change can therefore be difficult to predict with any certainty. It should be noted that in some situations, change might have a beneficial environmental effect.

Table 5.5: Criteria used to Determine Magnitude of Change

Magnitude of Change	Description of change
High	Complete destruction of the site or feature. Change to the site or feature resulting in a
	fundamental change in our ability to understand and appreciate the resource and its
	historical context and setting
Moderate	Change to the site or feature resulting in an appreciable change in our ability to
	understand and appreciate the resource and its historical context and setting
Low	Change to the site or feature resulting in a small change in our ability to understand and
	appreciate the resource and its historical context and setting
None	Negligible change or no material changes to the site or feature. No real change in our
	ability to understand and appreciate the resource and its historical context and setting

Determination of Significant Effects

5.5.6 *Table 5.6* provides general guidelines on determining the significance of environmental effect based on the sensitivity of the receptor and the magnitude of change that the proposed project would have upon that receptor.

Table 5.6:	The Significance of Environmental Effects
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Magnitude of Change	Sensitivity of Receptor					
	High	Moderate	Low	Negligible		
High	Significant	Significant	Significant/ Not Significant	Not Significant		
Moderate	Significant	Significant	Significant/Not Significant	Not Significant		
Low	Significant	Significant/Not Significant	Not Significant	Not Significant		
None	Not Significant	Not Significant	Not Significant	Not Significant		

5.6 TRAFFIC AND PEDESTRIANS

Overview

- 5.6.1 The development will have the potential to impact on road users (ie drivers, pedestrians and cyclists) and roadside receptors caused by generated and displaced traffic (eg traffic conflicts, noise from traffic and HGV annoyance).
- 5.6.2 Impacts may also occur from disruption to the road network caused by works, in particular road closures should they be required.

Methodology

Operation

- 5.6.3 Details of all permanent junction and other infrastructure alterations will be given. Any junctions affected by infrastructure alterations (alterations that are part of the development application) or which may be impacted on by an increase in traffic from the development (directed through consultation with the local authority and professional judgement of the traffic engineers) will undergo junction capacity modelling.
- 5.6.4 An assessment will be undertaken for an average weekday morning and evening peak period for the existing (so the current capacity can be assessed), the do-minimum (future baseline year in which the development will be operational) and the do-something scenarios (future baseline year modelled with the development-generated traffic). This will show whether there is already a problem or if there is likely to be a capacity problem at the junction

as a result of expected traffic growth on its own and expected traffic growth combined with development-generated traffic. The assessments will also show whether queues are likely to occur.

- 5.6.5 Impacts on cyclists and pedestrians will be assessed by calculating the magnitude of change in traffic flow, ie the difference between the do-minimum traffic flows and the do-something traffic flows. The magnitude of change is typically expressed as a percentage difference. This will then be compared to the evaluation criteria described in *Box 5.*
- 5.6.6 Impacts of the development on public transport services will be assessed. The do-minimum public transport services and facilities will be described. Any proposed changes to the do-minimum situation, either as a direct result of the development (eg removal of a bus stop) or as a mitigation measure proposed to alleviate any potential impact (eg implementation of a bus lane) will be described.

Construction

- 5.6.7 Details of any temporary diversions and infrastructure alterations will be described. The impacts of the development on other drivers and on pedestrians and cyclists will be assessed by calculating the magnitude of change in traffic flow.
- 5.6.8 The level of peak construction traffic generation will be applied to the projected baseline traffic flow (projected to the peak construction year) on the relevant road network. The magnitude of change is typically expressed as a percentage difference. This is then compared to the evaluation criteria describe in *Box 5.1*.

Evaluation Criteria

- 5.6.9 The significance of effects will be determined using appropriate threshold criteria set out in:
 - guidelines issued by the Institution of Highways and Transportation ⁽¹⁾;
 - the Design Manual for Roads and Bridges, Volume 11 ⁽²⁾.
- 5.6.10 These are summarised in *Box 5.1* below.
- 5.6.11 During the operational phase if the criterion is exceeded then effects on cyclists and pedestrians can be expected. Once the criterion is exceeded, professional judgement is used to assess the level of significance, as no

Institute of Highways and Transportation (1994) Traffic Impact Assessment Guidelines, IHT.
 Department of Transport et al (1993) Design Manual for Road and Bridges, Environmental Assessment, Volume II, HMSO.

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guidance is available on this matter. The assessment of significance will take into account any existing facilities available to cyclists (eg on/off-street cycle paths, pedestrian crossing points), any mitigation measures proposed as part of the development, the existing level of cycle usage on the relevant parts of the road network and whether the development will generate a notable change in the number of pedestrians and cyclists using the facilities.

5.6.12 When assessing the effects of the construction phase, it does not automatically mean there will be a significant impact if the evaluation criteria are exceeded. The assessment must also take account of the level of magnitude of change and the length of the construction phase. The overall level of significance will be decided through professional judgement, based on an understanding of the local area and the proposed project details.

Box 5.1 Assessment Criteria

Traffic Conditions:

The assessment of effects on traffic conditions draws on guidance contained in the Institution of Highways and Transportation (IHT) *Traffic Impact Assessment Guidelines*. There is a potential for traffic effects during both construction and operation if the predicted traffic levels were to meet the following conditions:

- generated traffic levels exceed 10% of the baseline two-way traffic on the adjoining highway, or 5% where the adjoining highway is already congested; or
- the development generates over 100 vehicle movements (a return journey is two movements) in a peak hour.

In addition an assessment will be made of whether the ratio of traffic flow to capacity and queue length are within recommended limits for the operational phase.

Pedestrians and Cyclists:

It is assumed that changes in traffic flow of less than 30% are unlikely to have significant effects on pedestrian and cyclist movements. The adoption of this criterion is based on extensive studies examining the relationship between traffic flow and conflicts between motor vehicles and pedestrians and cyclists in a variety of road conditions.

5.7 Noise

Methodology and Evaluation Criteria for Construction Noise

5.7.1 Noise levels will be predicted using the methods set out in British Standard 5228. The assessment criteria which will be used for evaluating the significance of construction noise are based on criteria set out in BS 5228 and the Department of the Environment (DoE) Advisory Leaflet 72.

- 5.7.2 A summary of the relevant criteria for the assessment of the effects of construction noise is set out in *Table 5.7.* These criteria are applicable to all noise-sensitive receptors. During construction receptors will include the following:
 - specific sites schools and hospitals;
 - residential properties; and
 - business premises.
- 5.7.3 It should be noted that the noise levels set out in *Table 5.7* are not aimed at providing noise limits for construction activities, but are proposed as threshold criteria for the assessment of noise effects associated with the construction programme.

Table 5.7Threshold Criteria for Evaluating the Effects of Noise During Construction

Period	Building/Location	Criteria for Assessment L _{Aeq, period}	Purpose			
Daytime (0700 - 1900)	Dwellings/Offices (facade)	75 dB	To maintain speech intelligibility			
	Schools	65 dB	To maintain speech intelligibility in classrooms			
Evening (1900 - 2300)	Dwellings (facade)	65 dB	To avoid sleep disturbance			
Night-time (2300 - 0700)	Dwellings (facade)	45 dB(1)	To avoid sleep disturbance			
(1) or equal to ambient L_{Aeq} levels if the ambient noise level is higher than 45 dB						

5.7.4 The approach which will be adopted in the assessment will be to determine the potential noise effect from construction activities and to compare predicted noise levels for each construction phase with the noise criteria in *Table 5.7.* In cases where predictions show that these criteria will be exceeded for at least a few days, a significant potential effect will be reported.

Methodology and Evaluation Criteria for Operational Phase

5.7.5 A baseline survey at noise sensitive receptors will be undertaken in order to determine the currently prevailing noise climate, which will be used as part of the assessment.

- 5.7.6 Noise from developments is often assessed in two ways:
 - by comparing the levels of noise that are expected to be generated against absolute noise standards, such as those that indicate likely annoyance and/or disturbance of everyday activities; and/or
 - by considering the change in ambient noise that will occur with the development in operation.
- 5.7.7 Potential sources of noise from the redevelopment of King's Cross include alterations to the highways leading to changes in traffic flow and hence noise levels, the introduction of a new platform 0 resulting in potential changes to operational rail noise, the relocation of taxi/drop off points and therefore noise from the vehicles idling and doors slamming, ventilation systems and fans associated with the development.
- 5.7.8 The transportation noise assessment will take into consideration the nature of the noise to be assessed and will use the criteria provided in the following guidance:
 - Planning Policy Guidance Note 24, Planning and Noise, 1994; and
 - World Health Organisation: Guidance on Sleep Disturbance.
- 5.7.9 Transportation noise effects resulting from the operation of the proposed project will be permanent. Therefore, wherever the criteria given in the above standards are exceeded and baseline noise levels are increased by at least 3 dB, then the resultant effect will be reported as significant.
- 5.7.10 The assessment of fixed plant noise will take into consideration the nature of the noise to be assessed and will use the criteria provided in the following guidance:
 - British Standard 4142:1997 Method for rating industrial noise affecting mixed residential and industrial areas.
- 5.7.11 In accordance with the above guidance, where the assessment predicts that the noise generated by the operation of fixed plant is likely to lead to noise complaints, then these will be reported as significant effects in the ES.

5.8 SOCIO-ECONOMICS

Assessment Methodology

- 5.8.1 The proposed project will contribute, in conjunction with a number of other proposed projects, to the overall regeneration of the King's Cross area. The scheme is likely to generate social and economic benefits for communities within the London Boroughs of Camden and Islington.
- 5.8.2 In undertaking the socio-economic assessment, data will be gathered from the following key sources:
 - data from Census 2001, Office National Statistics and Neighbourhood Statistics website (baseline data – employment, deprivation, housing, transport);
 - local government websites;
 - the multiplier effect guidance from HM Treasury (1995) Framework for the Evaluation Regeneration Projects and Programmes, EGRUP. This guidance is under revision (see 3R Assessment Guidance Consultation Draft November 2002), but still remains in force;
 - regional government investment programmes/initiatives for the particular project, usually found on ODPM website eg Strategic Investment Areas; and
 - details of regeneration schemes and projects in an area obtained from central government and local government.
- 5.8.3 Specifically the methodology will address the impacts of the project on:
 - direct, indirect and induced employment associated with construction and operation;
 - other labour market effects linked to increased accessibility, particularly relating to skills and reduction of unemployment;
 - social and community benefits, arising from improved access to services and facilities; and
 - regeneration and economic development, including important but unquantifiable image and catalytic effects.

Evaluation Criteria

- 5.8.4 The following criteria will be used to assess the socio-economic impacts of the proposed project:
 - *Scale of impact*: quantification of effects (direct, indirect, and induced jobs generation);
 - *Context of change*: the magnitude of the effect in its local context (ie how significant is the addition to local employment in terms of the size and structure of the local labour market); and
 - *Timing of change*: some effects may occur in the short-term following the implementation of the scheme, others may take longer to be realised.
 The significance of the socio-economic effects will be determined through value judgments based on our understanding of the local area.

5.9 CONSTRUCTION DUST

Methodology

- 5.9.1 The key air quality issue during construction is dust emitted while carrying out the works, which can lead to nuisance impacts caused by soiling from dust deposition.
- 5.9.2 The establishment of a baseline for dust deposition rates will not be possible in the timescales available to carry out the EIA. This is because a 12-month monitoring survey would typically be required to establish such a baseline.
- 5.9.3 The assessment will rely on a qualitative assessment that will be based on an analysis of the nature of construction works being undertaken and the type, sensitivity and proximity of local receptors in the vicinity of the works.

Evaluation Criteria

5.9.4 There are no established criteria for the assessment of dust deposition arising from construction sites. A risk-based approach will be used to identify construction activities with the potential to generate significant quantities of dust near to sensitive receptors. Construction sites are a temporary operation and some degree of nuisance would normally be tolerated if the activity lasts for no more than a few months. Recent studies by the Building Research Establishment (BRE) also suggest that nuisance is unlikely to occur at distances greater than 50m from a construction site boundary. On this basis, ERM has devised a risk evaluation matrix (*see Table 5.9*) from the results of the studies by the BRE, in order to determine the significance of effects arising from construction dust deposition.

Table 5.9Evaluation of Potential Significant Effects of Dust Deposition

Duration of dust raising	Distance from site boundary to sensitive receptors*				
activity on Site	< 50 m	50 - 100 m	> 100 m		
> 12 months	Significant	Significant	Potentially Significant		
6 – 12 months	Significant	Potentially Significant	Not significant		
< 6 months	Potentially Significant	Not significant	Not significant		

* sensitive property defined as: residential, commercial office, hospital, surgery, etc

5.10 CONSTRUCTION WASTE

Methodology

- 5.10.1 The construction of the scheme will give rise to waste including spoil and domestic waste from site accommodation.
- 5.10.2 The construction of the scheme will give rise to spoil arising from deep excavations. The volume of contaminated spoil requiring disposal will be estimated as the likely proportion of the arisings that could be contaminated, based on a study of historical uses of the site. Other sources of waste will include domestic waste from site accommodation and effluent from portable toilets provided during the construction phase.
- 5.10.3 Where spoil is not contaminated, it is envisaged that the approach will be to adopt a disposal hierarchy, with the first choice option being to reuse spoil on site as part of the scheme wherever possible. The second choice option would be to reuse spoil in other schemes within the area, with the last choice option being disposal to a registered site.

Evaluation Criteria

5.10.4 In general, whenever the threshold levels described in *Table 5.10* are exceeded, the effect of contaminated spoil and Special Waste disposal will be considered to be significant. Where spoil is not contaminated an evaluation will be made to determine whether its disposal is significant, based on the capacity of the available disposal sites to receive the anticipated quantities in the required timeframe.

Table 5.10 Evaluation of Potential Significance of Construction Waste Disposal

Activity	Site Specific Criteria
Disposal to landfill of contaminated spoil	2000m ³
Disposal off site of any special waste	100m ³

ENVIRONMENTAL RESOURCES MANAGEMENT

5.11 CONTAMINATED LAND

Methodology

- 5.11.1 The potential for areas to be contaminated will be established through review of maps of current and historic land uses. Baseline conditions will be assumed to be those prevailing at the commencement of construction. The establishment of baseline conditions will comprise the following process:
 - source/hazard characterisation to assess the possible risks inferred by the occurrence of historical and current land uses; and
 - prioritisation of sites based on an appraisal of the likely hazards and the sensitivity of any relevant receptors.
- 5.11.2 The main sources of information to be used in defining the baseline conditions will be:
 - project environmental features mapping, environmental constraints mapping and data gathered by the design team during the design phase;
 - historical Ordnance Survey mapping, records of sites;
 - aerial photographs;
 - Local Authority Unitary Development Plans (UDPs);
 - output from Local Authority Contamination Land Inspection Strategies;
 - data collected by other specialists, ie water specialists with regards to groundwater vulnerability and surface water bodies;
 - relevant data obtained as a result of the site investigation works and any previous environmental intrusive investigations where the data is held by the project.
 - BGS data;
 - outputs from the ongoing site investigation programme;
 - Environment Agency (EA) Source Protection Zones (SPZs);
 - EA Thames Groundwater Quality Reports;
 - EA Groundwater Vulnerability maps;

- EA Surface Water Classifications; and
- relevant data obtained from other organisations, such as NR and London Underground.
- 5.11.3 It is also proposed to obtain a baseline of environmental information by obtaining a report from Sitescope for a 1250m radius around the proposed project site.

Evaluation Criteria

- 5.11.4 A qualitative risk assessment will be carried out using the accepted sourcepathway-receptor methodology as advocated by Part IIa of the Environmental Protection Act 1990 and will appraise the following:
 - source and hazard identification: the contaminant source will be characterised in terms of the nature of the hazard which could be realised;
 - pathway and exposure assessment: the exposure pathway will be characterised and potentially affected receptors (or specific resources) will be identified; and
 - the risk will then be characterised on the basis of the potential harm to a receptor within a given source-pathway-receptor combination or pollutant linkage. The potential risks will be graded with a level of magnitude.
- 5.11.5 The risks will be reported as either significant or not significant following consideration of the degree of severity of the risk and its likelihood. An example is shown in *Table 5.11*. The example is limited to one pollutant and is for illustrative purposes only.

Table 5.11 Example of qualitative risk assessment of identified pollutant linkages

Source	Potential Pollutant	Receptors and Resources	Pathway	Effect on Receptors and Resources	Degree of Severity	Likelihood	Potential Significance
Former Gas works	Hydro- carbons	Users of the site	Inhalation, dermal contact	Health Effects	Low	High	Not Significant
		Construction workers	Inhalation, dermal contact	Health Effects	Low	High	Significant
		Consumers of groundwater (deep aquifer)	Ingestion	Health Effects	Moderate	Low	Not Significant
		Shallow aquifer	Passage through porous strata	Pollution of ground water	Moderate	High	Significant
		Deep aquifer	Man-made <i>eg</i> site investigation, tunnelling, vent shaft construction.	Pollution of groundwater, EA may require remediation.	High	Moderate	Significant

5.11.6 Potential contaminated land effects will be reported as being high, moderate or low, based on a consideration of the contaminants involved and the vulnerability and sensitivity to contamination of the surrounding area. Effects identified as being high, will be reported as significant. Moderate effects will be reported as either potentially significant or not significant. Low effects will be reported as not significant.

5.12 ECOLOGY

Methodology

- 5.12.1 The assessment of the ecological effects of the scheme will be based on:
 - consultation with organisations such as English Nature and local conservation bodies;
 - a review of existing ecological information and site visits; and
 - surveys, as appropriate to determine the presence of protected species.
- 5.12.2 For the purposes of the EIA, the ecological assessment the following surveys will be undertaken:
 - A review of existing ecological information for the site and its immediate surrounds.
 - Where any buildings or other structures are to be affected, a bat survey will be undertaken.

• Consultation with organisations including English Nature, conservation groups (eg bat groups) to determine the need for, and scope of, any further surveys.

Evaluation Criteria

- 5.12.3 Once the ecological baseline has been established, the effects of the scheme on its habitats and species of nature conservation value will be determined using the criteria below.
- 5.12.4 The primary criteria for the evaluation of ecological effects will include:
 - the spatial extent, intensity and duration of effects;
 - the extent and quality of affected habitats and the importance of affected species, taking account of any designations for nature conservation importance and amenity value; and
 - the ability of habitat to recover from temporary effects.
- 5.12.5 In general, whenever bats and/or their habitat are identified any effect on them will be considered significant.

5.13 WATER RESOURCES

Methodology

- 5.13.1 Baseline data will be collected with respect to hydrology, hydrogeology, flood records, surface and groundwater quality, aquatic fauna and flora, water abstraction licenses and land drainage. The main sources will comprise:
 - Environment Agency records;
 - Section 105 or section 24 flood plain mapping;
 - Local authorities;
 - water service and supply companies;
 - Institute of Hydrology;
 - British Geological Survey;
 - British Waterways; and
 - major abstractors.
- 5.13.2 Surface water data will be collected within a 250m radius of the proposed project. Data on groundwater protection zones and abstraction licenses will be collected within a radius of 2000m and 1000m respectively from the proposed project. These distances will be reviewed during the course of the

assessment, to identify any need for change, eg changes in abstraction rates can alter the extent of source protection zones.

Evaluation Criteria

- 5.13.3 Significance will be determined in each case taking account of:
 - The severity of potential change (duration, volume of discharge, concentration of contaminants etc.).
 - The value and sensitivity of the resource, eg in terms of protected aquifers, water quality objectives and EC Directive on surface water quality.
 - The number, type and sensitivity of receptors (eg importance of a public water supply source, designated fishery, availability of alternative sources).

5.13.4 The threshold criteria are set out in *Table 5.12* below.

Type of Effect	Project Phase	Site Specific Threshold of Significance	Level of Severity	Severity Threshold
Pollution to	Construction	No minimum	Low	Any Class D or unclassified
watercourses.	and	threshold; derogation		watercourse. (Note 1).
	Operation	of water quality in any	Moderate	Any Class C watercourse.
		watercourse is	High	Any Class A or B
		considered to be		watercourse.
		significant.		
Causing or	Construction	No minimum	Low	Flooding affecting
exacerbating	and	threshold; flooding of		agricultural land.
flooding.	Operation	any land is considered	Moderate	Flooding affecting roads
		to be significant.		and infrastructure.
			High	Flooding affecting buildings
Derogation to	Construction	Causing disturbance in	Low	Within <6m thickness of
either a major or	and	ground within <6m		strata overlying aquifer.
minor aquifer.	Operation	thickness of strata	Moderate	Within unsaturated zone
		overlying an aquifer.		of aquifer.
			High	Within saturated zone of
				aquifer.
Derogation to any	Construction	No minimum	Low	Reduction of any natural
natural discharge	and	threshold.		discharge (stream
or abstraction for	Operation			baseflows or
water supply.				spring/seepage zones).
			Moderate	Any public or private
				source abstracting
				<1 MI/day.
			High	Any public or private
				source abstracting
				>1 MI/day.

Table 5.12 Threshold Criteria – Water Resources

Note 1: Numerical grading relates to the Environment Agency's GQA (General Quality Assessment) Chemical Grading for Rivers and Canals (NRA, 1994).

Note 2: Source Protection Zoning as defined in the Environment Agency's Policy and Practice for the Protection of Groundwater.

Environmental Resources Management

6 PREPARATION OF THE ENVIRONMENTAL STATEMENT

6.1.1 Once the EIA methodologies described in the above sections have been applied, the output of this process will be reported in the ES. Specifically the ES will identify all significant environmental effects, measures which will be adopted to mitigate adverse significant effects, and any residual or unavoidable effects.

Annex A

List of Consultees

London Borough of Camden

Town Hall Argyll Street London WCIH 8EQ

Islington Council

Town Hall Upper Street Islington London NI 2UD

Environment Agency

North East Thames Region Apollo Court Hatfield Hertfordshire ALIO 9EX

English Heritage

23 Saville Row London W15 2ET

The Victorian Society

I, Priory Gardens Bedford Park, London W4 ITT

CABE Design Review

The Tower Building 11 York Road London SEI 7NX

Greater London Authority

City Hall, The Queen's Walk London SEI 2AA

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