Network Rail

King's Cross Station

Sustainability Statement

Report ref
202_i2

Network Rail

King's Cross Station

Sustainability Statement

July 2006

Ove Arup & Partners Ltd
13 Fitzroy Street, London W1T 4BQ
Tel +44 (0)20 7636 1531 Fax +44 (0)20 7755 3510
www.arup.com

Job number 54200-60

ARUP

Document Verification

Job title	King's Cross Station		Job number 54200-60
Document title	Sustainability Statement		File reference
Document ref	202_i2		

Revision	Date				
Draft 1	26/03/06	Filename	Report_dratft1_200305.doc		
		Description	First draft		
			Prepared by	Checked by	Approved by
		Name	Various Authors	Helen Crosby	Paul Johnson
		Signature			
Issue	06/06/06	Filename	Report_Issue_270306.doc		
		Description	Issue		
			Prepared by	Checked by	Approved by
		Name	Various Authors	Helen Crosby	Paul Johnson
		Signature			
Issue	12/07/06	Filename	KXSE_Sustainability_Statement_issueJuly06.doc		
		Description	Issue – July 2006		
			Prepared by	Checked by	Approved by
		Name	Various Authors	Helen Crosby	Paul Johnson
		Signature			
		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			

Issue Document Verification with Document ✓

Contents

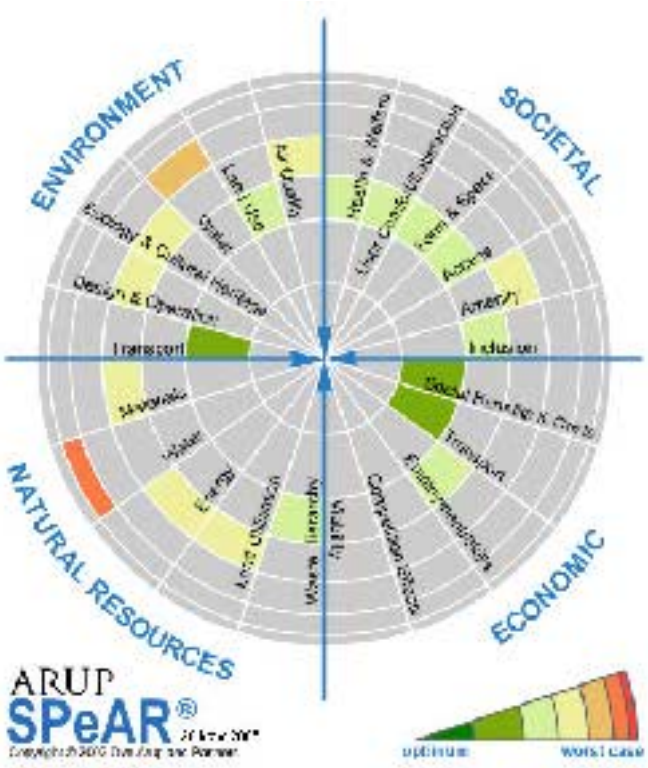
Appendices

Executive Summary

Network Rail appointed Ove Arup & Partners (Arup) to undertake an appraisal of the design proposals for the King's Cross Station Enhancement (KXSE) project in support of the planning application to be made to London Borough of Camden.

The objective of the appraisal is to establish the 'profile' of sustainability performance against the key aspects of natural resource efficiency, environmental impact minimisation, social welfare benefits and economic vitality. Information for the appraisal was taken from specialist studies prepared for the planning application. Using the Sustainable Project Appraisal Routine (SPeAR®) technique developed by Arup, the findings of the appraisal are shown below.

In summary, the KXSE project promotes accessibility; and responds directly to the local authority's Sustainable Development policy. The project will be delivered as a sustainable solution, with particularly strong sustainability elements relating to:



- Minimising transport impacts on the surrounding area through the servicing strategy for the Station
- The design of a naturally lit and ventilated Concourse with moveable elements that can be opened and closed in response to ambient conditions. This design also reduces energy consumption and associated carbon emissions
- Improving the quality and safety of the public realm surrounding the Station, especially once the Southern Concourse is removed

The KXSE project responds to a local, regional and national requirement for increased public transport capacity, and provides a well-designed solution that responds to the sustainability aspiration of London, as articulated in the Mayor's strategies and the Camden Local Plan.

Recommendations for further work that could further strengthen the sustainability performance of the KXSE project include aspects of:

- **Materials** - The development of a strategy for the procurement of materials should be considered. The strategy should include reference to the specification of materials with a high recycled content for construction, and for fixtures and fittings; and the procurement of goods and services from local suppliers, where practicable
- **Water** - The incorporation of water efficient technologies in station facilities should be considered, opportunity for rainwater harvesting should also be considered to reduce the quantity of surface water runoff draining to sewer

- **Renewable energy** - Options for the incorporation of renewable energy sources on site should be investigated, following the example of the Transport Museum and the Science Museum integrating photovoltaic panels
- **Waste management** – Options for increasing the quantity of waste material from trains that can be recycled should be investigated. This will support NR's corporate policy of targeting waste reduction and increasing the quantity of materials recycled

1 Introduction

Network Rail is applying for planning permission for the upgrading and enhancement of the King's Cross Station in London, and commissioned Ove Arup and Partners (Arup) to undertake an appraisal of the sustainability performance of the design proposals.

The King's Cross Station Enhancement (KXSE) project is being undertaken in response to the need to provide high-quality long-distance and suburban rail services. This will be achieved by increased capacity for train movements through the construction of an additional platform, improved circulation areas, passenger facilities and the provision of retail and catering outlets within the Station. In addition, integration with other transport modes will ensure King's Cross Station provides access to public transport systems, including buses and the Underground.

The KXSE project compliments the King's Cross Central regeneration initiative. The redevelopment of the King's Cross Station directly supports one of the ten development principles for the area[1], namely promoting accessibility; and responds directly to the local authority's Sustainable Development policy.

This report documents the sustainability appraisal undertaken on the design scheme for KXSE. The purpose of the appraisal is to support the planning submission by demonstrating how sustainability issues have been incorporated into the design, and how the scheme responds to local and regional policy on sustainable development.

1.1 King's Cross Station Enhancement

The KXSE project aims to effect improvements to the concourse facilities that are required in terms of passenger arrivals, ticket purchasing, provision of train information, comfortable waiting areas, and movement of passengers and inter-modal transfer facilities.

In addition, the redevelopment around the Station indicates substantially improves pedestrian flows in and around the Station, particularly between Euston Road and the proposed development to the north. NR has the following objectives for the KXSE project:

- Provide a unified concourse for suburban and intercity platforms;
- Provide a new Platform Y at least 300 m in length to accommodate longer trains;
- Allow better servicing of trains
- Allow improved station operations
- Provide a good passenger accumulation area allowing for 15-minute delays to train services;
- Provide good visual connections between platforms;
- Minimise walking times;
- Introduce new ticket barriers;
- Provide passenger facilities such as ticketing, left luggage, catering and retail etc;
- Provide good intermodal and public realm links; and
- Provide a self contained evacuation strategy.

[1] Principles for a human city. Prepared by Argent St George, the developer for King's Cross Central and the landowners, London and Continental Railways and Exel. July 2001.

The works to be undertaken in the project include:

- A new Western Concourse, taxi facilities and, where required, associated townscaping
- A new platform (designated Platform Y) to accommodate additional trains
- The demolition of the existing Southern Concourse and the development of a new Southern Square
- Interventions, demolitions and modifications to the Western Range of the Station
- The refurbishment of the Western Range offices

The Station is a Grade 1 listed building and comprises the Main Train Shed, the Suburban Train Shed to the west, the Eastern and Western Ranges, and a 1970's addition of a Southern Concourse. The Station is also in close proximity to the Grade 1 listed St Pancras Station and the Grade 2 listed Great Northern Hotel.

1.2 Structure of the Report

Section 2 of the report outlines the corporate policy of Network Rail as it relates to this development. Section 3 details the approach and methodology used in the appraisal; the findings are detailed in Section 4. Section 5 provides a discussion of the findings in terms of the sustainability performance and how this supports regional and local policy aspiration. Section 6 contains recommendations for further work to be done in considering aspects that would further strengthen the sustainability profile of the KXSE project.

2 Sustainability Policy

This section provides a brief review of Network Rail's corporate responsibility agenda to demonstrate how significant environmental issues, identified at a corporate level have been addressed in the planning and design of the Kings Cross Station enhancement.

2.1 Network Rail: Corporate Responsibility

Network Rail (NR) is the organisation responsible for the maintenance of the rail infrastructure throughout Britain, and also manages a number of mainline stations including King's Cross. NR want Britain's railway to be world-class - a source of pride for the whole country.

NR is committed through its corporate Environmental Policy Statement to integrating good environmental management with the safe and efficient development, construction and operation of the railway and by providing resource and expertise to meets its environmental obligations and commitments. The approach is to focus on the key environmental issues facing NR, namely: vegetation, waste, climate change, biodiversity and land management. NR holds training programmes and produces a number of publications and guidance documents to help employees and contractors understand the impact they have on the environment and learn how to manage it. The Environmental Handbook explains how each of the key issues can affect working on site and how they should be managed.

To this end, NR operates an Environmental Management System (EMS) complaint with the requirements of the international standard, ISO 14001.

The EMS measures environmental risks and sets out how to manage them. Environmental standards are based on the principles of the international standard, ISO 14001; and

environmental standards are set for contractors which they are contractually obliged to meet.

In the NR Corporate Responsibility Report[2] (2005), a number of key environmental issues have been identified. The environmental issues relevant to the KXSE project include:

- **Waste** – a commitment to identify quantify and, where possible, set targets to reduce, reuse and recycle waste generated lineside as well as from stations, domestic waste and track materials
- **Emissions to air** – although train operating companies own and run the trains, and manage most stations, NR monitors diesel emissions in the stations falling under it's direct management and operates a strict shut-down policy with engines running only when necessary
- **Climate change** – as one of the largest commercial energy consumers in the UK, NR takes responsibility for calculating and reporting on direct and indirect Greenhouse Gas (GHG) emissions or the 'carbon footprint'
- **Water** – with an annual water consumption of approximately 1.8 million litres, NR acknowledges the loss from leakage from old pipework with a management plan to incorporate initiatives to reduce water consumption, identify opportunities for water reuse and reduce water loss without undue disruption to rail travel
- **Supply chain management** – all wood sleepers are procured from producers certified by the Forest Stewardship Council (FSC) or from those significantly working towards its standards. NR is also a member of the World Wildlife Federation (WWF) Forest & Trade Network. Standards have been implemented and staff are aware the environmental impact and how this is addressed
- **Contaminated land** – as a major landowner, NR has inherited land that has been subject to potentially contaminative uses. A programme to investigate and clean up historically contaminated sites has, to date, seen an investment of £48 million

3 Approach and Methodology

3.1 Approach to the Appraisal

This appraisal assesses the sustainability performance of the design proposal for the Kings Cross Station. Information included in the appraisal was taken from the Environmental Statement[3], Design Statement[4] and engineering design report[5].

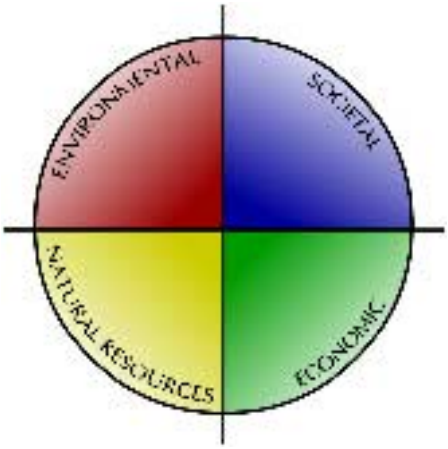
A first draft of the appraisal was undertaken and, following a discussion with Network Rail, meetings were held with the architect and services engineers, before finalisation of the appraisal and report.

[2] Network Rail Corporate Responsibility Report. 2005.
[3] King's Cross Station Enhancement Project Environmental Statement. Environmental Resources Management. July 2006
[4] King's Cross Station Enhancement – Design Statement. July 2006. Network Rail, John McAslan & Partners, Arup, Faith & Gould.
[5] King's Cross Station Enhancement. Engineering Services GRIP Stage 4 / RIBA Stage D Design. Arup. January 2006

3.2 Sustainable Project Appraisal Routine (SPeAR®)

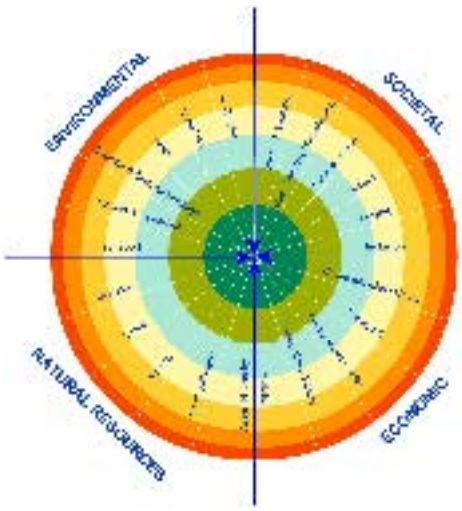
The Sustainable Project Appraisal Routine (SPeAR®) was developed by Arup as a technique to appraise the sustainability performance of a project, with the objective of embedding sustainability issues into the design and decision-making process to ensure the delivery of a sustainable solution.

SPeAR® is structured as a four-quadrant model that recognises the linkages between economic vitality, social welfare, natural resource conservation and environmental integrity.



The framework contains a number of sectors within each of the four quadrants; and each sector contains a set of appropriate indicators that have been derived from the literature on sustainability. A core set of indicators is retained in the framework, however the software is capable of amending indicators to reflect the context and scope of the project and so create a bespoke appraisal.

The sectors of SPeAR® and the underlying indicators are not weighted, as this would assume that some sectors make a greater contribution to sustainability than do others.



The appraisal considers the performance of each indicator against boundary conditions of best and worst case scenarios, relative to regulatory compliance and best practice, where applicable. The constraints of the project, whether they are physical, technical or financial, are also taken into consideration. Each indicator is aggregated in the relevant sector and the average performance of each sector is then transferred onto the SPeAR® diagram.

The multi-dimensional diagram gives a unique visual 'profile' of sustainability; and provides a snapshot of performance, highlighting both strengths and weaknesses from the perspective of sustainability.

The appraisal provides an auditable process of understanding how the design has responded to issues of sustainability and derives its information from the technical studies undertaken to support the project.

As part of the appraisal process, a review of the local sustainability policy was also undertaken to identify specific aspects of the policy that refer to sustainability, with the objective of understanding the extent to which the project conforms to policy and guidance.

4 Sustainability Appraisal

The findings of the appraisal are discussed in the following 4 sections under the headings of the SPeAR® framework. The comment highlights aspects that have made a strong contribution to the sustainability profile of the project and are intended to demonstrate the balance between the key elements of environmental impact reduction, natural resource efficiency, social welfare and economic vitality.

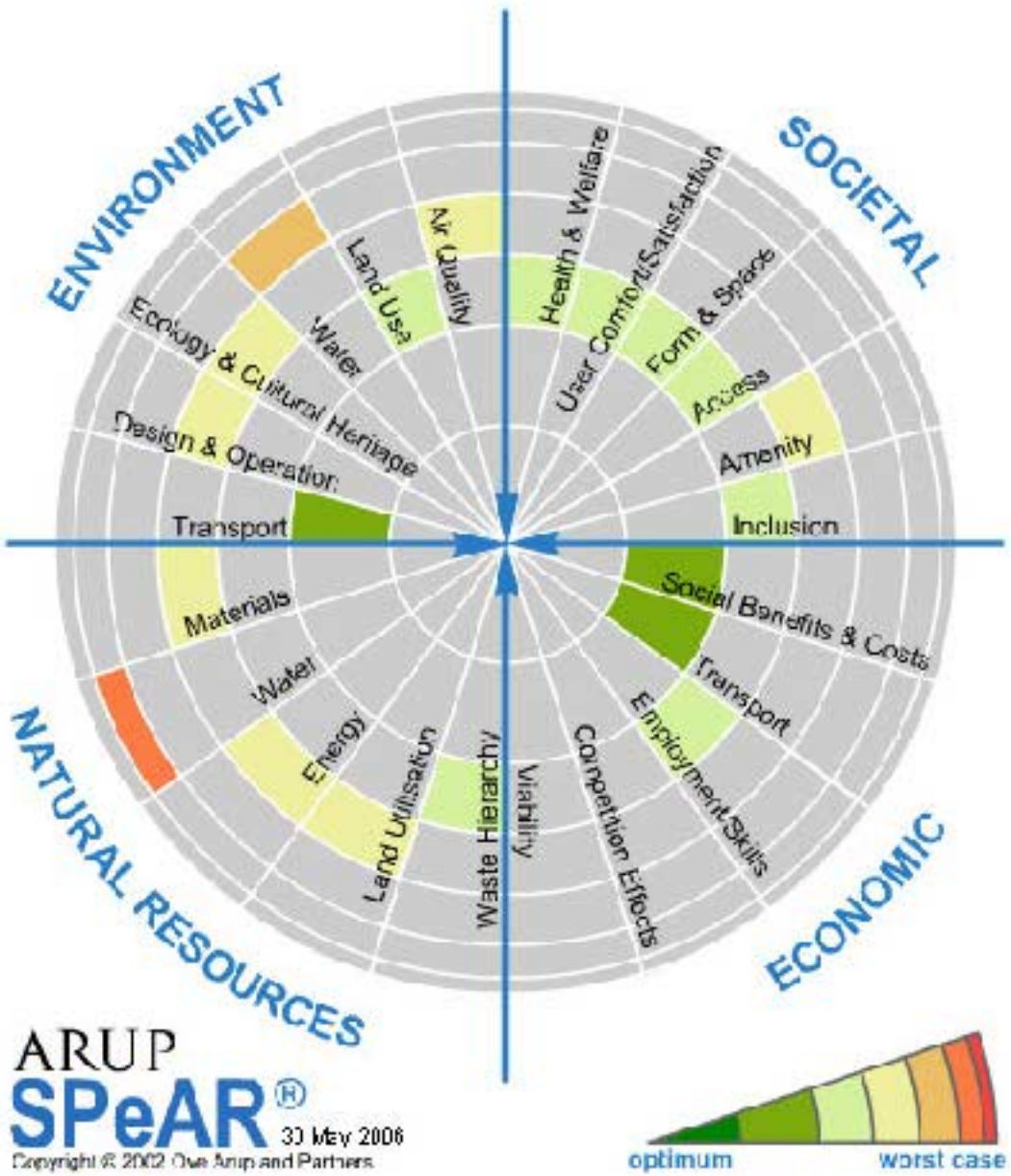


Figure 1. Sustainability profile of King's Cross Station Enhancement

4.1 Natural Resource Efficiency

- **Energy** - An initial calculation provided an indicative energy consumption of 777kWh/m^2/annum (396kWh/m^2/annum for electricity and 381kWh/m^2/annum gas). This calculation is based on assumed utilisation of plant and equipment and working hours, and should not be regarded as definitive. Energy consumption was benchmarked against a hypothetical scenario of a glazed and fully air-conditioned (heating and cooling) concourse (based on the Building Regulation stipulation that roof glazing (clear glass) may not exceed 20% of the total roof area); which predicted an energy consumption of 452 kWh/m^2/annum. With the concourse designed to operate as a naturally ventilated space, it has reduced energy consumption by 12.5 % per annum (a total saving of 72 636 kWh/annum). This reduction may seem modest however the comparison reflects the limitation placed on the fully air-conditioned scenario by the Building Regulations.

  The potential for further energy efficiency, and opportunities for energy generation from on-site renewable sources, will be investigated during the bespoke BREEAM assessment that is currently underway and will inform the detailed design for the Western Range.

  The glass roof structure provides high levels of daylight in the new concourse area and lighting levels will be regulated through the use of daylight sensors. A Building Energy Management System (BEMS) will be installed to monitor energy consumption in the cellular spaces that house retail, catering outlets, passenger support function and offices.

- **Materials** - The re-use of materials generated during the demolition process is limited to the recovery of some heritage materials from structures to be demolished. NR does however undertake to recycle 91% of the ballast, should any be generated. Demolition waste will not be crushed on site, and where it is taken off-site every effort will be made to recycle or re-use it with landfill being the last option.

  All the wooden sleepers used by NR come from forests certified by the Forestry Stewardship Council (FSC) as being from properly managed sources. NR also has standards in place to ensure that, in addition to all employees, contractors working on the network understand the impact they are having on the environment and how to manage it.

  Structural steel is the material of choice for the Western Concourse structure, and aluminium panels will be used as covers to the retails pods situated on the concourse mezzanine level. There is also no overall purchasing policy regarding the sourcing of construction materials, and other fixtures and fittings, as detailed design is not yet complete.

- **Water** - Water supply to the Station will be water mains and will be metered. Waste water will be discharged to sewage. NR is in the process of developing a management plan that will incorporate initiatives to reduce water consumption and identity opportunities for reusing water. Such initiatives will be included within the design process where possible.

- **Waste Management** – Approximately 7.53m^3 of waste material will be generated per day by the Station; together with 65m^3 of un-segregated train waste. Although all un-segregated train waste is currently sent to landfill; the servicing and waste management strategy for the Station redevelopment will effectively reduce the waste stream with 5.72m^3 (43%) of the total of 13.25m^3 of waste generated per day being recycled.

Storage facilities will be provided to tenants to encourage waste segregation. NR corporate policy aims to increase the quantity of waste recycled, and waste separation will include paper, plastic, cardboard/packaging, aluminium and glass. Targets for the recycling of materials will be set by NR for inclusion in the tenants lease agreement.

4.2 Environmental Impact

- **Air Quality** – based on estimates of energy consumption and the energy mix (gas and electricity) for the building services together with assumed hours of operation, Carbon Dioxide (CO_2) emissions associated with the KXSE were estimated at 255 $kgCO_2/kWh/m^2$/annum (69 kgC/kWh/m^2/annum). This calculation provides an indicative value of CO_2 emissions, and has been benchmarked against 282 $kgCO_2/kWh/m^2$/annum arising from the benchmark scenario energy calculation (fully air conditioned scenario). The design of the concourse as a naturally ventilated space has effectively reduced the carbon footprint of the station by 15% per annum.

  Within the design, emissions have been minimised by the specification of gas-fired boilers for heating which is an important consideration given that King's Cross Station is located within an Air Quality Management Area (AQMA) for NO_x and PM_{10}.

  The incremental increase in vehicle movements resulting from station operation is less than 10% of existing traffic flows and will not have significant impact on ambient air quality. Calculations of particulate matter concentrations indicate that a 10% decrease in PM_{10} concentrations is anticipated within the AQMA in 2010. The design stipulates that all heat pump compressors will utilise the non-ozone depleting refrigerant R407c.

  NR has in place a project Environmental Management System that will form part of the contract with contractor's working on KXSE project. NR is committed to improving the environmental performance of the railway and the continued development of rail as a sustainable form of transport – able to meet the needs of a more environmentally-conscious future. This contractual control ensures that NR standards also apply to contractors working on behalf of NR. During the construction process, air quality, particularly dust and particulate matter, will be controlled through the project-specific Environmental Management Plan (EMP) where the contractor must ensure that all works shall be planned to minimise emissions using best practicable means. Potential sensitive receptors will be highlighted by the Contractor during a site assessment; and mitigating measures will be employed where dust and odour has the potential to cause a nuisance to NR neighbours.

- **Land Use** – Most of the KXSE project comprises refurbishment of existing facilities with minor additional new elements and the enhancement will also contribute to the revitalisation of the area surrounding the site. The context of the surrounding area has been used to inform the changes to the Station structure and are in keeping with the character and appearance of the surrounding buildings, particularly the Grade 1 listed St Pancras Station and the Grade II listed Great Northern Hotel. The relocation of the station concourse will allow the creation of high-quality public open spaces in the Southern Square, and the pedestrian area to the west of the building.

- **Water** – The area surrounding the proposed Western concourse is currently hard standing, and the drainage strategy for the site is that, subject to the necessary consent under the Water Resources Act 1991, surface water is likely to be ultimately routed into the Fleet Sewer running adjacent to the site. The drainage strategy also includes the specification of trapped gullies or an oil interceptor

suitable to drain the site. Regulatory measures will ensure that there are no significant negative effects on the aquatic environment and further discussions will be held with the Environment Agency and Thames Water Limited to develop the detailed design of the proposed development with respect to drainage measures.

- **Ecology and Cultural Heritage** - The King's Cross Conservation Area is characterised by railway, business and residential uses interspersed with a variety of building types and robust streetscapes. King's Cross and St Pancras stations are major landmarks in the urban fabric of London and, in terms of cultural heritage, the KXSE project will be well integrated into the existing urban character. Some building detail will be lost due to demolition of structures however this will not result in significant residual effects on the character and appearance of the listed buildings.
- **Transport** - Due to the low numbers of vehicle movements predicted to be generated through construction activities, no consideration was given to this aspect in the assessment of transport impacts.

  The lack of vehicle parking provision at the Station will encourage travel by public transport and the increased provision of cycle storage, from 80 to 150 spaces, will also support vehicle-free transport modes.

  The design of the KXSE project has allowed for uplift in main line operations from the current 15 trains an hour to 19 trains an hour. This increase in station capacity supports continued passenger growth, including the predicted requirements of the King's Cross Central development when it reaches full occupation and is expected to account for approximately 9% of the total passenger flows in 2020.
- **Design and Operation** - The long-term capacity of the King's Cross Station will be increased by the construction of Platform Y to the east side of the existing Station and will also allow for flexibility in station utilisation in the short-term. The Western concourse provides 11 265 m^2 of gross internal floor space over 2 levels. The main concourse space was designed to be naturally ventilated and unheated, with glass used to optimise daylight and allow for wind control. Elements of the concourse structure are designed to be removable to allow for increased ventilation in the summer months. Computation Fluid Dynamics (CFD) was extensively used to model the internal microclimate of the Western concourse and prevent the occurrence of hotspots within the Station.

4.3 Social Welfare

- **Access** - The redevelopment of King's Cross Station will enhance the facility as a major transport interchange for national, regional and local transport modes. It will also improve the integration with bus services and provide an increased storage area for cycles; improved pedestrian spaces within and surrounding the Station will also encourage non-vehicle travel.

  The KXSE will also increase connectivity on a north-south axis within the area surrounding the Station and by opening up the Great Northern Hotel ground-floor level to facilitate pedestrian flows along an east-west axis. The improvements to the physical spaces around the station will also enhance the interaction within the surrounding community through increased integration especially with the Kings Cross Central development. Consultation with local communities and various NGO's has been undertaken as part of the planning process, and is ongoing.

The Station will also improve disability accessibility to comply with the requirements of the Disability Discrimination Act (1995) with the removal and the replacement of an existing overhead bridge with a bridge structure that will have escalator and lift access to all platforms.

- **Amenity** - The landscape treatment of the Southern Square will mainly be hard finishes with a simple ground plan to allow unrestricted movement thorough the area. Some trees will be planted along St Pancras Road; however given the predominantly urban character of the area, the opportunity for the creation of green space is limited.

  Noise, vibration and traffic impacts on the residents of York Way resulting from construction works undertaken during night-time rail work will be minimised by appropriate mitigation measures to minimise amenity conflict. The increase in heavy vehicle flows during construction will be managed by the contract-specific EMP that is required by NR from any contractor working on the KXSE project. The noise and vibration impact resulting from the increased number of trains utilising the Station will not be significant.

  The application of a managed delivery operation and improved storage facilities for train servicing will reduce the total number of Heavy Goods Vehicles (HGV's) making deliveries over a 12 hour period, from 106 in 2002 to 43 in 2020: a 56% decrease that will substantially reduce the impact of station operations on the surrounding area.

- **User Comfort** – The Western concourse is designed to be naturally ventilated and provide an air flow capable of maintaining average internal temperatures within design limits without the use of mechanical extraction.

  The engineering team used a Computational Fluid Dynamics (CFD) model to ensure that the internal concourse temperature does not exceed 25°C or exceed the external ambient temperature by more than 5°C when the external temperature is greater than 20°C. The concourse area is unheated during winter months but infiltration of wind and cold air will be controlled by the closure of elements of the concourse structure.

- **Form and Space** - The form and space of the King's Cross Station will be substantially improved by the enhancements with the open concourse design creating a level of safety and light; the improved pedestrian flow created by opening up the ground level of the Great Northern Hotel and the general improvements to the surrounding area. A new CCTV system will provide a safety and security function and will provide increased assistance with assessment and handling of incidents. New access control systems will control access to non-public areas.

4.4 Economic Vitality

- **Employment/Skills** - The KXSE project will improve the facilities for passengers and create an additional 1 932 m^2 of retail space within the concourse to compliment the surrounding mixed-use development. Based on capital expenditure, the KXSE project will create 208 jobs from the additional retail space created within the Station. The future refurbishment of the Great Northern Hotel may also include some shopping and food and drink facilities, which would add to the employment opportunities in the area.

  The construction process will generate 336 permanent full-time equivalent jobs. The King's Cross Partnership will provide skills for future employment within the area,

and a foundation degree course has been established with an educational facility. It will also offer a range of training courses for new recruits through to managers.

- **Transport** – Although the economic benefits accruing from the KXSE project are difficult to quantify, the strategic importance King's Cross Station as a national, regional and local transport interchange requires investment to provide and maintain facilities that support regional and local commuters who work in London. The role of King's Cross will be shortly enhanced to that of an international gateway with the completion of the CTRL terminus at the adjacent St Pancras Station.

  King's Cross Station currently provides linkages to the national and suburban rail network, London Underground, London Buses and pedestrian and cyclist networks and functions as key points of interchange. Euston Station, another important London Underground and mainline station, is in close proximity to the west of King's Cross.

- **Social Benefits** - The social benefits accrued from the KXSE project are closely aligned with the regeneration of the King's Cross area and the support to the regeneration initiative provided by the upgrading of the King's Cross Station. The removal of the Southern concourse and subsequent development of the Southern Square will improve safety within the public realm and encourage increased pedestrian movement within the area.

  The regeneration around King's Cross will raise the profile, and improve market perceptions, which will improve the opportunity for economic activity within the area.

5 Discussion and Recommendations

5.1 KXSE Sustainability Performance

The profile of the sustainability performance of the design proposals for the KXSE project is shown in Figure 1. When national and local benefits associated with the KXSE scheme are set against the short-term impacts at a local scale resulting from construction activities and operational impacts, there are substantial advantages arising from the scheme, as outlined below.

The improved capacity to the station and its integration with local, regional, national and international train services; the linkages with public transport modes such as bus and Underground services; the increased provision of cycle facilities, improved pedestrian movements, together with improved access for people with disabilities. In addition, the Station will serve as the primary transport node for the King's Cross Central mixed-use development currently under construction.

Employment opportunities associated with the construction process for the King's Cross station are 336 FTE jobs, while the increase in retail space provision within the station will generate an additional 208 jobs.

The location of the station within a mixed-use urban environment will not cause amenity conflict because the noise, vibration and impacts on air quality arising from the construction and operation of the facility will be pro-actively managed.

Secondary benefits that will accrue from the KXSE project relate to the improvement to the quality of the local area through the provision of upgraded open space, improved pedestrian linkages through and within the site, and improved security of the public realm.

With further consideration given to the aspects given as recommendations, the KXSE can deliver a sustainable solution for public transport in London and support the regeneration of the King's Cross Central area.

5.2 Responding to Sustainability Policy

National, regional and local sustainability policy is reviewed in Appendix A. This section summarises how the KXSE project conforms to, and supports these policies.

National policy on sustainable development is based on four objectives, namely:

- **Social progress** which recognises the needs of everyone
- Maintenance of **high and stable levels of economic growth** and employment
- Effective **protection of the environment**
- Prudent **use of natural resources**

These are reflected in the structure of the appraisal framework and this approach ensures that the overall performance of the KXSE project is consistent with national policy on sustainability.

Regional policy aspiration comprises the eight statutory strategies developed for London by the Mayor. These include Biodiversity, Transport, Air Quality, Economic Development, Ambient Noise, Municipal Waste Management, Culture and Spatial Development (The London Plan). The Mayor has also drafted an Energy strategy. The KXSE project provides strong support for the following:

- **Transport** – the provision of enhanced rail capacity and station facilities within London will support the King's Cross Central regeneration initiative. The closely integrated multi-modal transport system will also improve the quality of transport services into and within London, and will enable linkages with international travel when the Eurostar service relocates to St Pancras Station. The Mayor's transport Strategy describes key transport system priorities that aim to meet the overarching objectives of the Strategy and of particular importance to the KXSE project is the *"Integration of National Rail - to bring about fundamental improvements in reliability, new capacity, increased service frequency and measures to reduce overcrowding to meet London's local, regional, national and international needs. With safety as a top priority, improvements to NR services will particularly benefit London's world city economy, and travellers in south London and areas in outer London where there are few underground services. They will also support regeneration and economic development. Integrating NR will contribute to London's increasing prosperity and to the overall accessibility of the Capital"*
- **Air quality** – Although the station is located within an Air Quality Management Area, it will contribute to improvements in ambient air quality through the reduction in the number of heavy goods vehicles arriving at the station; and encouraging use of public and non-vehicle transport modes. The calculated CO_2 emissions have not been benchmarked but, given the hours of operation and the function of the Station as a transport facility, have been minimised through the design and choice of plant and equipment.

  While the KXSE does not directly contribute to an improvement of air quality in the surrounding area, it does not adversely impact on the achievement of the AQMA objectives.

- **Economic Development** – the construction process will provide a number of employment opportunities during the construction stage; and the increase in retail and catering facilities within the station will provide permanent employment opportunities. While it is difficult to quantify the collateral economic benefit of the KXSE project, it is acknowledged that the surrounding area will benefit from better security systems, pedestrian flows, and improvements to the landscaping and security of surrounding areas.
  As stated in the Mayor's Economic Strategy *"… the second main driver of job creation has been in other services, namely leisure and people-orientated services sector and hotels and restaurants, which are closely linked to the growth of tourism"*. The KXSE supports the economic development of London through the provision of accessible and affordable public transport.
- **Municipal Waste Management** – the waste management strategy for the Station will encourage the separation of waste generated within the Station for recycling, and decrease the quantity of waste sent to landfill.
- **Spatial Development** - the proximity of the Station to the Kings Cross Central area, as well as its function as a major transport interchange for London supports the Mayor's policy for .
- **Energy** – the design of the Western concourse to optimise daylight together with the installation of appropriate lighting and lighting controls, and the use of natural ventilation in summer months will effectively lower annual energy demand. The use of a mix of gas and electricity will lower the associated CO_2 emissions and monitoring during the operational phase will ensure minimisation of energy demand.

  The Mayor's Energy Strategy looks to decrease total energy demand through good design and increase the provision of renewable energy from on-site sources. The KXSE project has commissioned a bespoke BREEAM assessment that will provide further guidance on energy efficient design and technologies and investigate opportunities for incorporation of renewable energy into the scheme.

These issues are also included in the ambit of the Camden Local Development Plan, and the Sustainable Development policy.

In conclusion, the KXSE project responds to a local, regional and national requirement for increased public transport capacity, and provides a well-designed solution that responds to the sustainability aspiration of London, as articulated in the Mayor's strategies and the Camden Local Plan.

6 Recommendations

The recommendations outlined below refer to aspects of the KXSE project that require further consideration during detailed design to strengthen the sustainability performance of the scheme. Aspects include:

- **Materials** - The development of a strategy for the procurement of materials should be considered. The strategy should include reference to the specification of materials with a high recycled content for construction, and for fixtures and fittings; and the procurement of goods and services from local suppliers, where practicable

- **Water** - The incorporation of water efficient technologies in station facilities should be considered, opportunity for rainwater harvesting should also be considered to reduce the quantity of surface water runoff draining to sewer
- **Renewable energy** - Options for the incorporation of renewable energy sources on site should be investigated, following the example of the Transport Museum and the Science Museum integrating photovoltaic panels
- **Waste management** – options for increasing the quantity of waste material from trains that can be recycled should be investigated. This will support NR's corporate policy of targeting waste reduction and increasing the quantity of materials recycled

Appendix A

Sustainability Policy Review

A1 Sustainability Policy Review

This review of sustainable development policy serves to identify issues directly relating to sustainability such that the appraisal of the proposed development can demonstrate tangible support for these policy aspirations.

A1.1 National Policy

A1.1.1 Securing the Future

The UK strategy for sustainable development *Our Common Future* was revised in March 2005 to update the initial strategy drafted in 1999. The initial report outlined how the government proposed to deliver sustainable development through a vision of simultaneously delivering economic, social and environmental outcomes as measured by a series of headline indicators. Progress against these indicators has been measured every year, and although some have moved in the right direction, for example a strong economic performance, other indicators have indicated adverse trends, such as the increase in waste generation. The key areas for improvement have been identified and incorporated into the new strategy as areas that require decisive action in the future years. The timescale covered by the strategy is to 2020 and a strategic framework has been developed between the UK Government, the Devolved Administrations of Scotland, Wales and Northern Island and provides a consistent approach and focus.

This framework includes:

- A shared understanding of sustainable development
- A vision of what is to be achieved and the guiding principles to be followed in order to achieve it
- The sustainable development priorities for UK action at home and internationally
- Indicators to monitor the key issues on a UK basis

On this basis, a new framework goal for sustainable development has been agreed, and states:

"…to enable all people throughout the world to satisfy their basic needs and enjoy a better quality of life without compromising the quality of life of future generations"

The guiding principles for sustainable development are given as:

- **Living within environmental limits** – respecting the limits of the planet's resources, biodiversity and environment, so as to improve the environment and ensure that natural resources needed for life are unimpaired and remain so for future generations
- **Ensuring a string, healthy and just society** – meeting the diverse needs of all people in existing and future communities, promoting personal wellbeing, social cohesion and inclusion, and creating equal opportunities for all
- **Achieving a sustainable economy** – building a strong, stable and sustainable economy which provides prosperity and opportunities for all, and in which environmental and social costs fall on those who impose them, and efficient resource use is incentivised

- **Promoting good governance** – actively promoting good effective, participative systems of governance in all levels of society, engaging people's creativity, energy and diversity
- **Using sound science responsibly** – ensuring policy is developed and implemented on the basis of strong scientific evidence, whilst taking into account scientific uncertainty as well as public attitudes and values

These principles form the basis of all policy and, for a policy to be sustainable, it must respect all five of these principles although it is recognised that some policies will place more emphasis on some principles than others. Any trade-offs should be made in an explicit and transparent way. Achieving the goal of living within environmental limits in a just society needs to be done by means of a sustainable economy, good governance and sound science.

The priority areas for action across the UK are:

- **Sustainable consumption and production** – achieving more with less by means of looking at how goods and services are produced, and the impacts of products and materials across their whole lifecycle and building on people's awareness of social and environmental concerns. This includes reducing inefficient resource use, which is a drag on the economy; so helping to boost competitiveness within business and break the link between economic growth and environmental degradation
- **Climate change and energy** – evidence pointing to the release of greenhouse gasses, such as carbon dioxide and methane, into the atmosphere by human activity is deemed to be the primary cause of climate change. In seeking to secure a profound change in the way energy is generated and used, and in other activities that release greenhouse gasses, the UK seeks to set a good example and encourage others to follow
- **Natural resource protection and environmental enhancement** – given that environmental resources are vital to our existence and that of communities throughout the world, a better understanding of environmental limits, environmental enhancement and recovery where the environment is most degraded to ensure a decent environment for everyone, and a more integrated policy framework
- **Sustainable communities** – the aim to create sustainable communities that embody the principle of sustainable development at a local level involves working to give communities more power and say in the decisions that affect them, and working in partnership at the right level to get things done. The same principles of engagement, partnership, and programmes of aid to tackle poverty and environmental degradation and to ensure good governance in overseas communities

A sixth priority is that for international action, and includes a strategic objective of support to multilateral and national institutions that can ensure effective integration of social, environmental and economic objectives to deliver sustainable development, especially among the poorest members of society.

In addition, a new set of indicators of Sustainable Development are provided in the Strategy and selected indicators that are relevant to transport include:

- **CO_2 emissions by end user** – to reduce greenhouse gas emissions to 12.5% below 1990 levels and move towards a 20% reduction in carbon dioxide emissions below 1990 levels by 2010

- **Renewable electricity** – to reduce greenhouse gas emissions to 12.5% below 1990 levels and move towards a 20% reduction in carbon dioxide emissions below 1990 levels by 2010
- **Waste generation –** by sector and percentage of waste materials recycled
- **Land recycling** – all new development on previously developed land
- **Emissions of air pollutants** (SO_2, NO_x, NH_3, PM_{10}) – improve air quality by meeting the Air Quality Strategy targets for given determinants
- **Investment** – total investment and social investment
- **Productivity** – indicator to be determined
- **Mobility** – number of trips per person per mode, distance travelled per person per year by broad trip purpose

There are a number of national strategies that support the strategy for Sustainable Development; however a review was not considered to be within the scope of this project.

A1.2 Regional Policy

Within London, the Greater London Authority Act 1999 (the Act) requires the development of 8 statutory Mayoral strategies, covering aspects of Biodiversity , Transport , Air Quality, Economic Development, Ambient Noise, Municipal Waste Management and Culture and Spatial Development. These provide the framework within which London's economic and social development, wealth creation, and environmental improvement can be promoted. The Mayor also drafted a strategy for Energy.

A1.2.1 The London Plan

"The London Plan[6]" is the spatial development strategy for London. It provides the strategic plan setting out an integrated social, economic and environmental framework for the future development of London. It also integrates the physical and geographical dimension of the Mayor's other strategies and provides the London-wise context within which individual boroughs set local planning policy. The Mayor's Vision for London states: "…to develop London as an exemplary, sustainable world city, based on three interwoven themes:

- Strong, diverse long-term growth
- Social inclusively to give all Londoners the opportunity to share London's future success
- Fundamental improvements in London's environment and use of resources"

This vision is supported by the Mayor's objectives, which include:

- To accommodate London's growth within its boundaries without encroaching on open spaces
- To make London a better city for people to live in
- To make London a more prosperous city with strong and diverse economic growth
- To promote social inclusion and tackle deprivation and discrimination
- To improve London's accessibility

[6] The London Plan. Spatial Development Strategy for Greater London. February 2004. Mayor of London.

- To make London a more attractive well-designed and green city

Within the context of London's role in a global economy, the Plan aims to facilitate London's attractiveness to world business and retain London's position; with the recognition that London's life and economy will be shaped by trans-national forces, particularly economic globalisation, improved international communications and migration. As the capital city of the UK, London is important in attracting economic activities and continuing in its role of government, tourism, culture and learning.

The Plan identifies forces driving change within London, including:

- **Population growth** – forecasts indicate a large-scale change to the scale and nature of London's population. Changes in the ethnic mix of the population are anticipated, with significant growth in black and minority communities. International in-and-out migration has historically been high and is projected to remain so
- **Economic growth** – a fundamental driver of London's employment structure is the gain of employment opportunities in the business services sector, and the loss of an equivalent number of employment opportunities within the manufacturing sector. The second main driver of job creation has been in other services, namely leisure and people-orientated services sector and hotels and restaurants, which are closely linked to the growth of tourism
- **Environmental imperative** – Given that London lags other cities' performance in environmental management, it needs to plan growth in ways that make better use of key resources such as land, buildings and construction materials, water energy and makes substantial improvements in recycling. London also needs to respond to climate change, in the reduction of carbon dioxide emissions and by managing the impacts and risks that climate change will bring
- **Lifestyle and values** – with an increasingly diverse and youthful population, the shift towards a higher density, more urban, intensive, continental lifestyle is evident, and the convergence of home and work environments supports a lifestyle that requires more mixed urban spaces
- **Impact of new technology** – London will increasing need to be a learning city in which skills and ability to use information will be essential. Information technology will add to the flexibility of homes and work environments, and transactions using increasingly sophisticated communication technologies, such as e-tailing, e-commerce and e-government are all likely to have an impact on London, given its place at the core of global networks
- **Social justice** – Accommodating growth and change so as to address polarisation is the challenge for London. The disparity in wealth and other quality of life indicators between the poorest sections of society and the wealthiest is increasing, and London has higher concentrations of individuals, in both high and low income bands, than the rest of the UK

The drivers provide a framework within which development can focus on improving the quality of life for all inhabitants, and addressing the most urgent problem areas, in order to retain London's status as a world city.

A1.2.2 Energy Strategy

The Mayor's Energy Strategy "Green light to clean power" (February 2002)[7] sets out the vision and objectives for energy in London. The Mayor's vision is to "…*develop London as an exemplary sustainable world city*".

The strategy concentrates on the period up to 2010 and beyond, and the stated aim is "*to minimise the effect of London's energy production and use on health, and the local and global environment, improve social equality and economic performance*".

Delivery of this strategy comprises a combined approach:

- Reduce London's contribution to climate change by minimising emissions of carbon dioxide from all sectors (commercial, domestic, industrial and transport) through energy efficiency, combined heat and power, renewable energy and hydrogen
- To help eradicate fuel poverty, by giving Londoners, particularly the most vulnerable groups, access to affordable warmth
- To contribute to London's economy by increasing job opportunities, by innovation in delivering sustainable energy and by improving London's housing and other building stock

To support the strategy, an energy hierarchy is proposed comprising a reduction in energy consumption (**be lean**), the use of renewable energy (**be green**), and the efficient supply of local energy (**be clean**).

In addressing climate change, it is proposed that London reduce its emissions of carbon dioxide by 20%, relative to 1990 level, by 2010, as a first step to the long-term objective of a 60% reduction from the 2000 level by 2050.

A1.2.3 Biodiversity Strategy

The Mayor's Biodiversity Strategy[8] "Connecting with London's nature" (July 2002) states that the vision for London is:

"*to develop London as an exemplary, sustainable world city, based on three interwoven theme of strong and diverse long term economic growth, social inclusiveness to give all Londoners the opportunity to share in London's future success, and fundamental improvements in London's environment and use of resources*"

The objectives of the biodiversity strategy include:

- Biodiversity for people: ensuring all Londoners have ready access to wildlife and natural green spaces
- Nature for its own sake: to conserve London's plants and animals and their habitats
- Economic benefits: greening plays an integral role in the urban renaissance in new and existing infrastructure
- Functional benefits: biodiversity assists in reducing flooding and erosion prevention. It also provides local climatic benefits through amelioration of ambient noise and absorption of some pollutants
- Sustainable development: quality open spaces together with green footpaths and cycleways. Food grown locally and organically in allotments and gardens provides

[7] Green Light to Clean Power. The Mayor's Energy Strategy. February 2004. Mayor of London.
[8] Connecting with London's Nature. The Mayor's Biodiversity Strategy. July 2002. Mayor of London.

wildlife habitat and composting of green waste and growing energy crops in London can reduce its wider ecological footprint.

Policy proposal 6 of the Strategy states, "The Mayor will and boroughs should ensure that new developments capitalise on opportunities to create, manage and enhance wildlife habitat and natural landscape. Priority should be given to sites within or near to areas deficient in accessible wildlife sites, areas of regeneration, and adjacent to existing wildlife sites". This requires that, wherever appropriate, new developments should include new or enhanced habitat, or design (e.g. green roofs) and landscaping which promotes biodiversity, and provision for their management.

A1.2.4 Transport

The Mayor's Transport Strategy[9] (July 2001) contains the aims and objectives for transport in supporting London as a world-class city. The Strategy acknowledges existing traffic-related issues, and presents proposals to alleviate these and improve the capacity of the transport network to accommodate demographic and economic growth. The focus of the Strategy is over a 10-year horizon from 2001-2011.

The Mayor outlines 10 key transport priorities which, in summary, include:

- Reducing traffic congestion
- Overcoming the backlog of investment on the Underground
- Making radical improvements to bus services across London
- Better integration of the rail system with London's other transport systems
- Increasing the overall capacity of London's transport system
- Improving journey time reliability for car users
- Supporting local transport initiatives
- Making the distribution of goods and services in London more reliable, sustainable and efficient
- Improving the accessibility of London's transport system, thus improving social inclusion
- Bring forward new integration initiatives

In delivering the 10 key priorities for the transport system, the Strategy will ensure that transport is effectively integrated with land use planning, economic development and regeneration, equality of opportunity and social inclusion, health environmental improvements and sustainability.

The Strategy describes key transport system priorities that aim to meet the overarching objectives of the Strategy. Of particular importance is:

- **Integration of National Rail** – to bring about fundamental improvements in reliability, new capacity, increased service frequency and measures to reduce overcrowding are seen as vital to enable National Rail to meet London's local, regional, national and international needs. With safety as a top priority, improvements to National Rail services will particularly benefit London's world city economy, and travellers in south London and areas in outer London where there are few underground services. They will also support regeneration and economic

[9] The Mayor's Transport Strategy. July 2001. Mayor of London.

development. Integrating National Rail will contribute to London's increasing prosperity and to the overall accessibility of the Capital

Closely aligned with the Transport Strategy is the Mayor's Air Quality Strategy, which is summarised below.

A1.2.5 Air Quality

The Mayor's Air Quality Strategy[10] "Cleaning London's Air" (September 2002) has the stated aim to improve London's air quality to the point where pollution no longer poses a significant risk to human health".

Of the 7 pollutants for which the Mayor has a statutory obligation to achieve the objectives of the European Union (EU) air quality limit values; London will achieve these for 5 pollutants. However it is estimated that London will not achieve both the annual objective for Nitrogen Dioxide (NO2, target date 2005) and the daily objective for particles (PM_{10}, target date 2004). Both objectives will be exceeded along the major road network, and the NO_2 objective will be exceeded in central London and in a section of west London around Heathrow Airport.

Given that road transport is the main source of emissions of the main pollutants of concern in London, the primary focus of the Strategy is to reduce pollution from this source. This will be done primarily through reducing the amount of traffic and emissions from individual vehicles.

Buildings also represent an opportunity to reduce air pollution, and the Strategy targets buildings as a source of air pollutants from energy use, particularly heating. Potential for emissions reduction are identified in the adoption of best practice for more energy efficient new buildings, and in using renewable energy technologies such as solar water heating.

A1.2.6 Municipal Waste Management

The Mayor's Municipal Waste Management Strategy[11] "ReThinking Rubbish in London" (September 2003) outlines the Mayor's Vision of *"…by 2020, municipal waste should no longer compromise London's future as a sustainable city*".

Given that London's present capacity for disposing municipal waste is limited, current options for waste management include:

- **Recycling** – kerbside collection or 'bring' facilities for recyclable or compostable materials has seen an increase in recycling from about 5% of municipal waste in 1996/97 to 8% in 2001/02, however while tonnages are increasing so is the quantity of waste generated per annum
- **Recovery and waste treatment** – the recovery of heat, electric power and other forms of energy from waste reduces waste by about 70% by weight. At present about 20% of London's waste is sent to two large incineration plants, with a proposed third plant currently under consideration
- **Landfill** – the majority of London's waste is sent to landfill at sites in Bedfordshire and Buckinghamshire by rail, transported by barge to Essex, and by road to other sites in Cambridgeshire, east London, Oxfordshire and west Sussex

London aims to meet the national targets, specified in the Waste Strategy 2000[12], for:

[10] Cleaning London's Air. The Mayor's Air Quality Strategy. September2002. The Mayor of London.
[11] Rethinking Rubbish in London. The Mayor's Municipal Waste Management Strategy. September 2003.
[12] Waste Strategy 2000. England and Wales: Part I. May 2000. DEFRA.

- At least 25% of household waste to be recycled or composted
- The recovery of value from 40% of municipal waste by 2005, from 45% by 2010 and from 67% by 2015 by prioritising reduction, recycling and composting

To achieve the national recycling and composting rates, statutory standards have been set for both waste disposal and waste collection authorities for 2003/04 and 2005/06. These require that areas with recycling and composting rates below 5% in 1998/99 must achieve at least 10% by 2003/04. Authorities with 5 to 15% recycling rates are required to at least have doubled their recycling rates and all other authorities will have to recycle or compost at least a third of household waste.

By 2005/06, waste disposal authorities or waste collection authorities with recycling and composting rates under 6% in 1998/99 are required to achieve at least 18%, and those with 6 to 12% rates of recycling and composting are required at least to have trebled their recycling rate. Those who recycled and composted 12-18% in 1998/99 must reach 36%, and all other authorities must reach 40%.

These standards would deliver the national target recycling rate of 25% by 2005/06.

London aims to exceed the recycling and composting Best Value Performance Standards for waste authorities set by the Government. The Mayor aspires to higher rates of recycling and composting and considers they can be achieved in the longer term; and will seek to persuade the Government to put in place the legislative changes to enable the achievement of rates of recycling and composting of municipal waste of 50% by 2010 and 60% by 2015.

London will also aim to meet the national targets for recovery of value from 40% of municipal waste by 2005, from 45% by 2010 and from 67% by 2015.

A1.2.7 Economic Development Strategy

The strategy prepared by the London Development Agency[13] "Sustaining Success. Developing London's Economy" (2004) presents the Mayor's vision for London maintaining its status as a world-class city through:

- **Building on London's strengths** – including it social diversity, the range and scale of its markets, its high income and high productivity focus
- **Identifying opportunities** – such as the scope for marketing, building on success and ways of making best use of existing assets
- **Address existing weaknesses** – of high costs, social exclusion, poor environments and pressure on infrastructure
- **Address looming threats** – loss of competitiveness, poor liveability, declining overall welfare and increasing social polarisation

The major investment themes of the Strategy include:

- **Investment in London's places and infrastructure** - including investment in sustainable communities where new development should be implemented so as to maximise the benefits for, and minimise any adverse impacts on, local communities, business and the environment
- **Investment in people** - given the recognition that there are structural barriers to employment opportunities. These include an increasing proportion of higher skilled

[13] Sustaining Success. Developing London's Economy. Economic Development Strategy. London Development Agency. Undated.

and higher paid jobs accounting for an increasing proportion of employment, the stark disparities in labour market outcomes between different ethnic groups, between people living in different types of households and between people living in different areas of London; and the issue of low employment especially affecting households with children

- **Investment in enterprise** – providing appropriate workspace, supporting London's knowledge infrastructure and attracting inward investment to support emerging and established enterprises is necessary to maintain London's status as a world city. The requirement for access to a skilled workforce, and sectoral initiatives, where they can be clearly justified, is recognised, alongside support for innovation as a key driver of productivity. Given the competitive nature of the global markets it is vital that London's enterprises in all sectors understand and the need to develop innovative services, products and processes
- **Investment in the marketing and promotion of London** – while different areas of the economy face different competitive pressures, retaining London's ability to attract international visitors and investment is central to the Strategy

A1.2.8 Cultural Strategy

The Mayor's Culture Strategy[14] is set out in the report "London Cultural Capital. Realising the potential of a world-class city" (April 2002). The report highlights the city's cultural richness which is central to the sense of identity of the diverse communities in London. The support for this is given in the 12 policies of the Mayor:

- London needs to ensure its cultural institutions and events are of a high quality, world class status
- Improvements in infrastructure and support are necessary to realise the creative potential of London's cultural diversity
- London needs to develop its brand and promote itself as a world cultural city and tourism destination
- Creativity needs to be recognised as a significant contributor to London's economy and success
- Education and lifelong learning must play a central role in nurturing creativity and providing routes to employment
- Access to culture should be the right of all Londoners
- Culture should be a means of empowering London's communities
  There should be a spread of high-quality cultural provision across London and at all levels – local, sub-regional and regional
- Cultural activity should be encouraged in the development and regeneration of London
- The cultural value and potential of London's public realm should be fully realised
- Culture in London should receive the resources that are commensurate with its demographic, economic and spatial needs
- The structure and funding for culture should deliver the best deal for all Londoners

The Strategy focuses on delivery of the policies based on the key principle of diversity, and themes of excellence (to enhance London as a world city of culture), creativity (to promote

[14] London Cultural Capital. Realising the Potential of a World-class City. April 2004. Mayor of London

creativity as central to London's success), access (to ensure all Londoners have access to culture), and value (to ensure London get the best value out of its cultural resources).

A1.2.9 Ambient Noise

The Mayor's strategy for noise management[15] outlines the approach and action plan to manage ambient noise levels within the Greater London area. The strategy identified the following 3 key issues:

- Securing good, noise reducing surfaces on Transport for London's roads
- Securing a night aircraft ban across London
- Reducing noise through getter planning and design of new housing

Other initial priorities that are relevant to this project include:

- Seeking improved railway track quality and maintenance on National Rail and Underground as far as organisation and funding allow
- Securing support for exemplar noise barrier-integrated photovoltaic power generation along suitable roads and railways, and noise screening from safety and security fencing
- Reducing noise through better planning and design, where London's growth in people and jobs presents challenges, but redevelopment and refurbishment also offer opportunities – high density, mixed-use development can create quiet outdoor spaces away from traffic

The Mayor will urge the rail industry, taking particular account of vandalism, visual amenity, historic buildings and conservation issues, to:

- Examine the scope for promoting the safe, reliable and cost-effective use of railway noise barriers, where source-related measures would not be effective
- Consider securing noise benefits from routine renewal or improvements of boundary walls/security fencing, including ventilation ducts, and in refurbishment of structure, notably bridges
- Investigate the potential for noise barrier-integrated photovoltaic power generation along suitable railway lines

In addition, the Mayor will urge the rail industry, in partnership with local planning authorities and other stakeholders, and taking particular account of biodiversity, visual design, listed buildings and conservation area issues, to:

- Examine the cost-effective scope for promoting development over suitable railway stations or tracks, especially those in cuttings, taking account of potential net noise benefits
- Seek design of new development near railways which screens or otherwise minimises noise

[15] Sounder City. The Mayor's Ambient Noise Strategy. March 2004. Mayor of London.

A1.2.10 Supplementary Planning Guidance: Sustainable Design and Construction

In May 2006, the Mayor published a Supplementary Planning Guidance[16] (SPG) entitled "*Sustainable Design and Construction*" to support the implementation of the London Plan and, specifically, Policy 4B.6 relating to sustainable design and construction of buildings. As an SPG this document cannot set new policy; however after revision following consultation, the SPG can be taken into account as a further material consideration, so has weight as a formal supplement to the London Plan.

The SPG provides guidance on the way that the seven measures identified in Policy 4B.6 can be implemented to meet the London Plan objectives. These 7 measures include:

The Mayor will, and boroughs should, ensure future developments meet the highest standards of sustainable design and construction and reflect this principle in UDP policies. These standards will include measures to:

- Re-use land and buildings
- Conserve energy, materials, water and other resources
- Ensure designs make the most of natural systems both within, in and around the building
- Reduce the impact of noise, pollution, flooding and micro-climatic effects
- Ensure developments are comfortable and secure for users
- Conserve and enhance the natural environment, particularly in relation to biodiversity
- Promote sustainable waste behaviour in new and existing developments, including support for local integrated recycling schemes, CHP systems and other treatment options

Applications for strategic developments should include a statement showing how sustainability principles will be met in terms of demolition, construction and long-term management. Boroughs should ensure that, where appropriate, the same sustainability principles are used to address planning applications.

The guidance sets various essential standards that must apply to all London's buildings and a second tier of 'Mayor's preferred' standards. The essential standards are minima based on current Building Regulations, the targets set out in the Mayor's strategies and current good industry practice. The Mayor's preferred standards indicate more exemplary approaches that can be followed but are not yet policy requirements.

For all planning applications for major development in the Greater London are, applicants will be expected to conduct assessments as appropriate to demonstrate how their proposals address the relevant sustainable design and construction standards in this guidance. Major development can be defined where the floor space will be 1,000m^2 or more. Strategic developments that are referable to the Mayor are expected to meet all the essential standards and also to demonstrate how they have met, where feasible, the Mayor's preferred standards.

Demonstration of how new developments take account of the standards will vary according to the development type and scale.

The SPG is mostly concerned with providing guidance to reduce the impacts of development upon the environment and natural resources and does not consider all aspects of sustainability in the built environment, particularly with regard to socio-economic and

[16] The Mayor's Supplementary Planning Guidance: Sustainable Design and Construction. May 2006

community effects. The SPG sits alongside other SPGs relating to the London Plan, particularly SPG: Accessible London – Creating an Inclusive Environment.

The SPG sets out guidance for the drafting of sustainability statements which are required to be submitted with planning applications for strategic developments, as set out in Policy 4B.6. The SPG states that "the sustainability statement should include:

- Executive Summary
- Seven sections to mirror the seven principles outlined in Policy 4B.6 – each showing how the principles set out in this SPG are addressed in the proposed development and which of the essential and preferred standards will be met, with justification given for the standards achieved by the development.
- Conclusion and commitments

A1.3 Local Policy

The review of the Local Development Plan of Camden[17] is restricted to issues relating to sustainable development that have been identified from Section 1 of the document. Additional issues that are identified as relevant to the KXSE development are also included in this review.

A1.3.1 Camden Local Development Plan (LDP)

The Camden LDP has the following aims:

- Making sure development meets our needs, now and in the future
- Meeting the housing needs of Camden's population
- Producing an environmentally sustainable pattern of land use and reducing the need to travel
- Helping to improve and protect amenity and quality of life
- Protecting and enhancing our environment
- Providing facilities for all members of the community
- Improving economic prosperity and diversity
- Protecting and improving Camden's town centres
- Balancing the needs of residents with the Borough's London-wide role

The strategic policy of the Council relating to Sustainable Development focuses on:

- **S1** – the Council will seek to ensure that all development is sustainable with regard to social needs, the protection of the built and natural environment, the sensible use of resources and the maintenance of a viable economy
- **S2** – the Council will seek to ensure that development promotes a high quality of life for al members of the community, contributes to sustainable land use patterns and does not harm local amenity
- **S3** – The Council will seek to ensure that development adequately considers resources, energy, waste and minerals, minimises their impacts, and protects the environment and people from hazards

[17] Camden UDP Revised Deposit Draft 2004.

In addition, the UDP contains strategic policies relating to:

- **Transport** – The Council will seek to reduce the need to travel, manage and reduce the amount of traffic on Camden's roads and encourage forms of travel that cause minimum environmental harm
- **King's Cross Opportunity Area (SKC1)** – The Council seeks the sustainable development of the King's Cross Opportunity Area, which achieves its full potential:
    - To support and develop London's role as a world business, commercial and cultural centre
    - To achieve economic, social, and physical integration with surrounding communities
    - To contribute positively to meeting a full range of housing, social and healthcare needs in Camden and so contribute to meeting London's needs
    - To create employment and training opportunities both generally and for local people
    - To maximise opportunities for walking and cycling and the use of existing and proposed public transport facilities, thereby minimising dependence on private car use and traffic generation
    - To minimise any adverse impact on the environment arising from the development and to secure positive environmental gains
    - To enhance opportunities for biodiversity
    - For community regeneration through innovative processes of community involvement in the planning, design and management of he new development and services

The focus of the Sustainable Development policy includes the following issues:

- **SD1 (Quality of life)** – by means of a combination of development of sustainable communities', the regeneration of areas, access for all and community safety; improvement to the quality of life for the people of Camden can be achieved
- **SD5 (Location of development with significant travel demand)** – the application of a sequential test to identify areas that can support development that generates significant travel demand identifies King's Cross as a priority area
- **SD7 (Light, noise and vibration pollution)** – the minimisation of intrusion caused by light spillage, noise and vibration from development
- **SD9 (Resources and Energy)** – control of development in order to ensure the maintenance of ambient air quality levels, no harm to the water environment, water quality and drainage systems; and the conservation of energy and resources by means of considering demand efficiency in design, and the utilisation of recycled and renewable building materials
- **SD12 (Development and construction waste)** – provision for the sorting and storage of waste materials; and the re-use and recycling of construction waste on sites