ST. PANCRAS SUBSTATION ENVIRONMENTAL STUDY

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St Pancras Substation

Environmental Study

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ACRONYMS AND ABBREVIATIONS

AADT	Annual Average Daily Traffic
AOD	Above Ordnance Datum
AONB	Areas of Outstanding Natural Beauty
APA	Archaeological Priority Area
AQMA	Air Quality Management Area
AQS	Air Quality Strategy
BGS	British Geological Survey
BPM	Best Practicable Means
BS	British Standard
CAMS	Catchment Abstraction Management Strategy
CoPA	Control of Pollution Act 1974
CSL	Capita Symonds Limited
dB	Decibels
Defra	Department of Environment, Food and Regional Affairs
DETR	Department of Environment, Transport and the Regions
DfT	Department for Transport
DMRB	Design Manual for Roads and Bridges
EA	Environment Agency
EIA	Environmental Impact Assessment
EMFs	Electric and Magnetic Fields
EMP	Environmental Management Plan
EPA	Environmental Protection Act 1990
EPUK	Environmental Protections United Kingdom
ES	Environmental Study
EU	European Union
FEH	Flood Estimation Handbook
FRA	Flood Risk Assessment
GAC	Generic Assessment Criteria
GHz	Giga Hertz
GiGL	Greenspace Information for Greater London
GLA	Greater London Authority
GLVIA	Guidelines for Landscape and Visual Impact Assessment
HGV	Heavy Goods Vehicle
HRA	Hydrogeological Risk Assessment
Hz	Hertz
IEMA	Institute of Environmental Management and Assessment
IOA	Institute of Acoustics
kg	Kilogram
kg/m^2	Kilogram per metre squared
km	Kilometre(s)
km^2	Square kilometre(s)
kV	Kilovolts
kV/m	Kilovolts per metre
LAQM TG	Local Air Quality Management Technical Guidance
LB	London Boroughs
LBAP	Local Biodiversity Action Plan
LDF	Local Development Framework
LDP	Local Development Plan

LEZ	Low Emission Zone
LiDAR	Light Detection and Ranging
LNR	Local Nature Reserve
m	Metre(s)
m/week	Metres per week
m^2	Square metre(s)
m^3	Cubic metre(s)
m^3/day	Cubic metres per day
MAGIC	Multi Agency Geographic Information for the Countryside
mAOD	Metres Above Ordnance Datum
mbgl	Metres below ground level
mm	Millimetres
mm/s	Millimetres per second
MOL	Metropolitan Open Land
ms^{-1}	Metres per second
MVA	Mega Volt Ampere
NBN	National Biodiversity Network
NGR	National Grid Reference
ng/m^3	Nanogram per cubic metre
NO_2	Nitrogen Dioxide
NO_x	Combined oxides of nitrogen
NSR	Noise Sensitive Receptors
nT	Nanoteslas
ODPM	Office of the Deputy Prime Minister
PM_{10}	Particles with a diameter of less than 10µm
$PM_{2.5}$	Particles with a diameter of less than 2.5µm
PPE	Personal Protective Equipment
PPG	Planning Policy Guidance
PPGNs	Pollution Prevention Guidance Notes
PPGs	Pollution Prevention Guidelines
PPS	Planning Policy Statement
RBMPs	River Basin Management Plans
RFRA	Regional Flood Risk Assessment
RPA	Root Protection Areas
RPG	Regional Planning Guidance
SAC	Special Areas of Conservation
SBI	Sites of Borough Importance
SF_6	Sulphur Hexafluoride
S_2F_{10}	Disulfur Decafluoride
SFRA	Strategic Flood Risk Assessment
SLI	Sites of Local Importance
SMI	Sites of Metropolitan Importance
SMR	Sites Monument Record
SPA	Special Protection Areas
SPZ	Source Protection Zones
SSSI	Sites of Special Scientific Interest
SUDS	Sustainable Urban Drainage System
TBM	Tunnel Boring Machine
TCL	Transport Committee for London
TfL	Transport for London
The Act	The Environment Act 1995

TLRN	Transport for London Road Network
TMP	Traffic Management Plan
TPO	Tree Preservation Order
TRO	Traffic Regulation Order
UDP	Unitary Development Plan
µA	Microamperes
µg/m^3	Microgram per cubic metre
UK	United Kingdom
UKBAP	UK Biodiversity Action Plan
µm	Micro metre
µT	Microteslas
V/m	Volts per metre
WebTAG	Transport Analysis Guidance Website
WFD	Water Framework Directive
WHO	World Health Organisation
WRMU	Water Resource Management Unit
ZVI	Zone of Visual Influence

ENVIRONMENTAL STUDY

CHAPTER 1
INTRODUCTION

1. INTRODUCTION

Background

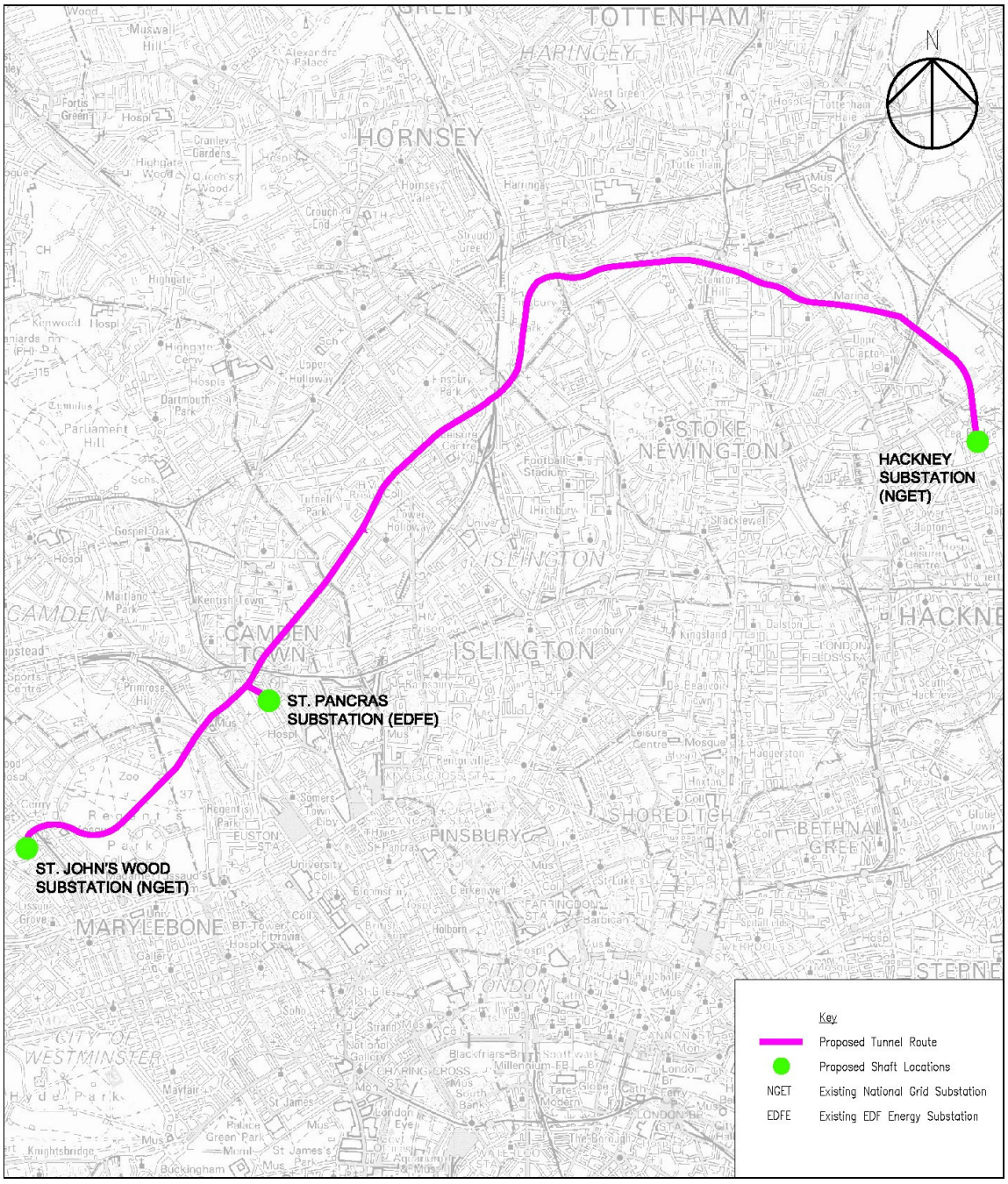
1.1 The purpose of this Environmental Study (ES) is to describe the proposed permanent headhouse together with the associated ventilation shaft and 280 m spur tunnel, within the boundary of existing and operational EDF Energy Substation (the 'Site') in the London Borough (LB) of Camden (referred to herein as the 'Project'); and to report on the assessment of its likely significant effects on the environment. This ES also sets out recommendations for mitigation measures to minimise any potential significant adverse environmental effects.

1.2 The works at the Site relate to the main electricity cable tunnelling scheme in North London stretching from Hackney to St John's Wood. The main tunnel will house 400,000 volt (400 kV) electricity supply cables linking National Grid Electricity Transmission plc (National Grid) existing substations at Hackney and St John's Wood, and will also make provision for possible future connections. The cable tunnelling scheme comprises a 12.5 km long main tunnel with associated shafts - ventilation of, and access to, the tunnel will be provided by a number of headhouses located above shafts linked to the main tunnel. This ES is based on a comprehensive environmental assessment of the complete Hackney to St John's Wood Cable Tunnel Project. A report on this assessment is under preparation but not at present finalised due to incomplete information on some parts of the proposed cable tunnel scheme.

1.3 Figure 1.01 below provides the locational context for the Site and the wider tunnelling scheme.

1.4 National Grid owns and operates the high-voltage electricity transmission system in England and Wales. This transmission system takes electricity from where it is generated and transmits it in bulk, via underground cables and overhead lines, to distribution companies and large industrial customers who buy electricity on the wholesale market. Distribution companies such as EDF Energy Ltd and Scottish and Southern Energy operate local electricity grids at 132 kV or less.

Figure 1.01: Main Tunnel Route, including the St Pancras Substation Site



The Project

1.5 The basic components of the Project are summarised in Chapter 2 of this ES. The spur tunnel, shaft and headhouse will provide ventilation and access to the main tunnel. The spur tunnel will not carry high voltage electricity cables.

1.6 National Grid intends the Project to be constructed under a Design and Build contract. The appointed works contractor will prepare comprehensive statements of working methods to be employed in the construction, complying with regulatory requirements and the environmental constraints and mitigation measures identified within this ES.

Description of the Site and Surroundings

1.7 The Site is located within the LB of Camden and is an existing substation owned and operated by EDF Energy. The Site occupies a rectangular area of land situated between and bounded by Georgina Street to the north, Royal College Street to the east and Pratt Street to the south with a grid reference of E529307, N183901. The Site location is shown in Figure 1.01. The Site is occupied by a combination of electricity transmission plant, buildings and associated circulation space and service yard. It is proposed to locate the National Grid headhouse within this compound immediately adjacent to the existing 4-storey former training centre building that directly fronts Pratt Street.

1.8 Royal College Street is a wide thoroughfare with segregated cycle path. Land uses are predominantly commercial and include warehousing, depots and small industrial units. Immediately opposite the proposed headhouse site on the east side of Royal College Street, and extending between its junctions with Pratt Street and Georgina Street, the road is flanked by a solid red brick wall which forms the west elevation of the 'St Pancras Commercial Centre'. The frontage of the Site to this road is characterised by boundary walling, a range of electricity plant, the rear of the 4-strorey former training centre, and a large advertising hoarding.

1.9 At the southeast corner of the Pratt Street & Royal College Street junction stands 'The Golden Lion' public house. This 4-storey Victorian Red Brick property looks over the vacant corner of the Site where it is proposed to accommodate the National Grid headhouse.

1.10 The western side of Royal College Street and the southern side of Pratt Street are residential, characterised by 3-storey Georgian terraces of stone and London stock brick.

1.11 The northern side of Pratt Street, to the west of the Site, comprises of the Lady's RC Primary School, the All Saints Greek Orthodox Church and the 4-storey brick built training centre.

1.12 Regents Canal Conservation Area abuts the northern side of Lyme Street, which is located to the north of the Site. The Site is visible from a very small part of the Conservation Area.

Consents Background

1.13 All aspects of the cable tunnel scheme are permitted development by virtue of the Town and Country Planning (General Permitted Development) Order 1995, SI 1995/418 (as amended) with the exception of some of the headhouses. A planning application for the St Pancras Substation headhouse was made to LB of Camden during May 2009.

1.14 As a matter of policy and good practice National Grid voluntarily makes environmental information on its proposals available to interested parties and the general public, in the form of an ES. The ES has no statutory basis or force, and is not an Environmental Statement, nor does it form any part of the planning application made for the St Pancras Substation headhouse. The information provided within the ES does not accord with any regulatory requirements or the definition of 'Environmental Information' within the Environmental Impact Assessment (EIA) Regulations.

Statutory Environmental Responsibilities

1.15 National Grid is committed to the protection and enhancement of the environment, always seeking new ways to minimise the environmental impacts of their past, present and future activities.

1.16 Under Section 38 and paragraph 1 (1) of Schedule 9 of the Electricity Act 1989, National Grid has specific duties to preserve environments of special interest and to mitigate the impact and effects of its activities on the environment:

1 (1) In formulating any relevant proposals, a licence holder or a person authorised by exemption to generate or supply electricity—

(a) shall have regard to the desirability of preserving natural beauty, of conserving flora, fauna and geological or physiographical features of special interest and of protecting sites, buildings and objects of architectural, historic or archaeological interest; and

(b) shall do what he reasonably can to mitigate any effect which the proposals would have on the natural beauty of the countryside or on any such flora, fauna, features, sites, buildings or objects.

1.17 Under paragraph 2 (1) of Schedule 9, National Grid is required to have a statement setting out the manner in which these duties will be fulfilled:

2 (1) A licence holder shall within twelve months from the grant of his licence prepare, and from time to time modify, a statement setting out the manner in which he proposes to perform his duty under paragraph 1(1) above, including in particular the consultation procedures which he intends to follow.

1.18 A copy of National Grid's Schedule 9 statement is available upon request. This ES is consistent with Schedule 9, including National Grid's commitment under Section 38.

Structure of the Environmental Study

1.19 This ES comprises the following:

(i) Chapters 1 - 3 – Cover the Introduction, the Description of the Project and the Approach to the Assessment;

(ii) Chapters 4 - 13 – Cover the environmental assessments on a topic-by-topic basis;

(iii) Chapter 14 – Contains the summary and conclusions regarding environmental impacts and effects; and,

(iv) Annexes of Supporting Information.

1.20 Annexes with the prefix GEN (e.g. GEN.01) are relevant to all (or most) topics. Those with other prefixes (e.g. HYD.01) are topic specific. These Annexes are listed at the beginning of this ES.

ENVIRONMENTAL STUDY

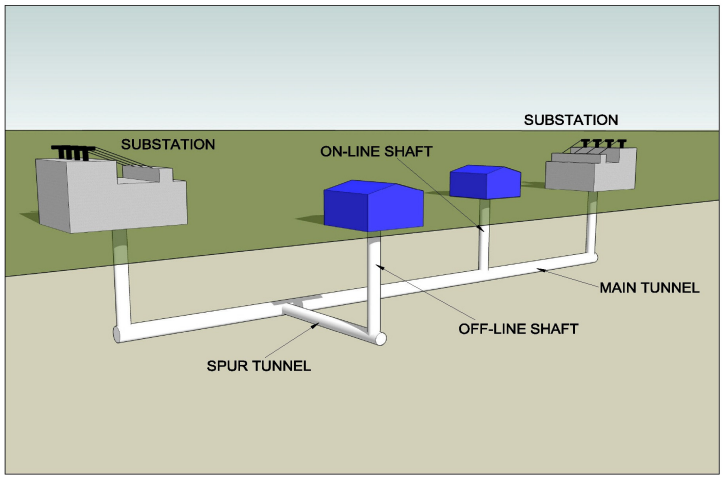
CHAPTER 2
DESCRIPTION OF THE PROJECT

2. DESCRIPTION OF THE PROJECT

Introduction

2.1 The Project provides ventilation and access to National Grid's proposed underground electricity transmission cable tunnel between Hackney and St John's Wood. A shaft cannot be provided 'on-line' at this location, therefore, a spur tunnel between the main tunnel and an 'off-line' shaft is required. This is illustrated diagrammatically in Figure 2.01 below.

Figure 2.01 Principal Components of a Cable Tunnel Including Horizontal Spurs



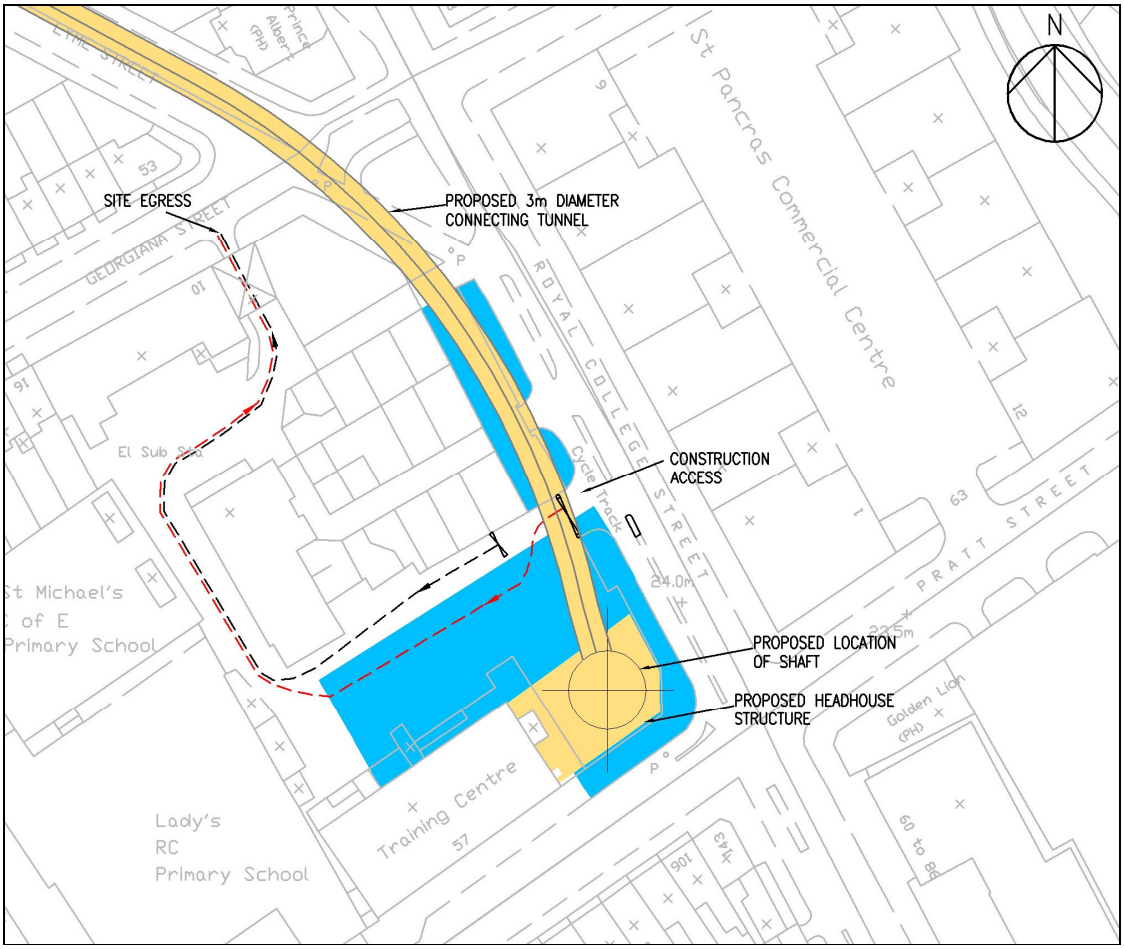
2.2 This Chapter describes the Project's construction and operation. Due to the iterative nature of the design and assessment process, and a number of external considerations, it is possible that the final design may vary slightly from that described. Wherever possible, uncertainties and alternatives have been identified, and effects have been assessed in a manner that will allow decisions to be taken about broadly similar designs which nevertheless differ to some degree from the Project described herein.

Principal Components of the Project

2.3 The Project comprises the construction of a shaft and headhouse, and a 3 m diameter spur tunnel 280 m in length linking with the main cable tunnel. The spur tunnel/main cable tunnel connection will require a reinforced concrete underground chamber beneath Camden Road at its junction with Lyme Street.

2.4 The layout for the off-line shaft and permanent headhouse at the St Pancras Substation is shown in Figure 2.02 below, and in greater detail in Annex GEN.01.

Figure 2.02 Layout for the off-line shaft and permanent headhouse at the St Pancras Substation Site



2.5 Details of the shaft and headhouse are given in Table 2.01, below. Site access will be via Royal College Street and egress via Georgina Street.

Table 2.01 Shaft and Headhouse at the St Pancras Substation

London Borough	Shaft Diameter (Internal)	Shaft Depth (Approx)	Site area (Approx)	Head house Dimensions	Fan Type
Camden	10.3 m	34 m	1000 m^2	18.38 m x 13.28 m x 7.82 m high	Supply

2.6 The shaft will contain a staircase to access the spur and main cable tunnel. The stairs are separated from the remainder of the shaft and are separately ventilated so that they can be used for emergency egress. As the shaft will not exceed a depth of 34 m, a lift is not required.

2.7 The headhouse proposals have been developed in the context of nearby buildings and will occupy a footprint of 18.38 m x 13.28 m x 7.82 m high. Headhouses typically have no windows and a minimum number of doors. The headhouse will be raised by 150 mm above surrounding ground levels to mitigate the effect on overland surface water runoff and will include a surface water drainage system design to provide and collect rainwater. To mitigate against poor water quality all surface water will pass through a suitably sized Class 1 oil interceptor before discharging to the public sewer.

2.8 The landscaping proposals for the headhouse have been designed to meet the following objectives:

(i) To protect and enhance the overall streetscape quality along both Pratt Street and Royal College Street; and

(ii) To include a biodiversity 'brown roof' that will also provide an aesthetically pleasing appearance from overlooking buildings around the Site.

2.9 The appearance, scale and massing of the headhouse has been designed to both fulfil functionality requirements and to compliment the existing Camden Training Centre which has a distinctive art deco style façade along Pratt Street and Royal College Street.

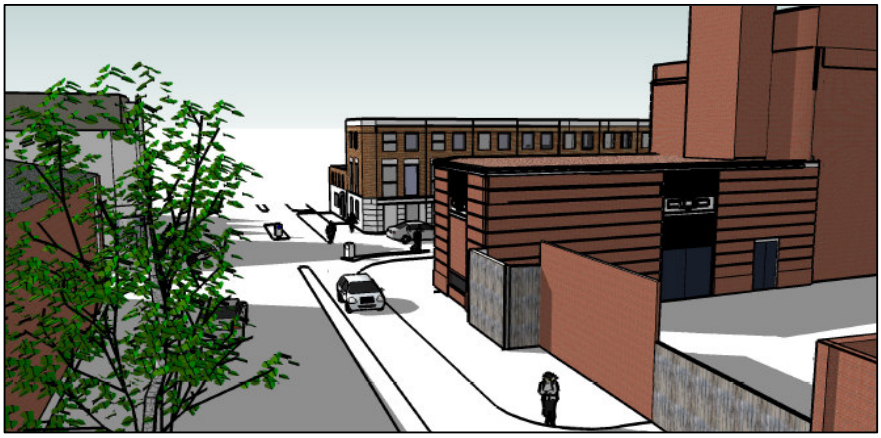
2.10 The headhouse provides an extension to the former Camden Training Centre building, although the headhouse is lower in height, and allows the vertical order of the existing building to be repeated in the headhouse, which assists with the effective assimilation of the headhouse within Pratt Street.

2.11 To compensate for the lack of windows the headhouse will exhibit inlaid brick panels of the same dimension as the existing windows in the Camden Training Centre building to retain pattern, order and form. The inlaid panels will be separated by protruding brick pillars and a horizontal pattern of art deco panels. This detail will be extended to the south and west elevations of the headhouse.

2.12 The northern elevation of the headhouse will be to the same height as the existing boundary wall and will comprise of profiled steel panelling.

2.13 Figure 2.03 below shows an artists impression of the headhouse in situ.

Figure 2.03 The Proposed Headhouse In-situ



2.14 The headhouse will accommodate variable speed extraction fans which are integral to the forced air ventilation system used to cool the cables and maintain the temperature of the tunnel at the required level. These will be designed and installed to ensure that they will not be discernable above background noise levels at the closest residential property.

2.15 The shaft will be constructed through a geology comprising Made Ground, underlain by London Clay, and the Lambeth Group. The spur tunnel is expected to be within the Lambeth Group (see Chapter 9 for further information on the geology). The vertical alignment for the spur tunnel has been chosen to avoid existing underground infrastructure whilst minimising the depth of the tunnel and shaft.

The Construction Process

2.16 The worksite will be within the boundary of the existing EDF St Pancras Substation. A temporary hoarding will be erected around the worksite.

2.17 Shafts are generally constructed using caisson methods or by underpinning or both. The specific construction techniques to be employed will be determined by the appointed works contractor.

2.18 Caisson techniques rely on the weight of the pre-cast concrete shaft lining to 'slide down' and cut into the ground. As the inside of the shaft is excavated new lining rings are added to the top at the surface level. Ground within the lining is removed using a mechanical excavator. The caisson technique can be used without the need to dewater the excavation in soft ground (wet caisson) because manned access to the excavation face is not normally required. A wet caisson is normally excavated using a crane located at the surface and fitted with an excavator attachment. A shaft constructed as a dry caisson will typically use a tracked excavator located at the shaft base; this usually requires some dewatering technique to be employed and the excavated material will be removed from the shaft by crane and skip. The available information suggests that the use of dewatering at the St Pancras Substation site will be minimal dependent on seasonal conditions (see Chapter 9, Hydrogeology of this ES).

2.19 Bentonite[1] is placed in the annulus (the area between the outside of the shaft and the ground) as a lubricant to assist in the 'sliding down'. On completion of the caisson, the bentonite is removed by displacement with a cement-based grout.

2.20 Underpinning involves shaft lining rings being added to the recently excavated bottom of the shaft and depends on competent ground (that is self supporting for a period until the new lining is in place) and a limited water inflow. Cement-based grout is placed to seal any void between the segment and the ground.

2.21 Where contaminated material exists close to the surface (see Chapter 10, Land Contamination of this ES), to avoid the possibility that this contamination becomes mobilised by the shaft construction process, it is possible to construct a sheet pile cut-off wall around the shaft area prior to shaft sinking. This creates a 'tank' around the

[1] Bentonite is a naturally occurring soft clay composed essentially of clay minerals of the Montmorillonite group and is formed from chemical weathering of volcanic materials such as tuff or glass, volcanic ash, other igneous rocks, or from rocks of sedimentary origin

area and ensures that shaft construction does not create pathways via which contaminated materials might reach the groundwater. The nature and location of any cut-off wall will depend on prior intrusive ground investigations in order to prevent the cut-off itself resulting in the creation of pathways.

2.22 The spur tunnel is expected to be constructed using a simple type of tunnelling shield, which will incorporate a mechanical excavator. The spur tunnel will be lined with pre-cast concrete segmental rings, and cement-based grout will be used to fill the gap between the outside of the tunnel segments and the excavated ground. The tunnel will be constructed from the vertical shaft base to the main tunnel, where the reinforced concrete connection chamber will be constructed as part of the main cable tunnel works.

2.23 The support logistics of the tunnelling process will depend on the actual techniques employed. For efficient operation the above construction methods need the excavated material to be regularly removed from the tunnel, and tunnel-lining segments and other materials to be regularly brought in.

2.24 Any contaminated material will be removed in compliance with waste management legislation. All of the excavated material from the spur tunnel and from the deeper parts of the shaft is expected to be inert, coming as it does from a considerable depth in undisturbed soil or rock. Excavated material which has potential for re-use or re-cycling will be considered for such use. (See also further information on transporting excavated material in this ES.)

2.25 Once the spur tunnel is completed the tunnelling shield will be dismantled and brought back up to the surface for refurbishment and possible use on other projects. Rails, if used, will also be removed upon completion of construction works.

2.26 A surface construction of approximately 1,600 square metres will be required throughout the construction period. A crane, grout mixing plant, dumper trucks, general material handling and construction equipment, temporary site offices, and temporary ventilation arrangements for the spur tunnelling are expected to be present on the construction site. The headhouse is a typical building construction operation that would utilise the same worksite set up for its construction.

Construction Programme and Site Working Hours

2.27 Tunnel construction is normally carried out on a 24-hour basis during the working week. The short length of spur tunnel may mean that weekend working, which may involve maintenance of tunnelling equipment, is not required. Although tunnelling work normally continues 24 hours a day, work on the surface during weekday nights is generally restricted to supplying tunnel rings and grout, and removing excavated material from the tunnel to a stockpile on the surface. Vehicle movements to or from the site during core night time hours (19:00 - 06:00) are minimal under normal circumstances. General site hours (not specifically associated with tunnelling) will be from 07:00 to 19:00, Mondays to Fridays, and from 07:00 to 13:00 on Saturdays. No Sunday or Bank Holiday working is expected.

2.28 The temporary construction worksite will have minimal lighting at night (when on-site activity will be reduced, but not halted, while tunnelling is under way).

2.29 The construction works at the Site relating to the head-house are expected to last approximately 4 months overall, with the overall construction period at the location being 15 months.

Transport of Construction Materials

2.30 Large construction materials (plant, grouting materials, rails, pipes and segments) are likely to be delivered by articulated lorries, whilst smaller materials are likely to be delivered by van.

2.31 Material excavated from the spur tunnel and shaft will be temporarily stockpiled within the construction worksite before being placed via a tracked excavator onto heavy goods vehicles (HGVs) for transport away from the site. Total volumes will be approximately 10,000 cubic metres of bulked material. The appointed works contractor will transport the excavated material by road for disposal/re-use/recycling. Other transport options for removal are not feasible at the Site. The end location for the excavated material is not known at present; however, for the purposes of this ES it has been assumed that removal will use routes agreed with the relevant highway authorities to gain access to the M25.

2.32 National Grid seeks to minimise the disposal of excavated material as waste, and its appointed works contractors for this Project will be required to take these policies into account. Excavated material classified as waste will be disposed/re-used/recycled under the terms of the waste receiver's Environmental Permit. The environmental impacts from the waste receivers' activities will have already been considered and assessed as part of their permitting process.

2.33 The impacts of the transport of the materials from the Site are considered in the traffic, noise and air pollution chapters of this ES.

Environmental Management Plan

2.34 National Grid will contractually oblige its works contractor to put a Project Environmental Management Plan (EMP) in place to provide direction to all the relevant environmental processes and procedures and specify the requirements to be met throughout the Project's duration. The contractor will also maintain an environmental register which will reference relevant environmental legislation.

2.35 The works contractor will be required to appoint a senior member of its Project team to be responsible for managing the environmental aspects of the Project and complying with the EMP. In addition site-based staff will be required to be competent to deal with the day-to-day environmental issues likely to arise on this Project.

2.36 The EMP will control, monitor, audit and report the environmental performance of the Project. Although limited to site-specific environmental management, the EMP will be required to reflect relevant elements and comply with the approach set out in ISO 14001:2004 and to be consistent with National Grid's policy; delivering environmental improvement, reducing risk, maintaining legislative compliance and meeting best practice. It is also a requirement that the EMP incorporates the mitigation measures contained within this ES.

2.37 During the course of the Project, monitoring and auditing will be undertaken by National Grid to ensure the implementation of the EMP. Following audits any corrective actions that have been identified will be implemented immediately. Appropriate records will be maintained for all environment related activities on site.

2.38 In addition to the Project EMP, the works contractor will be responsible for compiling, and implementing, constituent sub-plans including, but not limited to, a Site Waste Management Plan, and a Pollution Prevention and Contingency Plan.

Additional Measures Designed to Reduce Impacts

2.39 In addition to its commitments under Schedule 9, National Grid have committed to the following:

(i) Establishing the need;

(ii) Avoiding nationally or internationally designated areas;

(iii) Minimising the effects of new infrastructure;

(iv) Mitigating adverse effects of work;

(v) Compensating where mitigation is not possible;

(vi) Enhancing the environment;

(vii) Monitoring and continuous improvement;

(viii) Best practice in assessing environmental impact; and,

(ix) Consultation and liaison.

2.40 Further information on these commitments is available on the National Grid website: http://www.nationalgrid.com/uk/LandandDevelopment/SC/Responsibilities/

Operational Matters

2.41 During normal operations of the cable tunnel fresh air is drawn in through the headhouse at the Site by the ventilation fans located in the shaft and passed along the spur tunnel. In an emergency situation, such as a fire in the main cable tunnel, the ventilation system will be able to operate flexibly. Depending on the location of the fire relative to any personnel who may be in the cable tunnel, air may be drawn in, or exhausted through, any of the shafts. Smoke and fumes could therefore be emitted at the headhouse in an emergency. Detailed designs are normally finalised following discussions with the Fire Services regarding emergency procedures.

2.42 Environmental management of the tunnel and headhouse will be the responsibility of National Grid and will follow its operational management system and policies for corporate responsibility.

2.43 The proposed headhouse will be unmanned, requiring only periodic maintenance visits using, typically, one or two light vans.

2.44 Throughout the existing accesses to the existing Substation will be retained, with the existing EDF offices on the site also remaining in use.

ENVIRONMENTAL STUDY

CHAPTER 3
APPROACH TO THE ENVIRONMENTAL ASSESSMENT

3. APPROACH TO THE ENVIRONMENTAL ASSESSMENT

Introduction

3.1 This Chapter outlines the approach used to assess the likely significant environmental effects associated with the Project. It provides details regarding the topic areas that have been scoped out, the technical and spatial scope and the assessment and consultation processes.

Scoping

3.2 A scoping exercise was undertaken to 'scope out' any topics which are not likely to be significantly effected either directly, or indirectly.

3.3 Topics which have been 'scoped out' of this ES include agriculture, climate, consumption of natural resources, waste, electric and magnetic fields (EMF) socio-economics and archaeology. The reasons for this are discussed briefly below.

Agriculture

3.4 The Site, which requires permanent land take, will have no effect on agricultural resources or holdings since the land is classified as 'Urban' under the Agricultural Land Classification[1] guidelines (i.e. land largely devoid of soil and covered with houses and industrial development). The permanent use of land is also well below the threshold for statutory consultation with the Department for Environment, Food and Rural Affairs (Defra)[2] on use of the best and most versatile land resource.

Climate

3.5 The air quality chapter within this ES addresses the direct atmospheric effects of the Project. The cumulative effects on climate due to increased emissions from traffic generated during the construction and operational phases are considered as limited and unlikely to result in a significant effect.

3.6 Power generation is not a direct or indirect effect of the Project, per se; National Grid's function is to ensure transmission of the electricity to where the demand exists. The Project does not itself create a higher demand for electrical power, as it relates solely to the provision of access to, and underground ventilation of, the proposed North London cable tunnel between Hackney and St John's Wood.

3.7 Issues relating to overshadowing and daylight/sunlight effects have been addressed within the design of the headhouse and are reflected in the content of the Planning Application proposals.

Consumption of Natural Resources

3.8 The operational phase of the Project will not demand a significant consumption of natural resources and will not deplete resources which are already over exploited.

[1] Agricultural Land Classification. Ministry of Agriculture, Fisheries and Food. 1988
[2] Statutory Consultation is required with Defra if 20 hectares or more is required

3.9 During construction, the Project will require natural resources, in the form of aggregate, building materials, cement, metals and cables. Nevertheless, these resources are amply accommodated by national production.

3.10 National Grid operates an Environmental Management System certified to ISO 14001, which has procedures for the sustainable use of natural resources which will be followed throughout the development of the Project.

Waste

3.11 National Grid, as a separate activity to the cable tunnel scheme, has been considering how to further its policies on waste minimisation in general and excavated material from construction in particular.

3.12 Part of this activity has identified that there is adequate capacity for re-use/recycling/disposal of excavated material in the general vicinity of London to deal with the volume of arisings from the cable tunnel scheme as well as those from other proposed major works, such as Crossrail and Thames Water's Tideway project, that might be carried out over a similar timescale. Accordingly the assessment of waste in this ES is restricted to the movement of excavated materials and waste in the Traffic and Transportation chapter.

3.13 A Site Waste Management Plan will be completed prior to construction.

EMF

3.14 The Project relates solely to the provision of access to, and underground ventilation of, the proposed North London cable tunnel between Hackney and St Johns Wood. The spur tunnel and shaft will not include any high voltage electricity cables. EMF and electromagnetic compatibility impacts are therefore not identified as likely to cause significant effects and are scoped out of the assessment.

Socio-economics

3.15 Socio-economic assessments focus on the human dimension of environments and seek to identify the impacts on people. Some projects have a wide range of impacts on a locality, including bio-physical and socio-economic, and the trade off between such impacts is often crucial. In these cases impacts need to be addressed at a direct level i.e. direct employment impacts, and the indirect, wider level on a local and regional economy.

3.16 In this case, given the modest scale of the proposed works, the specialist nature of the tunnelling works; it is considered unlikely that this Project will significantly draw from the local labour pool and/or cause significant disruption or displacement to local businesses.

3.17 The socio-economic effects of the Project are therefore not expected to be significant.

Archaeology

3.18 The Site is more than 250 m from the closest Archaeological Priority Area (APA). The sole archaeological find within the scope of this Site is the remains of a Medieval hearth or fireplace comprising a rough stone surround, constructed using red tiles, identified at Baynes Street and St Pancras Way, approximately 210 m northeast of the Site (MLO57927, TQ2938 8412).

3.19 Due to a combination of a low archaeological potential and the impact of previous developments at the St Pancras Substation, the likely effect of the Project on archaeology is unlikely to be significant and the topic has been scoped out of the assessment.

3.20 National Grid, as good practice, will carry out an archaeological watching brief as part of the construction phase.

Assessment Process

3.21 For each environmental topic covered, the ES describes the methodology used to assess the effects of the Project on the environment. It then goes on to:

(i) To describe the current baseline conditions, using actual observations and surveys where appropriate, and the most recently available reference material. Each description of the current baseline conditions concludes with a summary of current environmental quality; and

(ii) To assess the identified likely environmental impacts of the Project against the current baseline.

3.22 This approach provides a robust and realistic method to describe and assess the likely significant effects of the Project.

3.23 The assessment identifies potential sources of environmental impacts and effects from the Project, both positive (beneficial) and negative (adverse), and predicts their likely effects on resources or receptors.

3.24 The determination of significance has been assessed , as far as possible, using a standardised approach as much as possible. This is detailed in Annex GEN.02. Although the determination of significance often ultimately relies on professional judgement, any exceedance of standards, criteria and thresholds will inform this judgement as set out in the individual assessment chapters.

3.25 Having described and assessed the likely significant environmental effects, the ES describes any proposed mitigation measures, which go beyond those already incorporated in the scheme, with the potential to prevent, reduce and where possible offset any potential significant adverse effects on the environment. As a matter of policy, National Grid will seek to mitigate, so far as practicable, likely significant adverse effects identified. Mitigation of likely significant adverse effects will be incorporated into the final detailed design of the Project as a matter of course.

3.26 Where mitigation measures are proposed, the ES then describes and assesses any residual effects after such mitigation measures have been taken, in relation to the issues raised in the relevant topic area.

3.27 Indirect and cumulative effects are assessed, to the extent that this is feasible, in order to determine whether or not they are likely to be significant.

3.28 Where relevant, an indication of any difficulties (i.e. technical deficiencies encountered in compiling the required information) is provided. This includes any uncertainty associated with impact prediction or the sensitivity of receptors due to the absences of data or other limitations.

Technical, Spatial and Temporal Scope

3.29 The technical and spatial scopes for those topic areas which are considered to potentially cause significant effects, and the geographical extent over which such effects may exist, are set out under each topic section within this ES.

3.30 Two broad periods of time have been identified as being relevant to the assessment of likely significant environmental effects. These periods are:

(i) Demolition and construction, which is likely to commence in January 2010 and continue for a period of approximately 15 months, with 4 months of this period attributed to the head-house construction; and,

(ii) Operation, which follows completion of the construction and commissioning of the main cable tunnel scheme in March 2011.

3.31 This ES addresses effects from both the construction and operation of the Project. Effects have been assessed against the 2008 baseline (other than where the most recent available data came from an earlier year).

3.32 The decommissioning of the spur tunnel, shaft and headhouse is not specifically considered in each chapter of this report primarily because the design life of the Project is 120 years. As such the best decommissioning procedures and mitigation measures that may be available at that time cannot be realistically assessed.

Cumulative Effects

3.33 Effects which on their own may not be considered to be significant can, when taken in combination with other scheme or non-scheme effects, merit special attention, and may possibly require mitigation.

3.34 There are three main ways in which effects can accumulate, as follows:

(i) Effects which mirror those arising on other (independent) projects, and which in combination produce significant effects;

(ii) Two or more scheme-related effects which do not inter-react, but which combine to produce a significant effect; and,

(iii) Two or more scheme-related effects which inter-react to produce a significant effect.

3.35 Examples which illustrate these different types of accumulation would include the following.

(i) The first category would include effects such as construction traffic (or noise, or visual impact etc) which, taken on their own as an addition to background levels, would be acceptable; but when taken in combination with the construction traffic (or noise, or visual impact etc) from other nearby projects likely to be brought forward at the same time, would be considered significant. Such combinations need not be concurrent: they might be sequential. A local resident who had endured noise, dust and site traffic from one construction site, in which the temporary nature of the impact was deemed to render it acceptable, might reasonably feel aggrieved if identical impacts from a neighbouring site started as soon as the first one had finished. These impacts are referred to below as 'on/off-site additive impacts'.

(ii) The second category is a more local variant on the first, and mainly likely to affect human receptors. Local residents who might be able to accept (say) noise, vibration or dust on their own, might find that their lives were made unduly miserable by a combination of all three, requiring this combination to be considered as significant. These impacts are referred to below as 'on-site additive impacts'.

(iii) Inter-reactions are not so common, but examples can be found. For example, a scheme which involved abstracting water from a chalk stream while emitting acid gases to the atmosphere would be expected to change the chemistry of the soil and surface water where the gases came to ground, an effect that would be magnified if the volume of receiving water was simultaneously being reduced (by abstraction). These effects might well combine to affect the ecology of the stream in a way that neither would achieve alone. A more common example, which should be (but is not always) picked up via the proper description of a scheme prior to the EIA process, concerns mitigation for one effect which creates a separate adverse effect. An example would be noise barriers (whether temporary or permanent) which affect the visual quality of the site and its surrounding area. These impacts are referred to below as 'inter-action impacts'.

On/Off-Site Additive Impacts

Concurrent Impacts

3.36 There will be other tunnelling and non-tunnelling projects going on simultaneously in London, but most of the impacts considered in this ES are local in nature. The exception to this is the traffic created by the need to deliver supplies to the Site and other construction sites, and the need to remove excavated material for off-site management (including re-use or disposal).

3.37 However, even taken in combination, tunnelling-related road traffic will be inconsequential within the context of London's trunk road network, and there are no grounds for believing that traffic from tunnelling projects will coincide at any pinch-points within the wider network in a way that would cause significant congestion or wider environmental impacts.

On-Site Additive Impacts

3.38 The principal scope for on-site additive impacts arises from multiple impacts from a single action or activity (such as the operation of heavy construction plant). By making a commitment (as part of the scheme for assessment) to require its contractors to prepare a Project EMP with relevant sub-plans, including, but not limited to, a Pollution Prevention and Contingency Plan and a Site Waste Management Plan; National Grid will ensure that the potential for cumulative impacts will be properly addressed.

Inter-Action Impacts

3.39 No potential for significant inter-action cumulative impacts has been identified.

Consultation

3.40 In addition to consultation on the ES topic methodologies, meetings and discussions have been held with various interested parties, including the LB of Camden and the Environment Agency.

3.41 National Grid has also made presentations on the wider cable tunnel scheme to Members of relevant LB Councils during 2008.

3.42 A staffed public exhibition was held by National Grid in relation to this Site and the wider project cable tunnel project on the 10th December 2008 at the Prince Albert Public House.

ENVIRONMENTAL STUDY

CHAPTER 4
TRAFFIC AND TRANSPORTATION

4 TRAFFIC AND TRANSPORTATION

Introduction and Scope of Topic

4.1 This Chapter considers the likely effects of road traffic generated during the construction of the shaft, spur tunnel and permanent head-house at the site of St Pancras Substation, Royal College Street, Camden.

4.2 The assessment primarily focuses on Heavy Goods Vehicles (HGVs) as these are the main vehicle type to be used during construction, although, light construction vehicles have also been considered.

4.3 The effects associated with the Projects operational phase have been excluded from this assessment. The site is an existing operational sub-station and the addition of the head-house once operational is unlikely to alter the existing vehicle movements associated with the current operations.

Proposals

4.4 Whilst this Project relates to the construction of a head-house and associated shaft at the St Pancras Substation site on Royal College Street, it does form part of a wider scheme for the provision of underground cabling between Hackney and St Johns Wood.

4.5 There are two stages of traffic activity at the St Pancras Substation site that have been included in the assessment, these are:

(i) Shaft and spur tunnel construction; and

(ii) Head-house construction and fit out.

Policies and Guidelines

4.6 T1 - Sustainable transport

(i) A - Sustainable transport development

(a) The Council will grant planning permission for development that would encourage travel by walking, cycling and public transport. The Council will not grant planning permission that would be dependent on travel by private motor vehicles.

(ii) B - Transport Assessments

(a) The Council will require applicants to provide a Transport Assessment in support of any development that significantly increases travel demand or would otherwise have a significant impact on travel or the transport system.

(iii) C - Travel plans

(a) The Council will require applicants to provide a Travel Plan to manage travel arising from any development that significantly increases travel demand or would otherwise have a significant impact on travel or the transport system.

(iv) D - Clear Zone Region

(a) In the Clear Zone Region, the Council will only grant planning permission for development that significantly increases travel demand where it considers that appropriate measures to minimise the transport impact of development are incorporated.

4.7 T2 - Capacity of transport provision

(i) The Council will only grant planning permission for development where it considers that all forms of travel associated with the development can be accommodated by:

(a) the capacity of the existing transport provision; or

(b) the capacity of planned transport provision that has fully secured funding and a firm start date; or

(c) additional capacity and/or demand management measures directly related in scale and kind to the development, to be funded by the developer, and designed to cause minimum environmental harm.

(ii) The Council will consult Transport for London where appropriate and will consider capacity taking into account the cumulative effect of all development proposals on transport provision.

4.8 T3 - Pedestrians and cycling

(i) The Council will only grant planning permission for development that it considers to make satisfactory provision for pedestrians and cyclists. In assessing development, traffic management and highway alterations, the Council will consider:

(a) improvements to conditions for the convenience and safety of pedestrians and cyclists, the walking and cycling environment, including design, access and security;

(b) the need for developments to cater for the walking and cycling demand they create on- and off-site where it cannot be accommodated by the capacity of existing and planned provision,

(c) the need to link all development to safe, convenient and attractive pedestrian routes and the London Cycling Network, and to add to the Cycling Network where justified by predicted use or safety concerns;

(d) the need to prevent severance of existing pedestrian links and the London Cycling Network, and to reinstate previously severed links;