13.48 Erection of hoarding around the Site during the construction phase will minimise any impacts arising from noise, dust and lighting levels and therefore reduce any potential effects on the surrounding habitats and species using them.

Residual Effects

13.49 A minor positive residual effect is anticipated if Japanese knotweed is appropriately eradicated from the Site.

13.50 A minor positive residual effect is anticipated if the living roof is appropriately installed and maintained.

Summary and Conclusions

13.51 The potential impacts arising from the Project at the Site on any ecological receptors within the Site and in the surrounding areas likely to be affected by the proposed works have been assessed.

13.52 No significant adverse residual effects are anticipated at the Site.

13.53 A minor positive residual effect is anticipated if Japanese knotweed is appropriately eradicated.

13.54 A minor positive residual effect is anticipated if the living roof is appropriately installed and maintained.

ENVIRONMENTAL STUDY

CHAPTER 14
SUMMARY AND CONCLUSIONS

14. SUMMARY AND CONCLUSIONS

Introduction

14.1 The purpose of this Environmental Study (ES) is to describe the proposed permanent headhouse together with the associated ventilation shaft and spur tunnel, at the St Pancras Substation located within the London Borough of Camden and to report on its likely significant effects on the environment. This ES also sets out recommendations for mitigation measures to minimise any potential significant adverse environmental effects. The Project forms part of a wider Electricity Tunnelling Project in North London between Hackney to St John's Wood.

14.2 This Chapter summarises those effects which are recognised in this ES as likely to be significant prior to the application of suitable mitigation as identified.

The Project

14.3 The Project is located within the London Borough of Camden and comprises of a 280 m long spur tunnel with a nominal internal diameter of 3 m with an associated permanent off-line shaft. Operational access will be via a permanent 'headhouse' located above the shaft linked to the spur tunnel which will hold operational and ventilation equipment.

14.4 The spur tunnel and main cable tunnel connection will require a reinforced concrete underground chamber beneath Camden Road at its junction with Lyme Street.

14.5 The layout for the off-line shaft and permanent headhouse at the St Pancras Substation is shown in Annex GEN.01.

14.6 As a statutory undertaker, National Grid has permitted development rights for the construction of the spur tunnel and its associated shaft. A planning application for the St Pancras Substation headhouse was made to London Borough of Camden in May 2009.

Significant Impacts and Effects Before and After Mitigation

14.7 The individual topic area assessments within this ES each have identified potential impacts and effects (both beneficial and adverse) which could arise as a consequence of the construction and operation of the Project.

14.8 Where practicable, each assessment chapter (and their supporting Annexes) identifies specific mitigation proposals that are needed to prevent, reduce and where possible off-set any significant adverse effects on the environment. It is recommended that these mitigation measures are incorporated into a project specific EMP.

14.9 Table 14.01 below sets out a summary of those effects of the Project which have been assessed as being potentially significant. The table also highlights whether an effect is beneficial or adverse.

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Table 14.01: Characterisation of Potentially Significant Impacts / Effects

Topic	*Nature of potential impact / effect*	*Potentially significant impact / effect (after all mitigation measures included as part of Scheme)*	*Likelihood of impact / effect being encountered*	*Mitigation proposed within this ES*	*Significance of post-mitigation impact / effect*
Traffic and Transportation	Adverse	Potential minor delays on the local road network as a result of construction traffic entering and exiting the Site.	Possible	Minor kerb and footway modifications on both Georgina Street and Royal College Street to allow vehicles to turn in and out of the Site. The temporary removal of approximately 3 m of traffic island on Royal College Street to allow vehicles to turn left. The provision of additional compound areas during the construction phase involving the temporary diversion of footpaths (1 year). The implementation of a Traffic Management Plan (TMP).	Not Significant
		Vehicles entering the site will have to cross the mandatory cycleway that runs on the west side of	Likely	Banksmen will be present during	Not Significant

Topic	*Nature of potential impact / effect*	*Potentially significant impact / effect (after all mitigation measures included as part of Scheme)*	*Likelihood of impact / effect being encountered*	*Mitigation proposed within this ES*	*Significance of post-mitigation impact / effect*
		Royal College Street with potential conflict between site vehicles and vulnerable road users. Additionally, footways adjacent to the site will need to be diverted during the shaft site works, which has the potential to impact upon vulnerable road users and can cause an increase in journey distance.		construction of the shaft and head house to protect cyclists and pedestrians from vehicles turning into the site off Royal College Street. A temporary pedestrian crossing facility on Pratt Street will provide safe means to cross	
Air Quality	Adverse	Dust emissions generated from construction and demolition causing elevated levels of PM_{10}.	Likely	The Project Environmental Management Plan (EMP) will contain measures that include, but are not limited to, solid hoarding, wheel washing and inspection of dust release sources to limit dust emissions.	Not Significant
Noise and Vibration	Adverse	Construction and demolition activities are likely to generate some increased levels of noise and vibration.	Likely	The implementation of Best Practicable Means (BPM) and those measures identified in BS 5228, as part of the Project EMP, during the construction phase	Not Significant

Topic	*Nature of potential impact / effect*	*Potentially significant impact / effect (after all mitigation measures included as part of Scheme)*	*Likelihood of impact / effect being encountered*	*Mitigation proposed within this ES*	*Significance of post-mitigation impact / effect*
				should limit the noise and vibration emissions to an acceptable level.	
		The ventilation system, including fans, could generate some increased levels of noise.	Possible	All mechanical plant will be designed to meet the Local Authority requirements for noise.	Not Significant
Ground Settlement	Adverse	Increased risk of settlement in areas of existing structures and underground infrastructure.	Unlikely	Appropriate construction methods and monitoring.	Not Significant
Flood Risk and Surface Water	Adverse	Storm events occurring during construction that can increase overland flow with increased sediment loading which may block drainage systems.	Possible	The control of sediment loads at source by covering all stockpiles and the provision and use of on site balancing facilities.	Not Significant
		Flooding of the below ground infrastructure during construction and operation.	Possible	Appropriate design measures	Not Significant
		Construction related hydrocarbons entering the aquatic system.	Possible	Incorporate pollution prevention measures and complying with EA Oil Storage Regulations.	Not Significant

Topic	*Nature of potential impact / effect*	*Potentially significant impact / effect (after all mitigation measures included as part of Scheme)*	*Likelihood of impact / effect being encountered*	*Mitigation proposed within this ES*	*Significance of post-mitigation impact / effect*
		The potential for excavations, stockpiles and demolition material to cause ponding which may divert surface water flow paths leading to an increase in surface water flood risk and become a safety hazard.	Likely	Selective placement of stockpiles taking into account topography paying particular regard to keeping surface water runoff away from the shaft.	Not Significant
		There is potential for compaction of the ground surface, which is likely to reduce the overall permeability at the site, potentially increasing surface water runoff.	Unlikely	Ground finishes of any areas outside the site but within the contractors working areas will be returned to their original state condition or better.	Not Significant / Slight betterment
Hydrogeology	Neutral	The shaft and spur tunnel will be constructed within London Clay and Lambeth Group, this in addition to the construction methodology, which forms part of the project scheme, means that it is unlikely that there will be significant adverse effects that require mitigation.	Unlikely	No mitigation measures are proposed in addition to those included as part of the scheme (see Chapter 9).	Not Applicable
Contaminated Land	Adverse	The presence of residually contaminated ground conditions and the likely exposure to future site users	Possible	Contaminated soils will be removed and / or remediated to be suitable for end use.	Not Significant

Topic	*Nature of potential impact / effect*	*Potentially significant impact / effect (after all mitigation measures included as part of Scheme)*	*Likelihood of impact / effect being encountered*	*Mitigation proposed within this ES*	*Significance of post-mitigation impact / effect*
		Construction workers may be exposed to contamination through the inhalation of airborne dust or vapour, direct dermal contact and extensive dewatering activities.	Possible	Compliance with Health and Safety legislation including the appropriate use of Personal Protective Equipment (PPE). Air monitoring of confined excavations. Should bonded or fibrous asbestos be identified within the construction phase, an Asbestos Management Plan should be produced and implemented.	Not Significant.
		Construction activities may mobilise contaminants and effect sensitive controlled waters.	Possible	The nature of the construction methodology and the requirements of the EMP (see Chapter 2) should mitigate against the mobilisation of contaminants to controlled waters.	Not Significant

Topic	***Nature of potential impact / effect***	***Potentially significant impact / effect (after all mitigation measures included as part of Scheme)***	***Likelihood of impact / effect being encountered***	***Mitigation proposed within this ES***	***Significance of post-mitigation impact / effect***
Built Heritage	Adverse	Indirect short term impacts such as noise and visual intrusion during construction for the residential area to the south of the Site where a listed terrace is located.	Possible	Construction effects are unlikely to materially affect any adjacent listed buildings and will be temporary in nature therefore no mitigation is considered necessary.	Not Significant
		Low indirect impact on the views between the Site and adjacent listed buildings once the Site is operational.		The permanent site boundary will be built with an appropriate choice of materials and colours to reduce ant potential impact upon the listed buildings.	
Landscape and Visual Impact	Neutral	The headhouse design is likely to have a neutral impact on the existing quality of the Commercial, Industrial and Retail townscape type.	Unlikely	Significant adverse effects have not been identified therefore mitigation measures have not be identified.	Not Applicable
	Beneficial	There is likely to be a beneficial visual impact as the exiting site hoarding will be replaced by the headhouse building.	Likely		
Ecology	Adverse	There may be impacts on bats potentially present arising from noise, dust and disturbance.	Unlikely	Construction works to be confined to the normal working day with restricted above ground working at night under	Not Significant

Topic	*Nature of potential impact / effect*	*Potentially significant impact / effect (after all mitigation measures included as part of Scheme)*	*Likelihood of impact / effect being encountered*	*Mitigation proposed within this ES*	*Significance of post-mitigation impact / effect*
				floodlighting.	
	Neutral (if avoided through exclusion zone) Beneficial (if eradicated)	Japanese knotweed has been identified to be present on the site and must either be avoided or eradicated.	Likely	Japanese Knotweed (if eradicated) will need to be in accordance with the best practice guidance (see suggested eradication strategy, Annex ECO.03).	Minor beneficial (if eradicated)

Conclusion

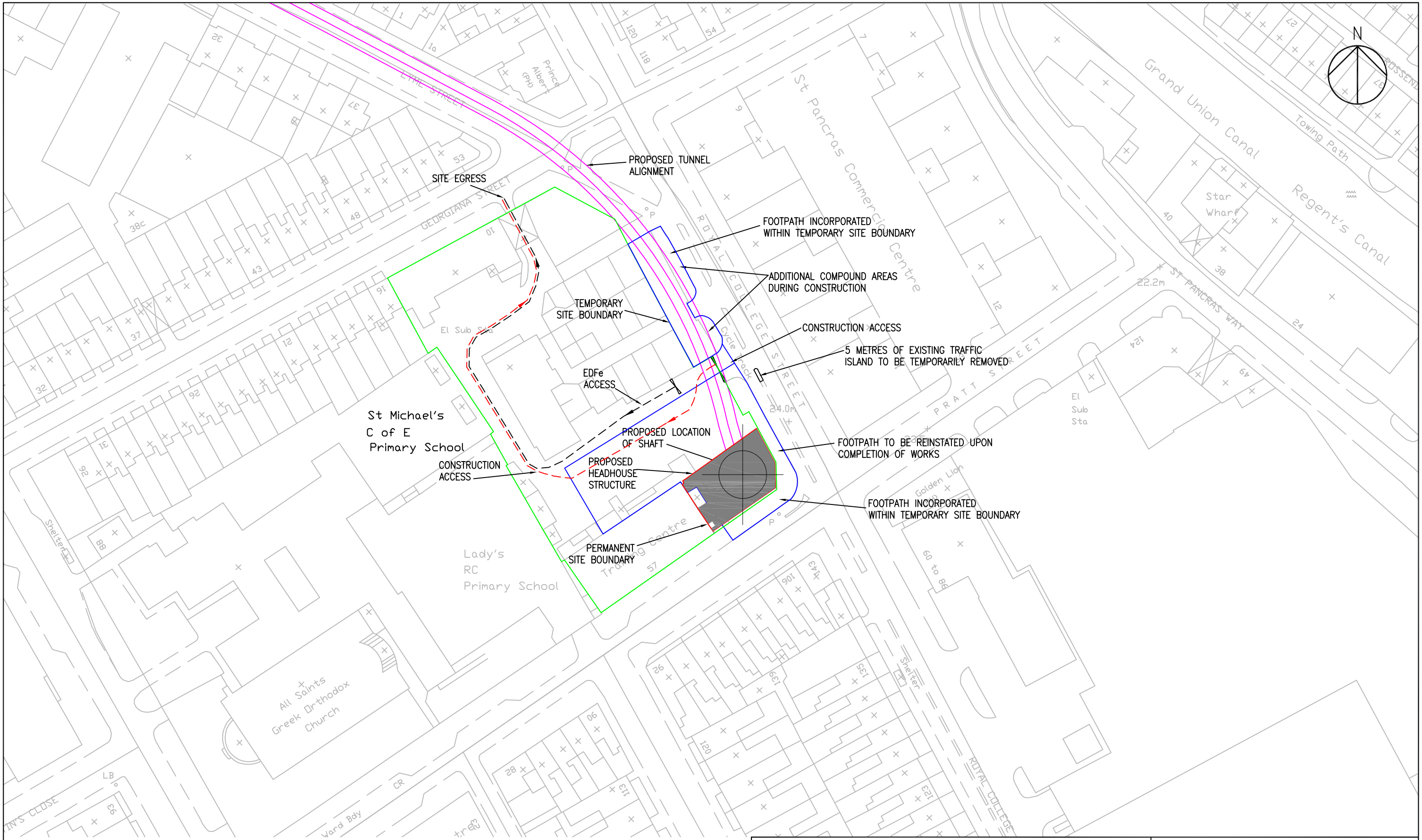
14.10 With reference to Table 14.01 above, it can be seen that although within certain topic areas there exists a potential for adverse environmental effects to arise during the construction and operational phases of the Project, through the application of effective mitigation, including in many instances adherence to current accepted Best Practice, it is determined that in accordance with the criteria within Annex GEN 02, there will be no significant adverse environmental effects arising as a result of the Project.

14.11 There will be a minor beneficial effect arising as a result of the Project should eradication of the Japanese Knotweed found on site occur.

14.12 The design of the headhouse is likely to have a beneficial visual impact as the structure will replace the existing site hoardings. In addition, there will be a positive ecological effect with the installation of a living roof.

ENVIRONMENTAL STUDY
ANNEXES OF SUPPORTING INFORMATION

GENERAL



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Key

- Headhouse
- Shaft Site
- EDFe Vehicle access around site
- Construction Vehicle Access
- Proposed Tunnel Alignment
- Temporary Site Boundary
- EDFe Site Boundary
- Permanent Site Boundary

REV		DR	CH	PA	DATE

ST. PANCRAS SUBSTATION

ANNEX GEN.01

nationalgrid

DRAWN BY	CHECKED BY	PASSED BY	DATE	SCALES @ A3 SIZE	ISSUE STATUS	DRAWING NUMBER	REV.
HL	GW	JD	MAY 09	1:500	FINAL	CS022511_SP_04	

ANNEX GEN.02:

JUDGING 'SIGNIFICANCE'

An important task in the process of environmental assessment is to identify those **effects** which are expected to arise from the construction, permanent existence or operation of a project (the 'Scheme for Assessment') and which are also judged to be potentially 'significant'. Such effects will arise as a consequence of **changes** generated by the project impacting on '**receptors** / **resources**' (see below for further guidance on these terms). The Scheme for Assessment should be assessed in its entirety (i.e. after taking into account the likely effectiveness of those design features and codes of practice to which the promoter is fully committed. These might be considered by some to be 'mitigation by design' but should not be treated as mitigation for assessment purposes; i.e. it is not necessary to assess the Scheme both without and with these measures).

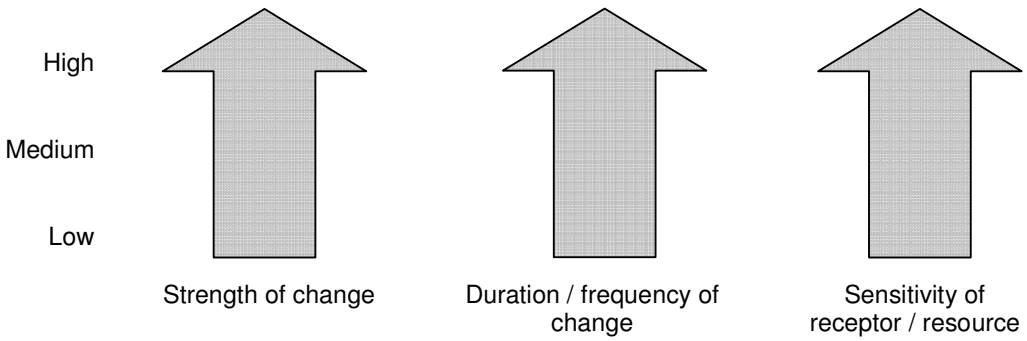
Changes may be positive or adverse, and might even be considered to be neutral. Examples would include: new scheme-related noise or air pollution, changes in lighting levels, loss of habitat or top soil, new planting and habitat re-provision, changes to the townscape, loss of surface permeability, waste production, etc.

Examples of **receptors** / **resources** include: people (residents, passers-by, workers etc), designated sites (SSSIs, AONBs, conservation areas, groundwater protection zones etc) and non-designated environmental resources of value.

The physical extent of effects (in terms of the geographical area affected, or the size of the human population affected, or the spatial extent of any protected species or habitats affected) should all to be taken into account.

Changes can be characterised according to their **strength**, and the combination of their **duration and frequency**. Receptors / resources can be characterised according to their **sensitivity** to change, taking into account their value and resilience. Some changes will affect different receptors / resources to different degrees, and some receptors / resources may be affected by a range of potential changes. Significance must therefore be judged in the context of a specific combination of change and receptor / resource.

The three components of an effect



Step 1 of the process of assessing significance is to identify all relevant **combinations of change and receptor** / **resource** which may arise as a consequence of implementing the Scheme for Assessment.

Step 2 is to use professional judgement and/or appropriate best practice guidance (and taking into account specific statutory or non statutory values and objectives as may be applicable, for example, in relation to air quality or water quality threshold values) to **identify the strength, duration and frequency of the likely changes, and the sensitivity of the receptors / resources concerned**.

Step 3 is to score the outcomes of Step 2 as **'high', 'medium, or 'low'**. For each potential effect there will be three separate scores (reflecting the strength of the change, the duration / frequency of the change, and the sensitivity of the receptor / resource).

Step 4 is to **describe and document** the outcome of Steps 1 to 3.

Step 5 is to **judge the significance** of each potential effect using the following three-step procedure:

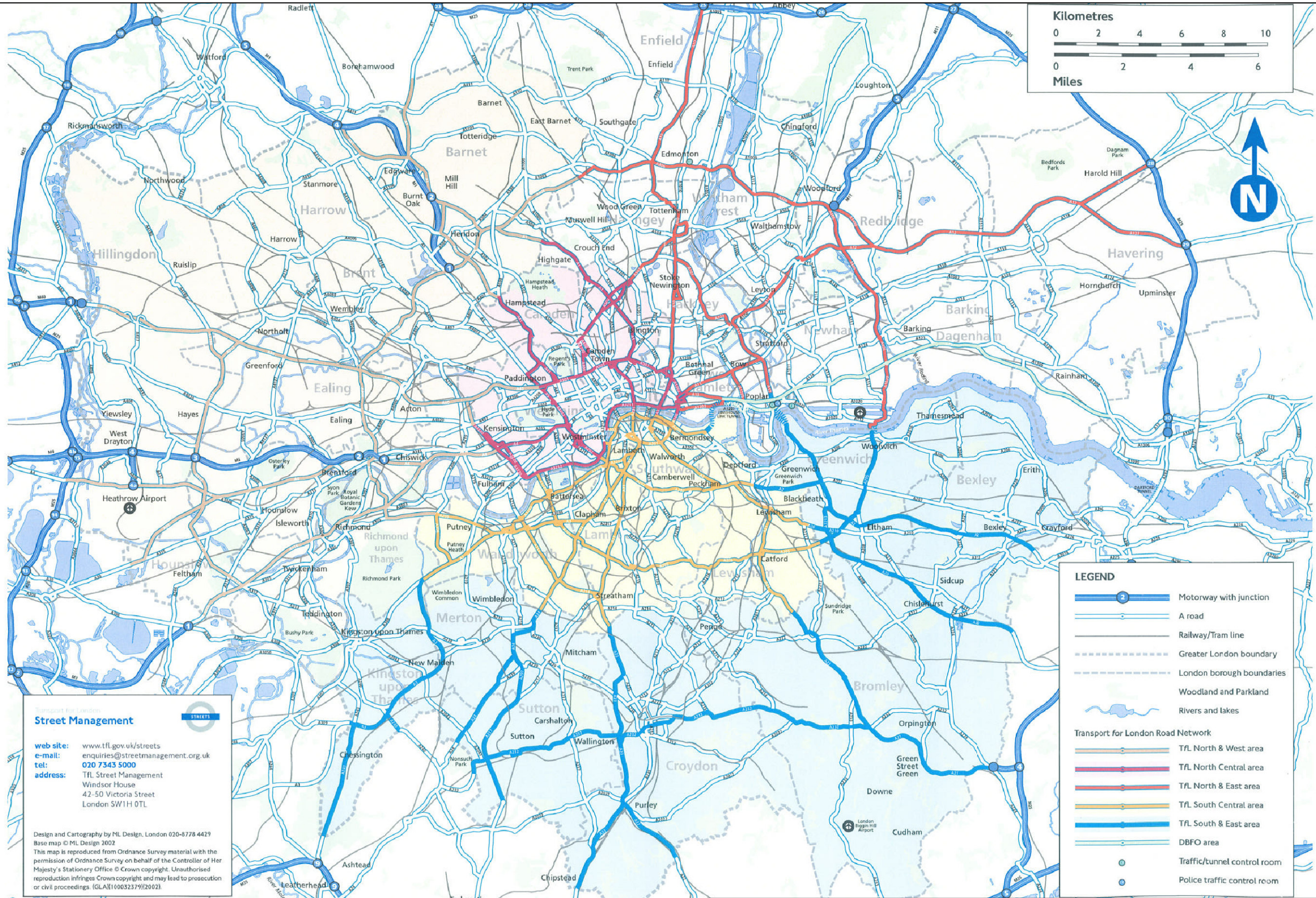
(i) Any effect with one or more score of 'high' and no score of 'low' should almost certainly be treated as significant.
(ii) Any effect with all three scores of 'medium' requires professional judgement to determine whether or not it should be treated as significant.
(iii) Any effect with two scores of 'high' and one of 'low' is less likely to be significant, but professional judgement should be exercised to confirm that this is the case.

Step 6 is to **record** those effects which are to be treated as **significant**.

Those effects which were considered under Step 5 but not in the end deemed to be significant may well need to be considered further in the context of **cumulative impacts**.

ENVIRONMENTAL STUDY
ANNEXES OF SUPPORTING INFORMATION

TRAFFIC AND TRANSPORTATION



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ST PANCRAS SUBSTATION

ANNEX TRA.01

nationalgrid

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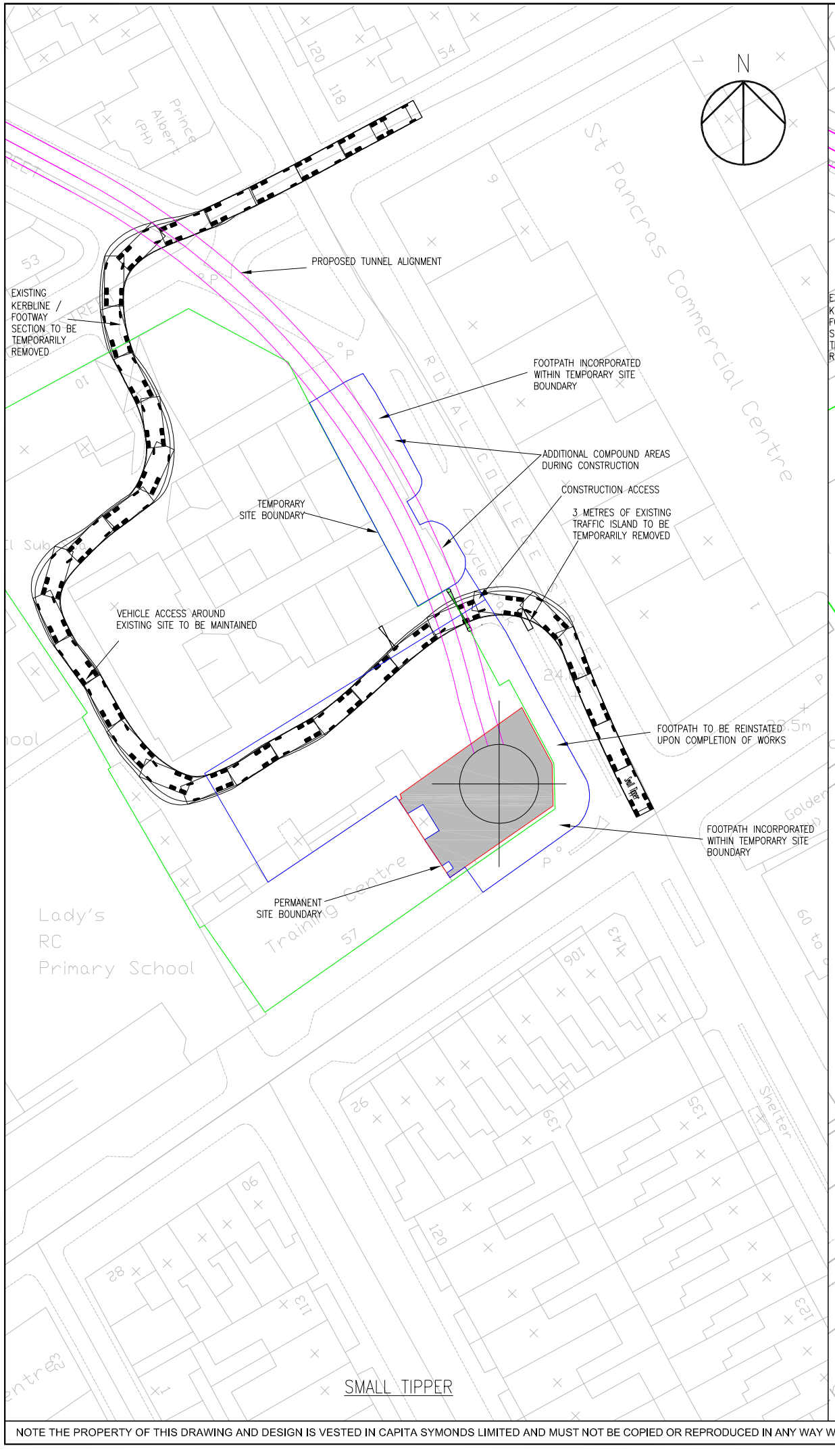
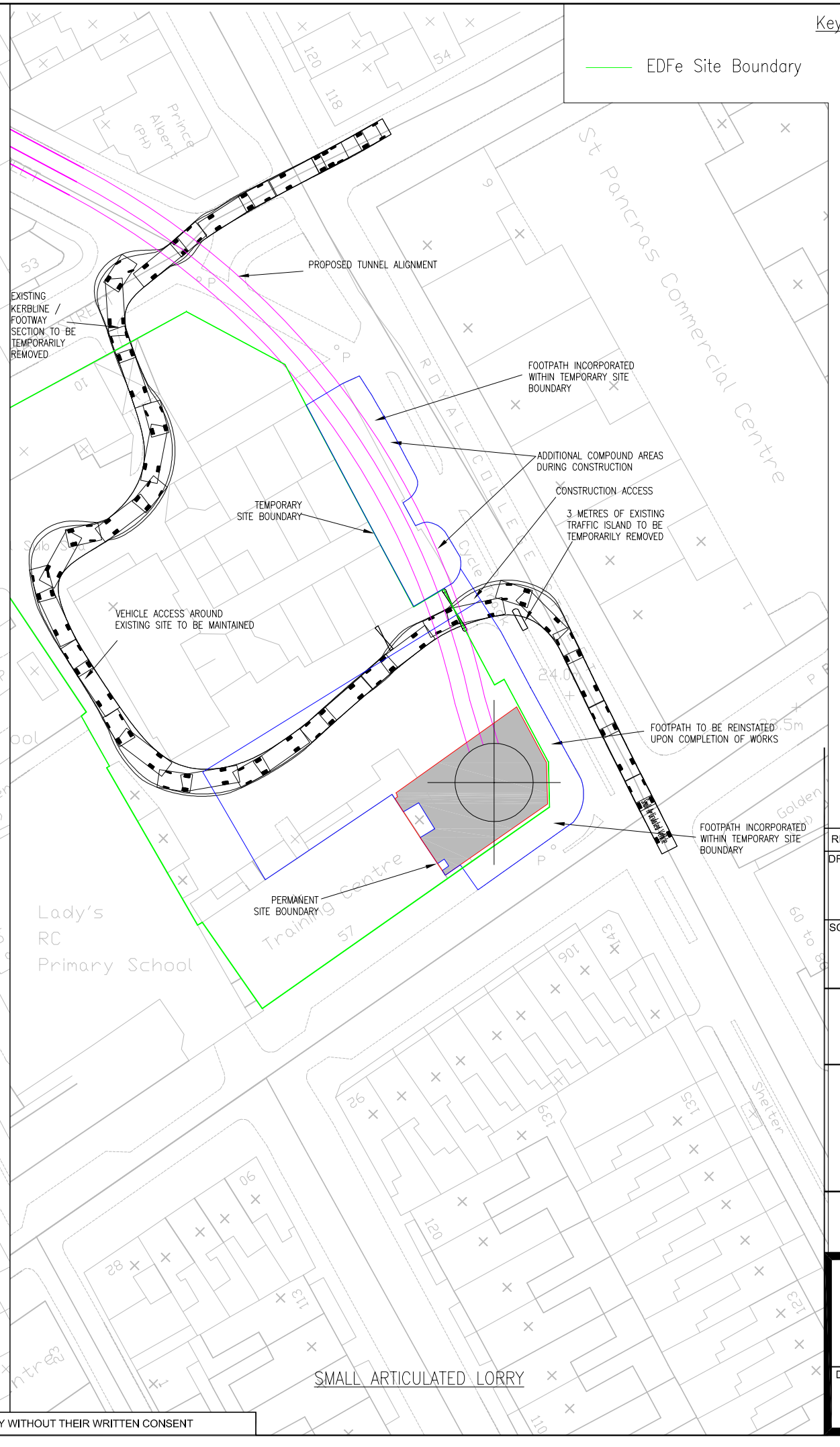
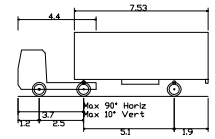




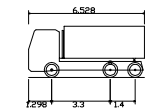
Key

- EDFe Site Boundary
- Proposed Tunnel Alignment
- Permanent Site Boundary
- Temporary Site Boundary
- Headhouse
- Shaft Site

Vehicle Type:



Small Articulated Vehicle	
Overall Length	10.700m
Overall Width	2.360m
Overall Body Height	3.604m
Min Body Ground Clearance	0.382m
Track Width	2.240m
Lock to Lock Time	6.00 sec
Kerb to Kerb Turning Radius	5.740m



Small Tipper	
Overall Length	6.528m
Overall Width	2.495m
Overall Body Height	2.927m
Min Body Ground Clearance	0.367m
Track Width	2.393m
Lock to Lock Time	6.00 sec
Kerb to Kerb Turning Radius	7.850m

N.B
CONTRACTOR TO PROVIDE DETAILED TRAFFIC MANAGEMENT LAYOUT FOR APPROVAL BY LOCAL AUTHORITY

REV		DR	CH	PA	DATE

DRAWN BY	CHECKED BY	PASSED BY	DATE
HL	GW	JD	MAY 09

SCALES @ A3 SIZE	ISSUE STATUS
1:750	FINAL

ST. PANCRAS SUBSTATION

ANNEX TRA.02a

CAPITA SYMONDS

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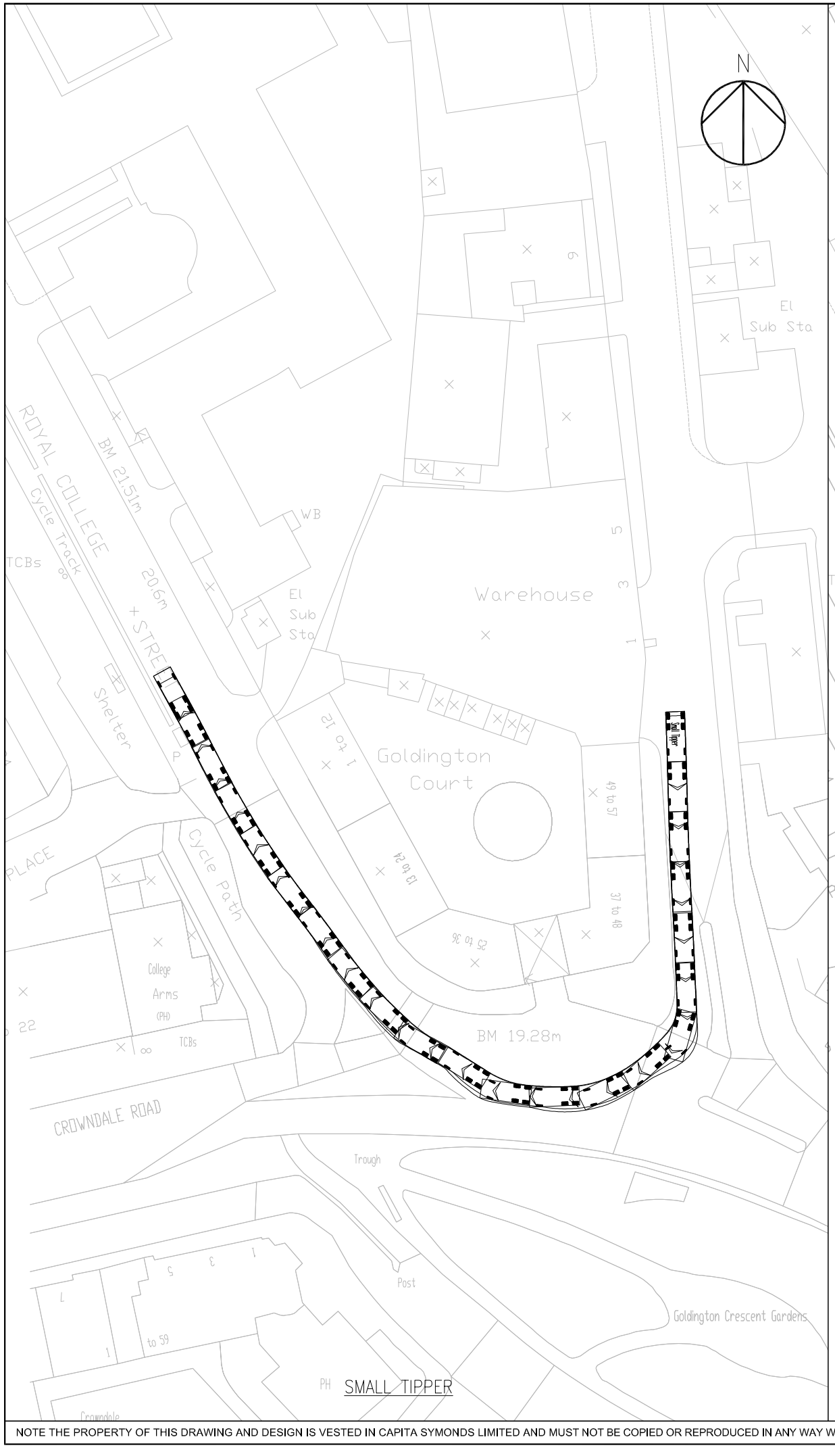

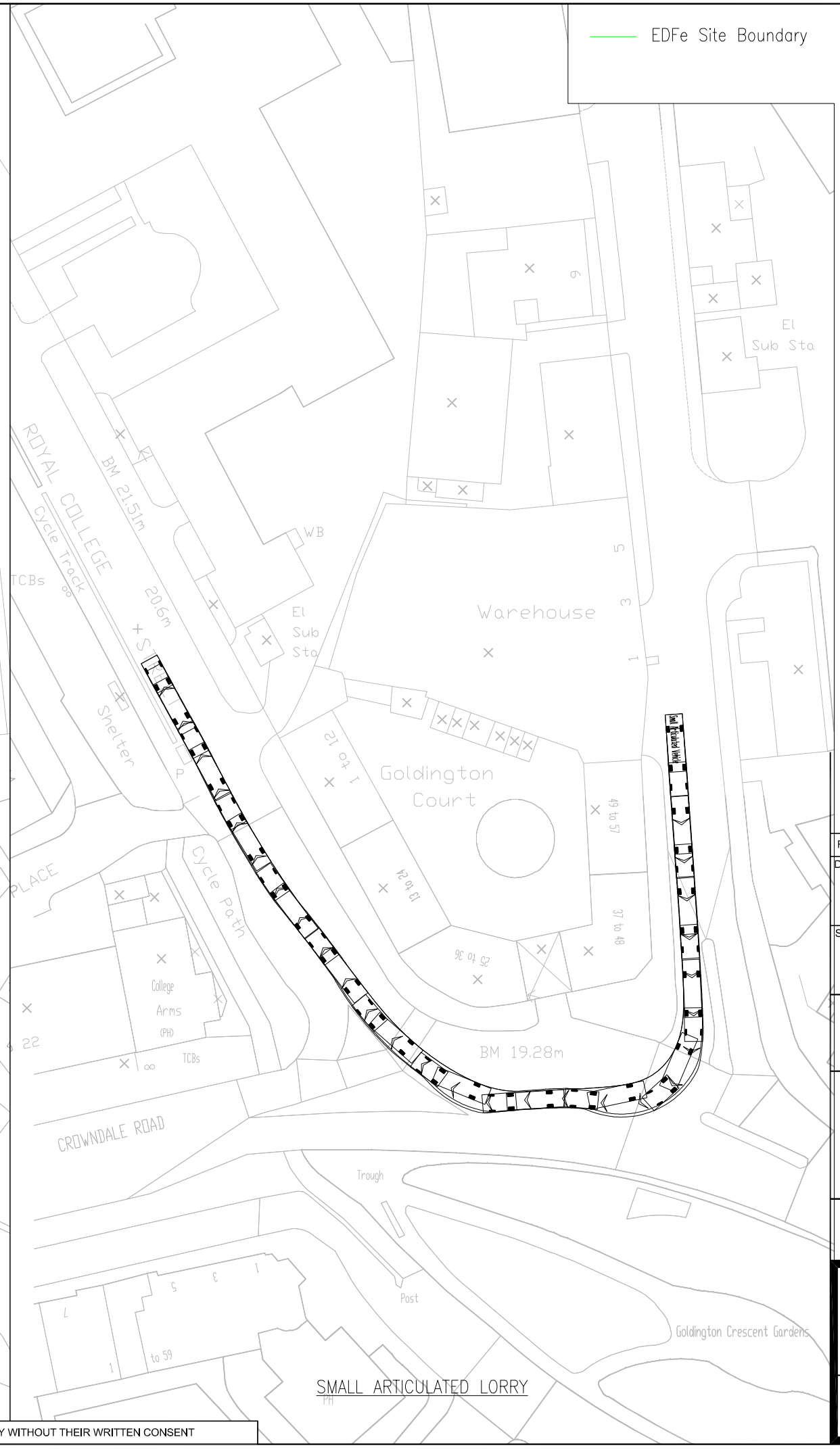

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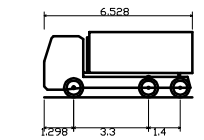
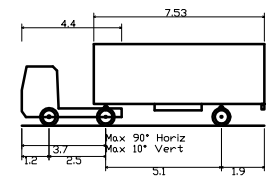
Key

- EDFe Site Boundary
- Proposed Tunnel Alignment
- Permanent Site Boundary
- Temporary Site Boundary
- Headhouse
- Shaft Site

Vehicle Type:



Small Tipper	
Overall Length	6.528m
Overall Width	2.495m
Overall Body Height	2.977m
Min Body Ground Clearance	0.327m
Track Width	2.393m
Lock to Lock Time	6.00 sec
Kerb to Kerb Turning Radius	7.850m



Small Articulated Vehicle	
Overall Length	10.700m
Overall Width	2.360m
Overall Body Height	3.604m
Min Body Ground Clearance	0.382m
Track Width	2.240m
Lock to Lock Time	6.00 sec
Kerb to Kerb Turning Radius	5.740m

N.B
CONTRACTOR TO PROVIDE DETAILED TRAFFIC MANAGEMENT LAYOUT FOR APPROVAL BY LOCAL AUTHORITY

REV		DR	CH	PA	DATE

DRAWN BY	CHECKED BY	PASSED BY	DATE
HL	GW	JD	MAY 09

SCALES @ A3 SIZE	ISSUE STATUS
1:750	FINAL

ST. PANCRAS SUBSTATION

ANNEX TRA.02b

CAPITA SYMONDS

DRAWING NUMBER	REV.
CS022511_SP_06b	

N

EXISTING KERBS TO BE BROKEN OUT AND ACCESS WIDENED

R3

R2

PROPOSED KERBLINE TO MATCH EXISTING. ANTICIPATED PCC HB2 KERB WITH NOMINAL 125mm UPSTAND

IN

EXISTING PEDSTRIAN CROSSING

NEW SURFACING TO HIGWAY SPECIFICATION

EXISTING DIVIDING KERBS TO BE CUT BACK TO PROVIDE FOR SWEPT PATH ON ENTRY TO SITE.

PROPOSED TEMPORARY PEDSTRIAN CROSSING. POSITION TO BE AGREED WITH HIGHWAY AUTHORITY

EXISTING PEDSTRIAN CROSSING

Key

- Proposed Tunnel Alignment
- Permanent Site Boundary
- Temporary Site Boundary
- Headhouse
- Shaft Site
- EDFe Site Boundary

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REV		DR	CH	PA	DATE

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SCALES @ A3 SIZE	ISSUE STATUS
1:750	FINAL

ST. PANCRAS SUBSTATION

ANNEX TRA.03

CAPITA SYMONDS

DRAWING NUMBER	REV.
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ENVIRONMENTAL STUDY
ANNEXES OF SUPPORTING INFORMATION

AIR QUALITY

ANNEX AIR.01

POLICIES AND GUIDELINES FOR AIR QUALITY

UK Air Quality Strategy, 2007

Table 1, below, indicates the latest Air Quality Standards (AQS) Objectives and the dates in which achievement is required by the European Union (EU). It should be noted that whilst the UK AQS targets are objectives, the EU dates are mandatory. Consequently, all UK legislation needs to be viewed with regard to EU Air Quality Framework Directive (96/62/EC).

Table 1: Air Quality Objective Values for Pollutants

Pollutant	Objective	Measured As (exceedences)	UK AQS Date	EU Achievement Date
Benzene	16.25 µg/m^3	Running annual mean	31.12.2003	2010
	5 µg/m^3	Annual mean	31.12.2010	
1,3-Butadiene	2.25 µg/m^3	Running annual mean	31.12.2003	n/a
Carbon monoxide	10 mg/m^3	Max daily, running 8 hour mean	31.12.2003	2005
Lead	0.5 µg/m^3	Annual mean	31.12.2004	2005
	0.25 µg/m^3	Annual mean	31.12.2008	
Nitrogen dioxide	200 µg/m^3	1 hour mean (18)	31.12.2005	2010
	40 µg/m^3	Annual mean	31.12.2005	2010
PAHs	0.25 ng/m^3	Annual mean	31.12.2010	2012
PM_{10}	50 µg/m^3	24 hour mean (35)	31.12.2004	2005
	40 µg/m^3	Annual mean	31.12.2004	2005
$PM_{2.5}$	25 µg/m^3	Annual mean	2020	2010
	15 % reduction	Urban background exposure reduction	2010 to 2020	2010 to 2020
Sulphur dioxide	350 µg/m^3	1 hour mean (24)	31.12.2004	2005
	125 µg/m^3	24 hour mean (3)	31.12.2004	2005
	266 µg/m^3	15 minute mean (35)	31.12.2005	n/a

Notes: PAH = Poly Aromatic Hydrocarbons, PM = Particulate Matter

Sources: Air Quality Strategy for England, Wales, Scotland and Northern Ireland (2007) and EU Air Quality Framework Directive 96/62/EC (1996)

Local Air Quality Management Technical Guidance 03 (LAQM TG (03))

Guidance for the assessment of air quality by local authorities is contained in "Local Air Quality Management Technical Guidance LAQM TG (03)[1] Review and Assessment of Air Quality" which outlines three stages of assessment.

The three stages of the review and assessment process are summarised as follows:

[1] Local Air Quality Management Technical Guidance LAQM TG (03), DEFRA 2003

Stage 1: All local sources of the pollutants subject to the UK AQS are listed, together with details of any air quality surveys and investigations that have been previously undertaken. If this information indicates that there is a likelihood of any Objective values being exceeded, then the local authority advances to Stage 2.

Stage 2: A more detailed assessment is undertaken of the areas where exceedences are possible, including details of any air quality monitoring carried out and modelling performed. Modelling is generally of a screening nature, and is similar to the approach contained in the 'Design Manual for Roads and Bridges' (DMRB) Volume 11[2]. If it is concluded that there is a significant risk that AQS Objective levels may not be met, the local authority should advance to Stage 3.

Stage 3: More sophisticated monitoring and modelling is undertaken to determine the extent of any exceedences and the extent by which the Objective values will be exceeded. If Objectives for any pollutants are not likely to be met where members of the public are exposed, the local authority must declare an Air Quality Management Area (AQMA).

When an AQMA is established the local authority should draw up an Action Plan that aims to reduce pollutant concentrations within the AQMA to below the objective levels, and continue the assessment of the pollution levels within the AQMA. In London Boroughs, the recommendations of the Greater London Authority (GLA)[3] must also be incorporated. These include:

(i) Traffic reduction;

(ii) Traffic management;

(iii) Cleaner vehicles;

(iv) Cleaner fuels; and

(v) Increasing public awareness.

The local authority must periodically assess air quality in their entire district through an Updating and Screening Assessment (USA) which identifies changes since Stage 1 that may require further assessment. If there is a risk that changes may be significant, then the local authority is required to undertake a Detailed Assessment (DA), which may lead to the declaration of further AQMAs.

Planning Policy Statement (PPS) 23

PPS 23 Appendix A: 'Matters for Consideration in Preparing Local Development Documents and Taking Decisions on Individual Planning Applications' details the matters of relevance to air quality which may be material in the consideration of individual planning applications where pollution considerations arise. These include:

(i) The possible impact of potentially polluting development (both direct and indirect) on land use, including effects on health, the natural environment or general amenity;

(ii) The environmental benefits that the development might bring, such as reductions in the need to travel and accompanying improvements to transport infrastructure;

[2] Design Manual for Roads and Bridges (DMRB) Volume 11, Highway Agency, 2003

[3] Greater London Authority 'Cleaning London's Air – The Mayor's Air Quality Strategy' Greater London Authority, 2002

(iii) The economic and wider social need for development (including potentially polluting development), such as the provision of a product or service, the generation of secondary trade with local businesses, the creation of new jobs and meeting regional or national environmental objectives;

(iv) The existing, and likely future, air quality in an area, including any AQMAs or other areas where air quality is likely to be poor (including the consideration of cumulative impacts of a number of smaller developments on air quality, and the impact of development proposals in rural areas with low existing levels of background air pollution). The findings of air quality reviews and assessments will be important in the consideration of local air pollution problems and the siting of certain types of development;

(v) The need for compliance with any statutory environmental quality standards or objectives (including the air quality objectives prescribed by the AQS);

(vi) The need to limit, and where possible reduce greenhouse gas emissions and take account of potential effects of climate change; and

(vii) Existing action and management plans with a bearing on environmental quality including AQMA Action Plans prepared by local authorities.

ANNEX AIR.02

BACKGROUND POLLUTANT AND TRAFFIC VALUES

Tables 1 and 2, below, present the background pollutant levels within the Project area used in the air quality assessment dispersion model.

Table 1: Background Pollutant Levels Used in Modelling (µg/m^3)

Road Section	Year	NO_X	NO_2	PM_{10}
A5202 Royal College Street	2004	64.3	37.0	24.8
A503 Camden Road (nr Royal College St)	2004	64.3	37.0	24.8

Source: www.airquality.co.uk

Table 2: Adjusted Background Pollutant Levels Used in Modelling (µg/m^3)

Road Section	Year	NO_X	NO_2	PM_{10}
A5202 Royal College Street	2006	60.0	35.4	24.8
A503 Camden Road (nr Royal College St)	2006	60.0	35.4	24.8

Source: www.airquality.co.uk

Table 3, below, presents the Annual Average Daily Traffic (AADT) flows, based upon a 24 hour period, used within the air quality assessment traffic modelling.

Table 3: Traffic flows Used in Modelling

Location	Base Flow (AADT 2006)	% HGV	Total Additional HGV Traffic
A5202 Royal College Street	12542	7.0	25
A503 Camden Road (nr Royal College St)	33614	8.0	50

NOx to NO_2 Conversion

For the air quality assessment, NO_2 concentrations have been calculated using an empirical approach in accordance with the recommended practice contained within LAQM.TG(03), as shown in the equations below:

$$NO_{2(Road)} = ((-0.068 \times \ln(NO_{X(total)}) + 0.53) \times NO_{X(Road)}$$

$$NO_{X(total)} = NO_{X(background)} + NO_{X(Road)}$$

$$NO_{2(total)} = NO_{2(background)} + NO_{2(Road)}$$

Source: Local Air Quality Management Technical Guidance LAQM TG (03), DEFRA 2003

In 2007 this equation was updated in a report published by Air Quality Consultants Ltd[1] to account for the changing relationship between the NO_X concentration and the NO_2 concentration as observed at monitoring units from across the UK.

[1] An Updated Approach to Deriving NO_2 from NO_X for Air Quality Assessment of Roads, Air Quality Consultants Ltd., 2007

The air quality assessment has therefore used the relationship described in the updated equation for within Greater London, shown below, to calculate NO_2 concentrations from total NO_X concentrations:

$$NO_{2(Road)} = ((-0.0413 \times \ln(NO_{X(total)}) + 0.5225) \times NO_{X(Road)}$$

Source: Air Quality Consultants Ltd

ANNEX AIR.03

BASELINE MONITORING CONDITIONS

Baseline Monitoring

Tables 1 to 4, below, present the baseline air quality monitoring conditions taken from the London Borough of Camden automatic and diffusion tube monitoring networks. The data for the automatic monitoring stations was taken from the London Air Quality website[1], and the diffusion tube data is from the Camden air quality monitoring website[2]. Where there is an exceedence of the relevant AQS Objective, the result is highlighted in bold.

London Borough of Camden:

Table 1: Automatic Monitoring Site (NGR: 526650, 184460) Camden 1 – Swiss Cottage (µg/m^3)

	NO_2		PM_{10}	
Year	Annual Average	1 Hour Exceedences of 200µg/m^3 (18 allowed)	Annual Average	24 hour Exceedences of 50 µg/m^3 (35 allowed)
2008	**75**	**74**	31	21
2007	**77**	**113**	35	**41**
2006	**71**	**39**	37	**52**
2005	**76**	17	37	**54**
2004	-	-	35	**43**

Note: - no data available
Source: www.londonair.org.uk, Feb 2009

Table 2: Automatic Monitoring Site (NGR: 530030, 181251) Camden 3 – Shaftesbury Avenue (µg/m^3)

	NO_2		PM_{10}	
Year	Annual Average	1 Hour Exceedences of 200µg/m^3 (18 allowed)	Annual Average	24 hour Exceedences of 50µg/m^3 (35 allowed)
2008	**77**	5	33	**18**
2007	**75**	**24**	40	**51**
2006	**72**	4	37	**39**
2005	**75**	2	34	23
2004	**72**	0	34	33

Source: www.londonair.org.uk, Feb 2009

[1] www.londonair.org.uk, Feb 2008
[2] www.camdenair.aeat.com, Feb 2009

Table 3: Automatic Monitoring Site (NGR: 530123, 182014) Bloomsbury (µg/m^3)

	NO_2		PM_{10}	
Year	Annual Average	1 Hour Exceedences of 200µg/m^3 (18 allowed)	Annual Average	24 hour Exceedences of 50µg/m^3 (35 allowed)
2008	**54**	0	26	10
2007	**61**	6	29	15
2006	**57**	0	30	21
2005	**57**	1	26	5
2004	**58**	0	26	7

Source: www.londonair.org.uk, Feb 2009

Table 4: NO2 Diffusion Tubes, London Borough of Camden (µg/m3)

		2007	2006	2005
Site Location	Code	Annual Average	Annual Average	Annual Average
Argyle School, Tonbridge St	CA1	**50.2**	-	-
Robert St	CA2	**48.2**	-	-
Gospal Oak School, Mansfield Rd	CA3	**40.4**	-	-
Euston Rd	CA4	**91.2**	**90.6**	**88.33**
Drummond St/Cobourg St	CA5	**48.1**	-	-
Wakefield Gardens	CA6	**49.6**	**48.5**	**41.25**
Frognal Way	CA7	28.7	**41.7**	33.22
La Sainte School, Croftdown Rd	CA8	31.4	-	-
63 Gower St	CA9	**94.9**	-	-
Tavistock Gardens	CA10	**46.3**	-	-
Tottenham court Rd	CA11	**101.1**	-	-
Lincoln's Inn Field	CA12	**46.6**	-	-
British Library	CA13	**54.5**	-	-
Russell Square Gardens	CA14	**44.3**	**54.6**	**55.11**
Finchley Road	CA15	**81.5**	**84.3**	**77.88**
Kentish Town Road	CA16	**66.6**	**69.0**	**65.34**
St Mary's School, 47 Fitzjohn's Ave	CA17	**63.6**	-	-
Gloucester Ave/Parkway	CA18	**53.6**	-	-
Inverness St	CA19	**52.6**	-	-
Brill Place	CA20	**51.5**	**51.3**	**50.93**

Note: - no data available
Source: www.camdenair.aeat.com, Feb 2009

ENVIRONMENTAL STUDY
ANNEXES OF SUPPORTING INFORMATION

NOISE AND VIBRATION

ANNEX NOI.01

POLICIES AND GUIDELINES FOR NOISE AND VIBRATION

Legislation

Control of Pollution Act 1974

Sections 60 of the Control of Pollution Act (CoPA) 1974 enables a Local Authority to serve a notice on a person or company who is carrying out, or who are planning to carry out, works of, among others, construction and demolition. This is in order to control the noise from these operations.

The CoPA also enables the person or company to apply to the Local Authority for consent to carry out such works (construction and demolition). The application must contain particulars of the works to be carried out and the steps proposed to be taken to the minimise noise that would result from the works.

Consent by the Local Authority may contain conditions of how and when the works are to be undertaken.

Environmental Protection Act 1990

The Environmental Protection Act 1990 (Part III) contains legislation with regard to statutory nuisances within England, Wales and Scotland. The legislation gives power to Local Authorities to issue an abatement notice if a noise nuisance is present regardless of any previous agreements.

Under the Environmental Protection Act 1990 Part III (Paragraph 12.12) noise emitted from construction sites can be deemed a statutory nuisance. However, under Section 61 of CoPA if compliance with consent has been obtained it can be used as a defence to statutory nuisance proceedings brought about by the relevant Local Authority, and it can show that the 'best practicable means' were used to prevent or to counteract the effect of the nuisance.

Local Authority Policies

London Borough of Camden (LB Camden)

Unitary Development Plan:

Policy SD7B located within Section 1 of the LB of Camden's Unitary Development Plan (UDP), 2006, identifies the LB of Camden's policy on noise and vibration with regard to the granting of planning permission for future developments.

Policy SD7B states: *"Unless appropriate attenuation measures are available and are included, the Council will not grant planning permission for:*

a) development likely to generate noise/vibration pollution; or

b) development sensitive to noise/vibration in locations with noise/vibration pollution.