

Victoria Station Upgrade

Supplementary Environmental Statement:

Technical Appendix E—Code of Construction Practice

DRAFT (Rev. D) July 2008

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Contents

0	Abbreviations	4
1.	Introduction	5
1.1	Document Status / Origin / Future Development	5
1.2	Purpose and application of the Code.....	6
1.3	The works – objectives and scope.....	8
2	General Principles	9
2.1	Construction Strategy	9
2.2	Environmental Principles	9
2.3	Health and Safety Principles.....	10
2.4	Site Management	11
2.5	Community Consultation & Liaison / Helpline	12
2.6	Approvals Process.....	13
2.7	References - General Principles.....	13
3	General Site Operations	14
3.1	Construction Process.....	14
3.2	Working Hours.....	14
3.3	Site Layout and Facilities.....	17
3.4	Site Security	18
3.5	Site Lighting.....	18
3.6	Emergency Planning and Response	19
3.7	Fire Prevention and Control.....	20
3.8	Cranes	20
3.9	Unexploded Ordnance.....	21
3.10	Electromagnetic Interference.....	21
3.11	Green Travel Plan	21
3.12	Construction Camps	21
3.13	References - General Site Operations.....	21
4	Public Access and Highway	23
4.1	General Requirements.....	23
4.2	Traffic Management Plan.....	23
4.3	Works Affecting Highways and Public Rights Of Way	23
4.4	Highway Reinstatement.....	24



4.5	Road Cleanliness	24
4.6	Lorry Controls	25
4.7	References - Public Access and Highway	25
5	Noise and Vibration	26
5.1	General.....	26
5.2	Procedures	26
5.3	Specific Provisions	26
5.4	References – Noise and Vibration	28
6	Air Quality.....	29
6.1	General.....	29
6.2	Vehicle and Plant Emissions	29
6.3	Dust	31
6.4	Odour.....	33
6.5	References - Air Quality / Dust Control.....	33
7	Water Resources	34
7.1	General.....	34
7.2	Site Drainage.....	34
7.3	Control of Pollution of Surface Water	34
7.4	Control of Pollution of Groundwater.....	35
7.5	Control of Groundwater Flooding.....	35
7.6	Dewatering	36
7.7	References - Water Resources	37
8	Contaminated Land	38
8.1	Introduction.....	38
8.2	Site Assessment and Remedial Practice	38
8.3	References – Contaminated Land.....	40
8.3.1	<i>Contaminated Land</i>	40
9	Materials and Waste & Energy Management.....	42
9.1	Materials and Wastes - General	42
9.2	Materials - Procedures.....	43
9.2	Asbestos.....	45
9.4	Energy Management	46
9.5	References - Waste and Energy Management.....	46
9.6	References - Asbestos	47
10	Ecology and Nature Conservation.....	48



10.1	General / Protected Species.....	48
10.2	Protection of Trees	48
10.3	References - Ecology and Nature Conservation.....	48
11	Archaeology and Built Heritage.....	49
11.1	General.....	49
11.2	Procedures	49
11.3	Specific Provisions	49
12	Settlement.....	51
12.1	General.....	51
12.2	Specific Provisions	51

Appendix 1 - Contents of CoCP Part B

Appendix 2 - Noise levels & provisions for Noise Insulation and Further Mitigation

Appendix 3 - Westminster City Council CoCP



0 Abbreviations

BPM = Best Practicable Means
BS = British Standard
CDM = Construction (Design and Management) Regulations
CoPA = Control of Pollution Act 1974
CoCP = Code of Construction Practice
CoW = Westminster City Council
CSD = Corner Site Development
EA = Environment Agency
EHO = Environmental Health Officer
ES = Environmental Statement
GLA = Greater London Authority
LFEPA = London Fire and Emergency Planning Authority
LUL = London Underground Limited **
NTH = Northern Ticket Hall
SEMP = Site Environment Management Plan
SI = Site Investigation
STH = Southern Ticket Hall
SWMP = Site Waste Management Plan
TCPA = Town & Country Planning Act(s)
TfL = Transport for London
TMP = Traffic Management Plan
TWA = Transport & Works Act
VL = Victoria Line
VSU = Victoria Station Upgrade

*** Where appropriate to the context 'LUL' should be taken as including those acting on behalf of LUL including consultants and contractors appointed by LUL*



1. Introduction

1.1 Document Status / Origin / Future Development

- 1.1.1 The status of this document is WORKING DRAFT and it will remain so until agreed with CoW. It is a working document for discussion during the period leading up to and beyond the submission of a Transport and Works Act Order application in late 2007 with a view to reaching agreement with CoW in early 2008. It will remain subject to review to reflect changes in construction industry practice etc
- 1.1.2 The provisions of the Code are based (so far as is relevant) on the Crossrail CoCP (April 2005 draft). The reason for this is that many aspects of the Crossrail proposals are comparable with those of VSU in terms of the type of work and their locations in Central London. Also, the Crossrail code has already been the subject of discussions involving both LUL and CoW.
- 1.1.3 CoW has produced its own CoCP and in the Preamble it states: The City Council will aim to impose the CoCP on developers and contractors as a condition of development during the planning process or by prior agreement. The developers of major projects within Westminster must comply with the CoCP, and must ensure that their contractors and subcontractors comply with it. LUL will ensure that compliance with CoW's code is a condition of the VSU contract(s). Contractors must prepare a Site Environmental Management Plan (SEMP) to demonstrate how they will comply with the requirements of the CoCP.
- 1.1.4 CoW's Code is set out as an Appendix to this Draft Code. For obvious reasons it is less specific about some aspects of the work than the VSU Code. There is some duplication between the two Codes but to a large extent the two are complementary. Provisions in the CoW Code include a requirement for an SEMP and details about liaison with the Environmental Inspectorate of CoW. The principle of SEMP's and working with the Environmental Inspectorate is fully accepted by LUL.
- 1.1.5 CoW also runs a Considerate Builders Scheme (CBS) to promote high standards on all building sites and VSU contractors will be



members of the CBS. It is anticipated that membership of the CBS would not give rise to any significant requirements over and above those contained in this CoCP

1.1.6 Discussions with CoW leading to the finalisation of the VSU code will include how the two codes should be further integrated to work together and whether it would be appropriate and/ or necessary for VSU contractors to join the CBS.

1.2 Purpose and application of the Code

1.2.1 It is intended that this Code of Construction Practice (CoCP) will apply so as to control possible impacts arising from the construction of VSU. It will be applied to all construction works. Accordingly, LUL will take steps to ensure that all parties involved in the construction work, including contractors, sub-contractors and their suppliers, will observe the relevant provisions of the CoCP..

1.2.2 This CoCP sets out standards and procedures for managing the environmental impact of constructing VSU. It covers the environmental, public health and safety aspects of the project that may affect the interests of local residents, businesses, the general public and the surroundings in the vicinity of the proposed construction site.

1.2.3 The CoCP is split into two parts. This document is Part A, which sets out:

- The context and underlying principles of the CoCP.
- The principal obligations on contractors and developers when undertaking work.
- The general measures to be used during construction, and how they will be applied by the contract and enforced by CoW.
- The details of the measures for each relevant environmental topic.

1.2.4 Part B of the CoCP will be developed by LU and its main Contractor when appointed to supplement Part A and will identify detailed site-specific measures, taking into account the



environmental issues at each work site, such as site set up and servicing arrangements. Part B will include, but not be limited to:

- conditions imposed on planning permissions;
- assurances given in relation to planning and other consents;
- Site Environment Management Plan (SEMP) and other Environment Management Plans to be produced /co-ordinated by the main contractor (see Appendix 1 for list); and
- consents obtained /co-ordinated by the main contractor under Section 61 of the Control of Pollution Act

1.2.5 The purpose of the CoCP is to ensure that impacts upon the environment are taken into account according to best practice. Overall, it aims to mitigate nuisance to the public and to safeguard the environment.

1.2.6 The Code may be revised from time to time in light of discussions with the local planning authority and/or other affected parties. "Construction" in the Code includes site preparation (including remediation and / or ground treatment, where appropriate), demolition, material delivery, excavated material disposal, waste removal and all related engineering and construction activities. Testing and commissioning are NOT "Construction" activities. Site investigations and / or advance works carried out under the terms of permitted development or planning permission granted before the making of the TWA Order may be subject to different provisions where appropriate.

1.2.7 LU and/or other parties exercising its functions will hold discussions with the local authority and other statutory agencies as appropriate in advance of submissions for approval.



1.3 The works – objectives and scope

1.3.1 The main objectives of VSU are to provide congestion relief, capacity enhancement for future usage, and better access (including step free provision) to the Underground station and thus improve operating capability. In particular VSU aims to improve access and egress to/from the Victoria Line (VL) platforms. This will enable the benefits to passengers that will arise out of the planned improvements in train service resulting from delivery of the VL Upgrade to be fully realised in tandem with meeting current and future demand and reducing congestion and journey times. The main elements of the proposed works are:

1. A new sub-surface Northern Ticket Hall (NTH) under Bressenden Place.
2. Access to the NTH from the east side of Bressenden Place (Cardinal Place) close to Victoria Street.
3. Access to the NTH from Victoria Street on the west side of Bressenden Place (see below).
4. The expansion of the existing VL sub-surface Southern Ticket Hall (STH) under Wilton Road and the area known as 'The Beach' in front of the mainline station.
5. Improved accesses to the STH from the Network Rail Station and 'The Beach'.
6. New lifts to provide step free access between street and VL platforms, and VL and D&C platforms.
7. New sub-surface escalator shafts and a sub-surface pedestrian link between the new and expanded ticket halls.
8. LU ventilation and other plant (some of which will replace existing plant) including works forming part of the Cooling the Tube Project carried out as part of VSU works.
9. Modernisation of Victoria Underground station.



2 General Principles

2.1 Construction Strategy

2.1.1 A construction strategy has been developed with the following objectives:

- (a) to meet the requirements of all relevant legislation, codes of practice and standards;
- (b) to limit adverse impacts on the local community and the environment so far as reasonably practicable;
- (c) to minimise impacts on the Victoria Palace and Apollo Theatres and other local businesses so far as is reasonably practicable;
- (d) to implement a community liaison plan including a help-line;
- (e) to minimise disruption to the highway network and bus services so far as is reasonably practicable;
- (f) to limit impacts on the operations of Network Rail, London Underground and other rail companies so far as is reasonably practicable;
- (g) to carry out the planning and delivery of the project in a cost effective manner; and
- (h) to co-ordinate with other relevant projects as far as reasonably practicable to reduce the combined impacts.

2.2 Environmental Principles

2.2.1 LU is committed to ensuring that VSU is built, where reasonably practicable, in accordance with current best practice for minimising the environmental effects of construction.

2.2.2 LU will review environmental performance in the selection process for tenderers and will require tenderers for the main construction contracts to have an Environmental Management System (EMS) which is consistent with the principles of BS EN ISO14001 before being included on tender lists and which will deliver the works in accordance with the provisions of this Code.



2.3 Health and Safety Principles

- 2.3.1 LU is committed to ensuring the health, safety and welfare of its employees and people who may be affected by the conduct of its undertaking. LU will apply appropriate industry standards for health and safety and will seek continuous improvement in safety performance, in accordance with the principles of HSG65 "Successful health and safety management", published by the Health & Safety Executive.
- 2.3.2 **LU and those acting on its behalf will ensure that adequate arrangements are in place for the discharge of all duties as named parties under the Construction (Design & Management) Regulations 2007 (CDM).** LUL will assess the competence and resources for health and safety of organisations appointed as other duty-holders under CDM, and will monitor compliance with discharge of its own and others' CDM duties throughout the project.
- 2.3.3 LUL will ensure the development of a health and safety management system in accordance with the principles of OHSAS 18001 "Occupational health and safety management systems". This system will include documentation defining LUL's internal arrangements for managing health and safety on the project and the specific requirements for health and safety applying to all designers and contractors appointed to work on the project.
- 2.3.4 LUL will ensure that all contractors appointed to carry out work on the VSU project, produce a Health and Safety Plan, defining how their work and associated risks to health and safety will be managed.
- 2.3.5 LUL's arrangements for health and safety will include a system for management of risks. At the time of contract appointment the contractor will be presented with a Project Risk register, as part of the Client's Health & Safety File submission. Subsequently, the contractor's responsibilities will include that all hazards are identified, on an ongoing basis throughout the life of the project, suitable and sufficient assessments are made of the associated risk, followed by adoption and execution of appropriate measures to eliminate the risk or to control the risk, so far as is reasonably practicable. Where risks to the public are involved, these will be reduced to as low as reasonably practicable (ALARP), and will be managed in accordance with the guidance in HSG151 "Protecting the Public" published by the Health & Safety Executive. Tunnelling works will be required to comply with the requirements



of ABI Construction Code for risk management in tunnelling works.

- 2.3.6 LUL will continuously monitor the work of contractors and will conduct a programme of audits and inspections to ensure compliance with the requirements of this Code and other project health and safety requirements.

2.4 Site Management

General

- 2.4.1 Contractual arrangements will require all VSU contractors to provide suitably qualified staff to manage and execute works in which they are involved. LUL will require that all contractors have an appropriate awareness of local sensitivities, expected code of conduct, working knowledge of the legislation, codes of practice, and guidance relevant to the various construction activities in which they are engaged.

Environmental Management Plans

- 2.4.2 This Code requires the production of a number of Environmental Management Plans (EMPs) including one or more SEMP, Traffic and Site Waste Management Plans (TMPs and SWMPs). These plans will set out the environmental objectives / targets of the project, how the project will deliver the environmental requirements, and how environmental issues that arise are to be handled to ensure compliance with relevant legislation and regulations and this Code. The requirement for EMPs will be reviewed with CoW and other statutory agencies through the consultation process on this Code. The plans will define the approach to address all relevant environmental issues and will set out how LUL intends to operate the construction and work sites and will set out the specific control measures necessary to deliver the requirements of the Code.

Training and Competence

- 2.4.3 LUL will require contractors to employ an appropriately qualified workforce, which may include holding a card from an appropriate recognised competence scheme, such as the Construction Skills



Certification Scheme or the appropriate LU safety induction scheme for working on or close to the railway. LUL will require Contractors to operate induction schemes for all personnel to ensure that they are aware of their individual responsibility to comply with the Code. The Contractor will be responsible for identifying the training needs of his personnel to ensure that appropriate training is provided. The training will include information on local considerations and the Client's expectations on site behaviours, "toolbox talks" for site operatives to maintain an appropriate level of awareness on health, safety and environmental topics and to advise employees of changing circumstances as work progresses. Records will be kept of attendance.

2.5 Community Consultation & Liaison / Helpline

- 2.5.1 LUL and/or Contractors will be committed to providing community relations personnel, who will be focussed on engaging with the community to provide appropriate information and to be the first line of response to resolve issues of concern. LUL will take reasonable steps to engage with all residents including those who may be differentially affected by construction impacts. LUL will ensure that occupiers of nearby properties will be informed in advance of works taking place, including the duration. In the case of work required in response to an emergency, the LA and local residents shall be advised as soon as reasonably practicable that emergency work is taking place.
- 2.5.2 When appropriate meetings will be held with residents (or their representatives) and other local occupiers to keep them informed about the works and to provide a forum for them to express their views. CoW will be invited to participate.
- 2.5.3 LUL will maintain a telephone helpline service staffed 24 hours per day during the main construction period to handle enquiries and concerns from the general public. It will also act as a first point of contact and information in the case of any emergency. All calls will be logged, together with a record of the responses and action taken. Appropriate contacts and response times will be the subject of a detailed procedure to be agreed prior to the commencement of construction. provided promptly. Potentially affected occupiers will be notified of the Helpline number and it will be widely advertised and displayed on site signboards. Details of how to contact the helpline service will also be available on the VSU website (www.tfl.gov.uk/vsu).



2.5.4 A Complaints Register will be maintained and a copy will be provided to CoW each month (or such other interval as is agreed with CoW).

2.6 Approvals Process

2.6.1 It is proposed to obtain approval for VSU primarily by means of an Order under the Transport and Works Act 1992 (TWA) for the main part of the works together with planning permission for these works.

2.6.2 LUL will implement a project approval process to ensure that all other appropriate approvals and clearances are obtained before a specific element of the works is started.

2.7 References - General Principles

- Construction (Design & Management) Regulations 2007.
- OHSAS 18001: Occupational health and safety management systems.
- HSG151: Protecting the Public - published by the Health & Safety Executive.
- HSG65: Successful health and safety management, published by the Health & Safety Executive.
- BS EN ISO14001 - Environmental Management Systems.



3 General Site Operations

3.1 Construction Process

3.1.1 Although the construction of VSU will be confined to a limited area it will be taking place at a location that forms a key hub of the rail and highway network. VSU is a major construction project and will involve many different types of construction activities. These activities will include: demolition; site clearance; site investigation; remediation (as necessary); tunnelling; piling; excavation; services diversion and new installations; highway works; below ground and surface building works. It will also involve extensive changes / modifications to LUL ventilation, communication and other installations and plant.

3.2 Working Hours

3.2.1 Details of working hours will be the subject of submissions under Section 61 of the control of Pollution Act which shall be made to Westminster City Council. No construction works will be undertaken outside normal working hours unless formal consent under S61 has been obtained. Only general principles relating to the types of activity for which it is likely to be necessary to seek S61 consent for working outside normal working hours are set out here.

3.2.2 Normal working hours are planned to be from 0800 to 1800 on weekdays and 0800 to 1300 on Saturdays. Where feasible, operations likely to cause disturbance and/or disruption will be limited to these hours.

3.2.3 In addition start up and shut down activities will take place for up to one hour before and after these times. Start up and shut down activities can include but are not limited to:

- maintenance
- site briefings, meetings and training

3.2.4 Start up and shut down activities will NOT include operation of plant or machinery giving rise to noise likely to exceed noise trigger levels for noise insulation. These are to be defined as part of a noise and vibration study which will be included in the ES for the VSU TWA Order (see also Section 5.1 of this document). The start up and



shut down periods shall not be regarded as extensions to normal working hours and particular care will be taken to limit and control disturbance to local residents during such periods.

- 3.2.5 Non-disruptive preparatory work, repairs and maintenance may be carried out on Saturday afternoons or Sundays between 0800 and 1700.
- 3.2.6 LUL will generally adhere to normal working hours as far as reasonably practicable but, because of their location in a busy commercial area and close to two theatres, it may be that some works would cause less disturbance and/or disruption if carried out wholly or partly outside normal working hours.
- 3.2.7 For example some works may be scheduled outside normal working hours instead of taking place at the same time as a daytime performance in one of the theatres.
- 3.2.8 Proposals for working outside normal working hours will be discussed with Westminster City Council in the context of the full information available in Section 61 applications.
- 3.2.9 There are some types of work that necessarily have to take place outside normal working hours or, being non-disruptive, can reasonably do so. These include:
- Tunnelling works together with directly associated activities will normally be carried out on a 24 hour per day, 7 days per week basis. Once tunnelling has commenced it may need to continue uninterrupted for reasons of engineering practicability and safety.
 - Internal structural modification and fit out works within the underground parts of the station including electrical, communications, ventilation and signalling works. This work involves complex and time consuming work but is non-disruptive. Also some of it will have to take place at night when the Underground is closed or during possessions / station closures (which are most likely to occur at night, weekends and/or in bank holidays) or at other such times as are necessary for safety critical works.
 - In order to safeguard the works it may be necessary for certain items of construction plant and equipment particularly associated with the tunnelling operations to be kept running 24 hours per day,



7 days per week which would include pumps, ventilation fans, cranes, compressors, batching plants and possibly generators. Any such equipment will be shielded in order to provide appropriate noise attenuation.

- Works which require temporary possession of roads and railways, or which need to take place during non (rail) traffic hours or when volumes of road traffic are low, for reasons of safety, engineering practicability or operational requirements. Such works are likely to include demolitions and construction work close to existing LUL infrastructure. Limiting disruption to the travelling public may also be a factor with regard to such works.
- Works in connection with utilities which have to be undertaken when demand is low.
- Operations which for reasons of engineering practicability must be completed once commenced and which cannot be completed within a working day (eg. a major concrete pour and certain piling operations).

- 3.2.10 Times at which such works could need to take place may include Saturday afternoons, night-times, Sundays and/or bank holidays from time to time.
- 3.2.11 In the case of work required in response to an emergency or which, if not completed, would be unsafe or harmful to the permanent works, the local authority will be informed, as soon as reasonably practicable, of the reasons for, and likely duration of, the works. The local authority will provide a telephone number and nominate an office to receive such notification, which will be reviewed regularly. Examples of the type of work envisaged would include where pouring concrete takes longer than planned due to equipment failure or where unexpected poor ground conditions, encountered whilst excavating, require immediate stabilisation.
- 3.2.12 Where work has to be rescheduled for reasons not envisaged and is expected to extend beyond the agreed or normal working hours or exceed the agreed limits and dispensation to the Section 61 consent, the contractor will apply for a variation to the section 61 consent to the relevant local authority at least 14 days in advance of the start of those works, or within an appropriate timescale to be agreed with the local authority.
- 3.2.13 Where rescheduling relates to work of a critical nature (such as key activities likely to delay other key activities) applications will be made where practicable 48 hours in advance and no less than 7



days in advance if the work is expected to last for a period of 5 days or more. The variation will be sought by means of an application setting out the revised construction programme or method and the relevant noise calculations.

3.2.14 Where such working outside normal hours has been discussed and accepted, nearby occupiers who are likely to be affected by the works will be informed as soon as reasonably practicable by LUL about the nature and likely duration of the works.

3.2.15 Deliveries will be arranged to minimise impacts on the road system as far as reasonably practicable although loading and unloading will normally take place during normal working hours. However there are good reasons why it may be necessary for this activity to take place at other times (eg. large loads or to minimise disruption). Each case will be considered on its merits and will be the subject of prior agreement with CoW. A procedure for obtaining prior agreement will be established.

3.3 Site Layout and Facilities

3.3.1 LUL will ensure, as far as reasonably practicable and appropriate, that the site layout and appearance will be designed using the following principles:

- (a) the site(s) will be screened and fully secured;
- (b) storage sites, fixed plant, machinery, equipment and temporary offices will be located to limit environmental effects, as far as reasonably practicable, and having due regard to neighbouring accommodation, as far as allowed by the constraints of the site(s);
- (c) site lighting will be located and directed so as not to intrude into adjoining land or constitute a road hazard; and
- (d) fixed site plant and facilities will be powered from mains electrical sources.



- 3.3.2 LUL will ensure, as far as reasonably practicable, that the visual intrusion of construction sites on nearby residents and users of local facilities and amenities is contained and limited. LUL will display a contact name, telephone number and address, and the Helpline number at appropriate locations on the boundaries of the site(s).
- 3.3.3 The type of hoarding or fencing used and vehicle access and egress points will be agreed with CoW. Signage, decoration, or enhancement, for information or aesthetic purposes, on the hoarding will be in accordance with LUL's corporate requirements.
- 3.3.4 LUL will promote and enforce a "good housekeeping" policy on the construction sites to ensure that they are clean, tidy and safe. Arrangements will be implemented to provide effective preventative pest control and prompt treatment of any pest infestation.
- 3.3.5 LUL will ensure that appropriate welfare facilities are provided including toilets, showers, locker rooms and first aid posts. The facilities will be connected to mains services and drainage, where reasonably practicable.

3.4 Site Security

- 3.4.1 LUL will ensure that the construction site(s) is secure and staffed for security on a 24-hour basis. Access to the site will be limited to specified entry points only and all personnel entries / exits will be recorded and monitored for both security and health and safety purposes.
- 3.4.2 The site boundary will be secured and constructed such that it minimises opportunities for unauthorised entry. The boundary will be monitored both directly and remotely (by CCTV) by the contractor / contractor's security team. Should the site boundary suffer damage then it will be immediately rectified by the contractor to the satisfaction of the client.

3.5 Site Lighting



3.5.1 Site lighting and signage will be provided to ensure the safety and security of the construction site(s) and will be at the minimum luminosity necessary. Where appropriate, lighting to site boundaries will be provided and illumination will be sufficient to provide a safe route for the passing public. In particular, precautions will be taken to avoid shadows cast by the site hoarding on surrounding footpaths and roads. Appropriate industry standard procedures will be implemented. This will include that lighting will be positioned and directed so as not to unnecessarily intrude on adjacent buildings and land uses and so as to prevent unnecessary interference with local residents or passing motorists.

3.5.2 The lighting will be designed to comply with the provisions of BS5489, Code of Practice for the Design of Road Lighting, where applicable. Further guidance is contained within Guidance Notes for the Reduction of Light Pollution, 2000, published by the Institute of Lighting Engineers.

3.6 Emergency Planning and Response

Emergency Procedures

3.6.1 LUL will ensure that emergency procedures for each work site are developed. The procedures will be standardised as far as possible across the work sites and will be appropriate to the anticipated hazards and the specific layout. The emergency plan will include emergency pollution control measures that will take into account Environment Agency (EA) guidelines. The emergency procedure will contain emergency phone numbers and the method of notifying local authorities and statutory authorities. Contact numbers for the key LUL and Contractor's staff will also be included.

Emergency Access



3.6.2 LUL will ensure that the requirements of the London Fire and Emergency Planning Authority (LFEPA) will be followed for the provision of site access points. Where appropriate, the accesses will be designed to the requirements of LFEPA Publication: Fire Safety Guidance Note Number 29 "Access for Fire Appliances". The accesses, if varied over time, will be notified to the emergency services in accordance with procedures and processes agreed prior to start of construction. In all cases the arrangements put in place will also be suitable for and agreed with the London Ambulance Service (LAS).

3.7 Fire Prevention and Control

3.7.1 All construction sites & associated accommodation and welfare facilities will have in place appropriate plans and management controls to prevent fires. The site fire plans will be prepared, regularly reviewed, and updated as necessary, and will have due regard to the following documents:

- (a) Fire Prevention on Construction Sites (Joint Code of Practice on the Protection from Fire of Construction Sites & Buildings Undergoing Renovation)
- (b) Fire Safety in Construction Work (HSG 168)

3.7.2 During detailed construction planning and design development stages, LUL will look to reduce fire risk and potential fire load applicable to the works and the operating station. The specification of non-combustible materials, products and packaging will be pursued wherever reasonably practicable. The project will also have to comply with any third party requirements as may be appropriate at specific sites, such as those of Network Rail.

3.8 Cranes

3.8.1 Crane arcs will be confined within the site boundary unless agreed otherwise with the local authority and property owners/occupiers whose air space is affected. LUL will obtain the relevant permissions from TfL or CoW as appropriate for cranes located adjacent to roads. Cranes will be operated in accordance with the requirements of BS 7121, Code of Practice for Safe Use of Cranes.



3.9 Unexploded Ordnance

- 3.9.1 A risk assessment will be completed for the possibility of unexploded ordnance being found on the site(s) and a response process will be included in the emergency procedures. An emergency response procedure will be prepared and implemented to respond to unexploded ordnance.

3.10 Electromagnetic Interference

- 3.10.1 LUL will consider the effects of electromagnetic interference on wireless telecommunication systems during the design and construction of VSU, which will include site specific effects from the demolition of buildings and the installation of tower cranes.

3.11 Green Travel Plan

- 3.11.1 LUL will produce a green travel plan for the project. The plan will be developed to encourage the use of public transport by those working on the project.

3.12 Construction Camps

- 3.12.1 None are proposed

3.13 References - General Site Operations

- BS 5489-1: 2003 – Code of practice for the design of road lighting – Part 1: Lighting of roads and public amenity areas.
- Guidance Notes for the Reduction of Light Pollution, 2000, published by the Institute of Lighting Engineers.
- BS 7121, Code of Practice for Safe Use of Cranes.
- LFEPA Fire Safety Guidance Note Number 29 – Access for Fire Appliances
- Fire Prevention on Construction Sites – Joint Code of Practice on the Protection from Fire of Construction Sites and Buildings Undergoing Renovation published by the Construction Federation and the Fire Protection Association.



- HSG 168: Fire Safety in Construction Work published by the Health & Safety Executive.



4 Public Access and Highway

4.1 General Requirements

4.1.1 LUL will ensure that legal requirements for works affecting highways are implemented and shall undertake the works in such a way as to maintain, as far as reasonably practicable, existing public access routes and rights of way during construction. Detailed proposals will be set out in a Traffic Management Plan (TMP). LUL will endeavour to limit undue inconvenience to the public as far as reasonably practicable whilst carrying out the works. The VSU TWA Order will include provisions for stopping up and diversion of highways, together with protective provisions for highway authorities.

4.2 Traffic Management Plan

4.2.1 A TMP (or TMPs) will be produced, co-ordinated and then implemented by the main contractor. The plan will be prepared in consultation with highway and traffic authorities and the emergency services. The TMP(s) will include:

- site boundaries and the main access/egress points for the worksites;
- temporary and permanent closures and diversions of highways;
- the strategy for traffic management including parking; and
- local routes to be used by lorries generated by construction activity, including lorry holding areas, lorry route signing strategy, means of monitoring lorry use and any routes prohibited from use.

4.3 Works Affecting Highways and Public Rights Of Way

4.3.1 LUL and its contractor will comply with any relevant requirements that may be detailed in the VSU TWA Order before commencing works that will involve interference with the highway. All necessary consents and licences will be obtained in advance. [NOTE: 'Highway' includes all land vested in CoW or TfL for highway purposes including footways]. All temporary closures of highways and public rights of way will be for as short a time as reasonably practicable. Pedestrian access to premises will be maintained. As far as reasonably practicable, diversion routes will be provided prior to the commencement of the relevant parts of the



works and will be maintained to a comparable standard of those that they replace. Suitable signage and barriers will be provided. Local residents and businesses will be informed in advance of the dates and durations of closures and, with the exception of emergency works as referred to above, will be provided with details of diversion routes a minimum of two weeks in advance, or when final details are available.

4.4 Highway Reinstatement

4.4.1 Where temporary alterations to the highway are required, the highway will be restored to the reasonable satisfaction of the relevant highway authority. Surveys will be used to establish the condition of the highway prior to the commencement and after the completion of the VSU works. The locations where surveys will be undertaken will be identified in the TMP.

4.5 Road Cleanliness

4.5.1 All reasonably practicable measures will be put in place to avoid/limit and mitigate the deposition of mud and other debris on the highway. These measures will have regard to the nature and the use of the site and could include:

- hardstandings at the access and egress points which will be cleaned at appropriate intervals;
- vehicle wash down points to clean vehicle wheels at each exit point on to the highway;
- the correct loading of vehicles and sheeting of loads where necessary to avoid spillage during their journeys; and
- the use of mechanical road sweepers combined with water sprays for the suppression of dust to clean site hardstandings and roads and footpaths in the vicinity of the site.

4.5.2 After completion of any works affecting a highway, all surplus materials arising from the works will be cleared from the highway, leaving it in a clean and tidy condition in accordance with the reasonable requirements of the highway authority.



4.6 Lorry Controls

4.6.1 Details of local routes to be used by construction lorries will be set out in the TMP. As far as reasonably practicable, there will be no parking of lorries on the highway in the vicinity of any worksite except in specified holding areas for delivery or removal of materials from the site. An appropriate control system will be implemented for the dispatch of all vehicles containing excavated material, demolition materials or other waste material. Waste will be controlled and deposited in accordance with relevant legislation. Signs identifying the VSU project and contractor contact numbers will be displayed in a prominent position on vehicles carrying project waste on public roads.

4.7 References - Public Access and Highway

- Transport Act 1968
- Highways Act 1980
- Road Traffic Regulation Act 1984
- Road Traffic Act 1988
- New Roads and Street Works Act 1991
- Traffic Management Act 2004
- BS 7121: Code of Practice for the Safe Use of Cranes.



5 Noise and Vibration

5.1 General

5.1.1 LUL will, as far as reasonably practicable, seek to control and limit noise and vibration levels so that affected properties and other sensitive receptors are protected from excessive noise and vibration levels associated with construction activities. LUL will apply Best Practicable Means (BPM), as defined under Section 72 of the Control of Pollution Act (CoPA) 1974, to all activities. LUL will obtain consents from CoW under the CoPA 1974, Section 61 (S61) on noise limits (and vibration limits where relevant) for the proposed construction works. Site specific management and mitigation requirements for noise and vibration, both on and off-site, will be defined in the S61 consents. By exception certain activities not anticipated to be noise sensitive such as site investigation and site set up may be agreed with the local authority such that a S61 will not be necessary.

5.2 Procedures

Monitoring

5.2.1 LUL will undertake appropriate monitoring as agreed in advance with CoW. The results of any noise and vibration monitoring will be made available, as required, to CoW. Access to the sites will be facilitated at all reasonable times for inspection and/or noise measurements by the local authority environmental health personnel, following appropriate site specific induction and/or health and safety training.

5.3 Specific Provisions

Selection and Use of Equipment

5.3.1 LUL will require that each item of plant used on the project is operated in compliance with the noise limits quoted in the relevant European Commission Directive 2000/14/EC/United Kingdom Statutory Instrument (SI) 2001/1701. LUL will adopt the recommendations set out in Annex B of Part 1 of BS 5228, and



Sections 7.3 and 9.2 of Part 4 of BS 5228, with regard to noise and vibration mitigation options. Where alternative authoritative guidance and procedures are thought to be more reasonable and have been agreed in advance with CoW, these may be adopted in place of the aforementioned. Plant and equipment liable to create noise and/or vibration whilst in operation will, as far as reasonably practicable, be located away from sensitive receptors. The use of barriers to absorb and/or deflect noise away from noise sensitive areas will be employed where required and reasonably practicable. All plant, equipment, and noise control measures applied, shall be maintained in good and efficient working order and operated such that noise emissions are minimised as far as reasonably practicable. Any plant, equipment, or items fitted with noise control equipment found to be defective will not be operated until repaired. Where reasonably practicable, fixed items of construction plant shall be electrically powered in preference to being diesel or petrol driven. Vehicles and mechanical plant utilised on site for any activity associated with the construction works will be fitted with effective exhaust silencers and shall be maintained in good working order and operated in a manner such that noise emissions are controlled and limited as far as reasonably practicable. Machines in intermittent use will be shut down or throttled down to a minimum during periods when not in use. Static noise-emitting equipment operating continuously will be housed within suitable acoustic enclosure, where appropriate.

- 5.3.2 For underground activities, the following measures will be adopted, where reasonably practicable and appropriate:

Conveyors

- (a) The mounting for any conveyors used to remove excavated material from the works (underground, sub-surface or surface) will be designed and installed so as to mitigate the transmission of noise and vibration;
- (b) A maintenance programme will be implemented to ensure that the noise generation of any conveyor does not deteriorate over time.

Temporary Tunnel Ventilation

All tunnel ventilation plant with connections to the atmosphere in any noise-sensitive location will be subject to mitigation measures appropriate to its local environment.



Notifications

- 5.3.3 Occupiers of nearby properties shall be informed in advance of the works taking place, including the duration and likely noise and vibration effects. In the case of work required in response to an emergency, CoW and local residents shall be advised as soon as reasonably practicable that emergency work is taking place. Potentially affected residents will also be notified of the Helpline number.

Noise Limits, Provision of Noise Insulation etc

- 5.3.4 Noise insulation (or a grant therefore) or further mitigation may be offered where prescribed noise limits are exceeded for specified periods. The circumstances in which such offers may be made are set out in Appendix 2 (Noise levels & provisions for Noise Insulation and Further Mitigation)

5.4 References – Noise and Vibration

- Control of Pollution Act 1974
- BS5228: Noise control on construction and open sites:
 - Part 1 (1997) Code of Practice for basic information and procedures for noise control.
 - Part 2 (1997) Guide to legislation for noise control applicable to construction and demolition, including road construction and maintenance.
 - Part 4 (1992) Code of Practice for noise and vibration control applicable to piling operations.
- BS6472: 1992 Evaluation of human exposure of vibration in buildings (1Hz to 80 Hz)
- BS7385 Evaluation and measurement for vibration in buildings:
 - Part 1: 1990 Guide for measurements of vibrations and evaluation of their effects on buildings.
 - Part 2: 1993 Guide to damage levels from groundborne vibration.
- SI 2001/1701: The Noise Emission in the Environment by Equipment for use Outdoors Regulations 2001 (EC Directive 2000/14/EC)
- SI 1985/1968: The Construction Plant and Equipment (Harmonisation of Noise Emission Standards) Regulations



6 Air Quality

6.1 General

6.1.1 LUL will, as far as reasonably practicable, seek to control and limit emissions to the atmosphere in terms of gaseous and particulate pollutants from vehicles and plant used on the site, and dust from construction activities. LUL will identify potential sources and apply appropriate control techniques.

6.2 Vehicle and Plant Emissions

6.2.1 LUL will ensure that the adverse effects of vehicle and plant emissions are controlled. Measures to be considered for limiting emissions and avoiding nuisance will include the following as appropriate and as far as reasonably practicable:

- 6.2.2
- (a) ensuring that the engines of all vehicles and plant on site are not left running unnecessarily;
 - (b) using low emission vehicles and plant fitted with catalysts, diesel particulate filters or similar devices;
 - (c) using ultra low sulphur fuels in plant and vehicles;
 - (d) requiring that plant will be well maintained, with routine servicing of plant and vehicles to be completed in accordance with the manufacturers recommendations and records maintained for the work undertaken;
 - (e) requiring that all project vehicle, including off-road vehicles, will hold current MOT certificates, where required due to the age of the vehicle, (or to be tested to an equivalent standard) and that they will comply with exhaust emission regulations for their class;
 - (f) siting plant away from potential sensitive receptors;
 - (g) avoiding the use of diesel or petrol powered generators and using mains electricity or battery powered equipment (NB. an emergency diesel generator will be required during tunnelling works);
 - (h) maximising energy efficiency [this may include maximising vehicle utilisation by ensuring full loading and efficient routing]; and
 - (i) all commercial road vehicles used in construction must meet the European Emission Standards pursuant to the EC Directive 98/69/EC (commonly known as Euro standards) of Euro III (from February 2008) or Euro IV (from January 2012 for heavier lorries) during any works. This will also be in compliance with the London Low Emissions Zone.



6.3 Dust

General

6.3.1 LUL will ensure that all contractors comply with the provisions of the Health and Safety at Work Act 1974, the Environmental Protection Act 1990, the Environment Act 1995 and the Clean Air Act 1993, and the regulations made there-under, including the Control of Substances Hazardous to Health Regulations (SI 2002/2677). LUL will recognise that the duration of operations and the proximity of receptors cannot be significantly altered since the location and other site criteria will be dictated by issues such as availability of land, spatial requirements of the project and techniques available for specific construction activities. LUL will require that measures to reduce the impact of dust are designed and implemented in an appropriate and timely manner. Consideration will be given to the emerging guidance set out in the London Best Practice Guide, The control of dust and emissions from construction and demolition published in November 2006.

Dust Control

6.3.2 LUL will ensure that a dust management plan is prepared and implemented for the worksite(s), including controls to limit dust emissions. The standard level of control for dust effects, Tier 1, is the minimum that will be implemented. A risk-based approach will be used to identify whether additional levels of control (Tiers 2 and 3) will be needed. This will be addressed in the SEMP (Site Environmental Management Plan). This approach is based on the Building Research Establishments publication 'Controlling particles, vapour and noise pollution from construction sites' (2003), which will be used as a reference for dust control on site. Emergency control arrangements will be adopted in the event of a pollution incident arising from dust. This will include appropriate liaison with the Local Authority EHO.

6.3.3 *Standard Dust Control Procedures (Tier 1)*

The standard dust control procedures, Tier 1, will include, as appropriate, site controls to:

- (a) ensure no burning of waste materials takes place on site;
- (b) ensure an adequate water supply on the site;
- (c) ensure water suppression is used during demolition operations;



- (d) ensure disposal of run-off water from dust suppression activities, in accordance with the appropriate legal requirements;
- (e) maintain all dust control equipment in good condition and record maintenance activities;
- (f) keep site fencing, barriers and scaffolding clean;
- (g) provide easily cleaned hardstanding for vehicles;
- (h) ensure regular cleaning of hardstandings;
- (i) not allow dry sweeping of large areas;
- (j) provide and ensure the use of wheel cleaning facilities near the site exit wherever there is a potential for carrying dust or mud off the site;
- (k) routinely clean the public highway using wet sweeping methods;
- (l) ensure vehicles working on site have exhausts positioned such that the risk of re-suspension of ground dust is minimised (exhausts should preferably point upwards), where reasonably practicable;
- (m) ensure all vehicles carrying loose or potentially dusty material to or from the site are fully sheeted;
- (n) ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery;
- (o) mix large quantities of cement, bentonite, grouts and other similar materials in designated areas which will be enclosed or shielded;
- (p) store materials with the potential to produce dust away from site boundaries where reasonably practicable;
- (q) ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out;
- (r) minimise the amount of excavated material held on site;
- (s) sheet, seal or damp down unavoidable stockpiles of excavated material held on site, where required;
- (t) avoid double handling of material wherever reasonably practicable;
- (u) ensure that any crushing or grinding plant used on the site, which falls within the definition in Section 3.5 Chapter 3 of the Pollution Prevention and Control (England and Wales) Regulations 2000 SI 1973, has an appropriate permit issued and is maintained according to the procedures set out in the Pollution, Prevention and Control Act 1999;
- (v) ensure that any plant identified above is operated in accordance with the conditions set out in the permit and a copy of the permit is held on site;



- (w) use enclosed rubble chutes and conveyors where reasonably practicable or use water to suppress dust emissions from such equipment;
- (x) sheet or otherwise enclose loaded bins and skips;
- (y) minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate;
- (z) use design/prefabrication to reduce the need for grinding, sawing and cutting on site wherever reasonably practicable;
- (aa) only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction;
- (bb) carry out site inspections regularly to monitor compliance with dust control procedures set out above and record the results of the inspections, including nil returns, in a site log book;
- (cc) increase the frequency of site inspections when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions; and
- (dd) record any exceptional incidents causing dust episodes on or off the site and the action taken to resolve the situation in the site log book referred to in (bb) above.

6.3.4 *Enhanced Dust Control Procedures for Sites/ Operations with an Medium or High Risk of Dust Emissions (Tier 2)*

Sites classed as Tier Two represent sites where activities are likely to involve an elevated risk of dust nuisance and therefore need further control measures in place. These should include all the measures included in Tier One, as well as the following additional measures, in accordance with the GLA Construction Dust Guidance (summarised here):

- comprehensive site survey to determine the prevailing wind direction (using available meteorological data). A minimum of two permanent PM10 monitoring stations to be installed along the transect of the average wind direction – this should supply data which is readily available to the local authority;
- use of solid barriers encompassing the entire site boundary;
- strip and wrap buildings to be demolished to reduce the amount of dust which may be liberated; and
- batching of concrete and other materials off-site to reduce the amount of works required on-site.



6.3.5 *Advanced Dust Control Procedures for Sites /Operations with a High Risk of Dust Emissions (Tier 3)*

These sites involve activities which lead to elevated dust generation and/or involve prolonged activities. It is therefore recommended that, as a precaution dust monitoring is implemented as standard. The relevant monitoring method should include those applicable to Tier Two, but may be supplemented with the following measures:

- hand-held or low-cost permanent monitoring at recognised sensitive receptors such as schools or health centres;
- visual inspection of these sites, as well as liaison with the relevant stakeholders – this should be recorded in a log;
- access to real-time data on-site which can be used to identify periods of activity which lead to elevated dust concentrations at receptors which may be used to temporarily halt works, or modify working practices in order to minimise impacts; and
- set-up a relevant grievance mechanism for the community, including telephone complaint system.

6.4 **Odour**

6.4.1 It is not anticipated that the VSU works will give rise to any odour nuisance, but if necessary LUL will adopt appropriate measures so as to avoid the creation of statutory nuisance from odours.

6.5 **References - Air Quality / Dust Control**

- BRE. Controlling particles, vapour and noise pollution from construction sites, Parts 1 to 5, 2003.
- Department for the Environment Food and Rural Affairs: Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2000.
- Environmental Protection Act 1990.
- Clean Air Act 1993.
- Pollution, Prevention and Control Act 1999.
- Pollution Prevention and Control (England and Wales) Regulations 2000 SI 1973.
- SI 2002/2677: Control of Substances Hazardous to Health Regulations.
- GLA and Mayor of London's guidance "The Control of Dust and Emissions from Construction and Demolition – Best Practice Guidance".



7 Water Resources

7.1 General

7.1.1 LUL will undertake the works and implement working methods which will be developed to protect surface and groundwater from pollution and other adverse impacts including change to flow volume, water levels and quality. This will be completed in accordance with relevant legislative requirements and appropriate industry guidance.

7.1.2 LUL will ensure that the design of the site layout and facilities referred to in Section 3.3 above and management of construction operations will take account of the guidance contained within the relevant Pollution Prevention Guides issued by the EA and other Construction Industry Research and Information Association (CIRIA) documents and will be based on accepted industry practice.

7.1.3 Contingency plans to deal with major pollution incidents at the work sites will be included within the overall emergency planning. EA guidance on pollution incident response planning will be reflected in the emergency plans.

7.2 Site Drainage

7.2.1 Site drainage, including surface runoff and dewatering effluents, will be discharged to sewers where appropriate and relevant permissions will be obtained from the statutory undertaker.

7.2.2 LUL will ensure that the site drainage meets the effluent standards required by the sewerage undertaker or EA as appropriate, and will provide holding or settling tanks, separators, and other measures as may be required. LUL will ensure that access is provided to the undertaker so that samples of discharge can be obtained and analysed and the flows verified as required. The relevant sections of BS6031: Code of Practice for Earthworks for the general control of site drainage will be followed.

7.3 Control of Pollution of Surface Water

7.3.1 LUL will ensure that protection measures to control the risk of pollution to surface water will be adopted and will include, where appropriate and reasonably practicable:



(a) any containers of contaminating substances on site will be leak-proof and kept in a safe and secure building or compound from which they cannot leak, spill or be open to vandalism. The containers will be protected by temporary impermeable bunds with a capacity of 110% of the maximum stored volume. Areas for transfer of contaminating substances will be similarly protected;

(b) all refuelling, oiling and greasing will take place above drip trays or on an impermeable surface which provides protection to underground strata and watercourses and away from drains as far as reasonably practicable.

Vehicles will not be left unattended during refuelling;

(c) only construction equipment and vehicles free of all oil/fuel leaks will be permitted on site. Drip trays will be placed below static mechanical plant;

(d) all wash down of vehicles and equipment will take place in designated areas and will comply with EA's Pollution Prevention Guidance (PPG) note PPG13;

7.4 Control of Pollution of Groundwater

7.4.1 LUL will ensure that protection measures to control the risk of pollution to groundwater will be included within the overall strategy. These will, in particular, be consistent with the Groundwater Regulations 1998. Where reasonably practicable LUL will avoid using materials in the permanent or temporary works that could pollute groundwater. This will include special consideration for the use of substances contained within List I and II of the Groundwater Regulations SI 1998/2746 (Groundwater Directive: 80/68/EEC).

7.4.2 It is anticipated that VSU works / dewatering will only affect the shallow (and not the deep) aquifer and no licensed abstractions or Protected Rights will be affected.

7.5 Control of Groundwater Flooding

7.5.1 LUL recognise that, pumped groundwater drainage takes place in basements of adjacent buildings, as well as from the LUL track drainage system, to prevent groundwater flooding. LUL will ensure that the following precautionary actions will be applied, where applicable and reasonably practicable, to limit and manage the residual risks;



(a) where agreed by LUL and property owners, some routine water quality monitoring may be undertaken at groundwater drainage installations. The parameters to be monitored will be appropriate to type of work undertaken and any related quality limits set by the statutory undertaker. The period of monitoring will be appropriate to the timing and type of work undertaken;

(b) LUL will arrange for additional site investigation (SI) to take place with some boreholes to be converted to standpipes where significant changes in water levels in the shallow aquifer are expected as a result of the VSU works. Selected water levels will be monitored for a maximum of twelve months after dewatering or construction of the tunnels is completed. The monitoring data will be analysed in relation to data on elevations of nearby basements and existing drainage installations;

(c) where agreed by LUL and property owners, some routine monitoring of pumped flows may be undertaken at groundwater drainage installations where significant changes in water levels in the shallow aquifer are expected as a result of the VSU works. Flows will be monitored for a maximum of twelve months after dewatering or construction of the tunnels is completed; and

(d) where agreed by LUL and property owners, some additional capacity at pumped drainage installations will be provided by LUL as mitigation where necessary.

7.6 Dewatering

7.6.1 The foregoing provisions will also apply to dewatering, in addition to the following:

(a) records of water pumped will be kept at all major dewatering sites where required under the terms of a discharge consent; and

(b) water quality at all major dewatering sites will be monitored weekly for the first 4 weeks of pumping and monthly thereafter. Monitoring will comprise a laboratory test of major ions and a field test of temperature and electrical conductivity as well as other parameters required under the conditions of an abstraction or discharge licence consent or permit.



7.7 References - Water Resources

- Water Resources Act 1991.
- Land Drainage Act 1991.
- Water Act 2003.
- BS 6031: Code of Practice for Earthworks.
- EA Pollution Prevention Guidance Notes.
- CIRIA, Control of water pollution from construction sites: Guidance for consultants and contractors (C532).
- CIRIA/Environment Agency Joint Guidelines:
 - Concrete Bunds for Oil Storage Tanks.
 - Masonry Bunds for Oil Storage Tanks.
- EA Guidance Note: Piling into Contaminated Sites.
- SI1998/2746: The Groundwater Regulations (EC Groundwater Directive: 80/68/EEC).



8 Contaminated Land

8.1 Introduction

8.1.1 LUL will apply the guidance in relation to contaminated land contained in the Environmental Protection Act 1990 (Part IIA). This guidance, referred to as the Part IIA regime, came into force in England in April 2000 by enactment of Section 57 of the Environment Act 1995. The Contaminated Land (England) Regulations 2006 (SI 2006/1380) consolidate the guidance published to date and state the conditions under which land is defined as contaminated. LUL will develop remediation measures in accordance with the legislation. The main objective of Part IIA is to provide a system for the identification and remediation of land where contamination is causing unacceptable risks to human health or the wider environment, assessed in the context of the current use and circumstances of the land (NB. initial investigations indicate that it is unlikely that there is any such contamination within the VSU site boundaries). If contaminated land is identified, the guidance contained within Part IIA is intended to ensure that where it is reasonable to do so, remediation is carried out so that the land no longer presents a significant harm being caused.

8.2 Site Assessment and Remedial Practice

8.2.1 LUL will carry out site assessments, investigations and/or risk assessments wherever construction work is planned in order to assess the potential for contamination in both soil and groundwater. The necessary measures will be agreed with the Environment Agency and the Local Authority as part of the construction planning process. A set of criteria for site investigation will be developed prior to the commencement of any intrusive works. Where site investigation reveals the presence of contaminated land an appropriate remedial strategy will be developed to identify the most appropriate option for dealing with the presence of contaminated land. This strategy would include the following:

(a) LUL will liaise with CoW, the EA and other relevant statutory bodies with a view to addressing their requirements and will agree control or protection measures necessary to provide appropriate mitigation. This may involve the sealing, excavation and disposal of soil or on-site remedial works;



(b) the Consolidated European Waste Catalogue (EWC) lists those wastes that are 'absolute entries' (hazardous waste regardless of their concentration) and 'mirror entries' (hazardous waste only if 'dangerous substances' are present above threshold concentrations). Contaminated soils are 'mirror entries' in the EWC. This means that contaminated soils may be classified as either hazardous or non-hazardous depending on the concentrations of 'dangerous substances' in the soil. An assessment of the composition of the waste soil using appropriate techniques, which could include sampling and laboratory analysis, will be undertaken to determine if the waste is classifiable as hazardous;

(c) LUL will also give consideration to alternatives to landfill disposal as the solution to treating contaminated soil. This may include the use of remedial technologies (in-situ and ex-situ) to reduce the quantity of soil requiring disposal, and/or treatment of soils to a standard such that they can be re-used at a site or be disposed of as non-hazardous waste. On-site remedial works will be carried out under the Waste Management Licensing Regulations 1994;

(d) Contamination issues will be recorded in the project Health and Safety File in accordance with the Construction (Design and Management) Regulations 2007, to protect affected parties;

(e) monitoring of excavation works will be undertaken to check for unexpected or unusual materials with a contaminative potential. This material could consist of buried drums, tanks or containers, soil, groundwater or liquids with an unusual colour or odour, or other evidence of contamination. If this type of material is encountered then work at that particular site, and directly affected by the contaminating agent, will be stopped until the material has been properly identified and suitable precautions taken. This approach will be included in the Health and Safety Plan;

(f) LUL will take specific precautions if materials containing asbestos are present or encountered during works. LUL and its contractors will comply with the Control of Asbestos at Work Regulations 1987 and Asbestos (Licensing) Regulations 1983 and their amendments, and adhere to relevant guidance including Asbestos: Exposure Limits and Measurement of Airborne Dust Concentrations (EH10 and MDHS 39/4) and Managing Asbestos in Workplace Buildings 1988;

(g) LUL will ensure that there are designated areas on site where contaminated materials can be separated from clean ones and stored in an appropriate environment. Storage of contaminated



materials may require specific facilities to prevent contaminants from leaching into the ground, nearby sewers or neighbouring properties;

(h) guidance provided in the Environment Agency's Pollution Prevention Guidance Notes (PPG's) in respect of water pollution in particular PPG01, PPG02, PPG05, PPG06, PPG21 and PPG23 will be followed as far as reasonably practicable. Further guidance is provided in Planning Policy Statement 23: Planning and Pollution Control and Defra/Environment Agency's Model Procedures for the Management of Contamination (CLR11).; and

(i) on completion of any remedial works, a record will be kept of the works undertaken to comply with the remedial strategy.

8.3 References – Contaminated Land

8.3.1 *Contaminated Land*

- Environmental Protection Act 1990 (Part IIA).
- Contaminated Land (England) Regulations 2000 (SI 2000/227).
- CIRIA (1996) A guide to safe working on Contaminated Sites Report 132
- BSI (2001) *Investigation of Potentially Contaminated Sites. Code of Practice.* 10175.
- Planning Policy Statement 23: Planning and Pollution Control.
- Defra/Environment Agency's Model Procedures for the Management of Contamination (CLR11).

8.3.2 *Asbestos*

- Control of Asbestos at Work Regulations 2002 (SI/2002/2675).
- Asbestos: Exposure Limits and Measurement of Airborne Dust Concentrations (EH10 and MDHS 39/4).
- Managing Asbestos in Workplace Buildings 1988.
- HSE guidance MDHS100: Surveying, sampling and assessment of asbestos containing materials.
- Asbestos (Licensing) Regulations 1983 (SI 1983/1649) as amended in 1998 (SI 1998/3233).
- The Hazardous Waste (England & Wales) Regulations 2005 (SI 2005 No.894)

8.3.3 *Duty of Care*

- Environmental Protection (Duty of Care) Regulations 1991.

8.3.4 *Hazardous Waste*

- Landfill (England and Wales) Regulations 2002 and Waste Acceptance Criteria (WAC).



- Environment Agency Technical Guidance WM2 *Interpretation and Classification of Hazardous Waste* provides assistance in classifying wastes.

8.3.5 *Environment Agency Pollution Prevention Guidance Notes (PPG's)*

- PPG01 General guide to the prevention of water pollution.
- PPG02 Above ground oil storage tanks.
- PPG05 Works near or liable to affect watercourses.
- PPG06 Working at construction or demolition sites.
- PPG21 Pollution incident response planning.
- PPG23 Maintenance of structures over water.
- EA Guidance Note: Piling into Contaminated Sites.
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8.3.6 *Other Regulations*

- Waste Management Licensing Regulations 1994.
- EC Landfill Directive 1999.
- The Hazardous Waste (England & Wales) Regulations 2005 (SI 2005 No.894)
- Landfill Tax (Contaminated Land) Order 1996.
- Landfill (England and Wales) Regulations 2002.
- Construction (Design and Management Regulations) 1994 (SI 1994/3140).
- Water Resources Act 1991(WRA 1991).
- Groundwater Regulations 1998 (GR 1998).
- Animal Health Act 1981 Notifiable Disease Burial Sites.
- SI 2002/2677: Control of Substances Hazardous to Health Regulations.



9 Materials and Waste & Energy Management

9.1 Materials and Wastes - General

- 9.1.1 Within the SEMP, LUL and its contractor will demonstrate how it will undertake material resource management to minimise waste creation. Where the method of procurement may involve design, the role of design in ensuring reduction in material and energy usage and waste will be demonstrated. This will also be reflected in the construction strategy.
- 9.1.2 LUL and its contractor will manage demolition / construction / excavation wastes generated at worksites, so far as reasonably practicable, in accordance with the waste hierarchy (see below) and within the relevant regulatory controls and cost restraints under the general protocols described below. Further details will be set out in the SEMP and will include the requirements of the site waste management plan regulations which will be delivered through the Site Waste Management Plan (SWMP).
- 9.1.3 The waste hierarchy is as follows and sets out the options in order of preference; the highest option(s) that is/are reasonably practicable will be adopted but usually a combination of (a) plus one or more of the others will be appropriate:
- (a) minimise generation of excavated materials and wastes through efficient materials resource management;
 - (b) re-use and recycle excavated materials and waste within the VSU project;
 - (c) re-use and recycle excavated materials and waste through environmentally beneficial use at sites out-with the VSU project; and
 - (d) dispose of surplus excavated materials and waste at licensed landfill sites.
- 9.1.4 LUL will ensure that the requirements of the waste hierarchy are enforced and the duty of care placed on all parties to take responsibility for protecting the interests and safety of others from the potential effects of handling, storing, transporting and depositing of excavated materials and wastes. LUL will ensure that waste is managed in accordance with Policy 4A.1 of the London Plan 2004 as well as the Site Waste Management Plan Regulations 2008.



9.2 Materials and Wastes - Procedures

Site Waste Management Plan (SWMP)

9.2.1 LUL and its contractor will be responsible for the development and maintenance of as Site Waste Management Plan (SWMP)

9.2.2 The SWMP will identify:

- The approach taken to waste management;
- The types of waste removed from site, its description and quantities of waste generated;
- The authorised waste carrier details and their waste carrier registration number
- Opportunities for recycling and / or re-use;
- Disposal routes and licensing requirements;
- Details of the site that the waste was taken to;
- Details of the environmental permit of exemption held by the disposal site where material is taken
- Requirements for Waste Management Licences and/or waste management licence exemptions.

9.2.3 The **principal contractor**, is responsible for:

- obtaining relevant information from sub-contractors
- updating the SWMP at least every three months as the project progresses
- keeping the SWMP on site during the project
- ensuring that other contractors know where the SWMP is kept
- allowing other contractors and the client access to the SWMP during the project
- handing the completed SWMP back to the client at the end of the project
- keeping a copy of the SWMP for two years

9.2.2 The plan will include an audit programme to be undertaken to demonstrate compliance with statutory requirements.

9.2.3 Disposal sites will be identified in consultation with the relevant LPAs, Defra, and the EA. With the dynamic nature of disposal sites it is imperative to maintain a regular dialogue with the landfill



site operators to explore options for beneficial re-use of the excavated materials and uphold validity of the robust case for disposal of the excavated material.

- 9.2.4 The SWMP will be produced in accordance with the ‘Site Waste Management Plans – Guidance for Construction Contractors and Clients – which became mandatory under The Clean Neighbourhoods & Environment Act 2005 – section 54 in April 2008. This details a specific process which will be followed

Duty of Care

- 9.2.5 LUL will comply with the ‘duty of care’ regulations to protect the interests and safety of others from the potential effects of handling, storing, transporting and depositing of excavated materials and demolition/ construction wastes arising under the project. Such compliance will include the implementation and monitoring of accepted industry practices for the control of dust, mud and other debris on site. The guidance set out in *Waste Management – The Duty of Care, Code of Practice* (HMSO March 1996) will be followed in addition to the obligations under the duty of care regulations.

- 9.2.6 The SWMP will include detailed procedures for compliance with the requirements for waste transfer notes in accordance with the Environmental Protection (Duty of Care) Regulations 1991 and arrangements for auditing the actions of other parties in the waste handling chain. A sample waste transfer note document, together with details of the administrative arrangements for record keeping, will be included in the SWMP.

- 9.2.7 The arrangements for handling hazardous wastes will be followed in the context of duty of care and the specific consignment note procedures applicable under the Hazardous Waste (England & Wales) Regulations 2005 (SI 2005 No.894) or any succeeding relevant legislation.

Specific Provisions

- 9.2.8 Littering on site by any individual under the control of LUL will be dealt with under a disciplinary procedure to be set out in the SWMP.

LUL and its contractor will :



- Develop transportation and other management procedures for contaminated or hazardous materials;
- Obtain any necessary licences for the storage treatment and disposal of waste (including dewatering discharge);
- Use registered waste carriers or seek registration as a waste carrier for the handling of all wastes, including contaminated materials; and
- Ensure that removal and disposal of contaminated materials complies with a strict consignment note system and that delivery is to appropriately licensed facilities.

9.2.9 Provision will be made for a suitable environmental specialist to identify any 'Hazardous Waste' as defined in the Landfill Regulations 2002, so that they can be suitably managed and disposed of during the works.

9.2.10 Other specific provisions/measures available for the handling of excavated materials and demolition/construction wastes will be reflected in the MMP and in the contractual requirements imposed by LUL to meet the procedures outlined above.

9.2 Asbestos

9.3.1 A management system will be established, which will adopt measures complying with the Regulations and Codes of Practice, to manage the risk from release of asbestos during alteration and demolition works and excavation work. This system will ensure compliance with the Control of Asbestos at Work Regulations 2002 (SI/2002/2675) and associated Approved Codes of Practice, and will provide for inspection, survey sampling and analysis in accordance with HSE guidance MDHS100 "Surveying, sampling and assessment of asbestos-containing materials".

9.3.2 Measures for managing asbestos in alteration, demolition and excavation works will include:

- (a) employing competent contractors to carry out alteration and demolition works;
- (b) contractors implementing a procedure for dealing with potentially suspect materials exposed requiring sampling and analysis by an independent specialist consultant;



- (c) formal exchange of information before start of work, including relevant information from the Asbestos Register to clearly identify location of asbestos-containing materials; and
- (d) method statements for any works in the vicinity of asbestos-containing materials to avoid any disturbance to such materials.

9.3.3 Measures for managing work involving asbestos-containing materials encountered in construction will include:

- (a) consideration of the appointment of a specialist consultant independent of the asbestos treatment contractor;
- (b) ensuring any work with asbestos-containing materials is notified to the Health & Safety Executive;
- (c) ensuring any work with asbestos-containing materials is carried out by licensed specialist asbestos treatment contractors in accordance with Asbestos (Licensing) Regulations 1983 (SI 1983/1649) as amended in 1998 (SI 1998/3233);
- (d) method statements defining detailed control measures to be produced by the specialist asbestos treatment contractor and approved by the Client / independent specialist consultant;
- (e) air sample monitoring of work to ensure required air quality standards are achieved; and
- (f) disposal of asbestos-containing materials to licensed waste sites in accordance with Special Wastes Regulations 1996 (SI 1976/972).

9.4 Energy Management

Energy Management Plan

9.4.1 LUL will develop an Energy Management Plan to demonstrate how energy consumption during construction will be minimised. This plan will complement the Green Travel Plan (see 3.11 above).

Energy and Design

9.4.2 LUL will ensure that energy management considerations are integral to the design of the works and to the construction strategy and consequent energy impacts.

9.5 References - Waste and Energy Management

- Environmental Protection Act 1990
- Environmental Protection (Duty of Care) Regulations 1991



- Site Waste Management Plans -- Guidance for Construction Contractors and Clients -Voluntary Code of Practice (Department of Trade & Industry – July 2004)
- Waste Management – The Duty of Care, Code of Practice (HMSO March 1996).
- CIRIA Guidance.
- The London Plan, 2004, published by the Mayor of London.
- The Site Waste Management Plans Regulations 2008, S.I. 2008 No. 314

9.6 References - Asbestos

- Control of Asbestos at Work Regulations 2002 (SI/2002/2675).
- Asbestos (Licensing) Regulations 1983 and their amendments.
- HSE guidance MDHS100: Surveying, sampling and assessment of asbestos containing materials.
- Asbestos (Licensing) Regulations 1983 (SI 1983/1649) as amended in 1998 (SI 1998/3233).
- The Hazardous Waste (England & Wales) Regulations 2005 (SI 2005 No.894)



10 Ecology and Nature Conservation

10.1 General / Protected Species

10.1.1 The surface areas required for the permanent works are entirely covered by buildings or hard surfacing. Areas identified as potential temporary working areas are similarly covered by hard surfacing although there are a small number of isolated trees. Preliminary investigation indicates that nothing of ecological or nature conservation interest will be affected by the VSU works.

10.2 Protection of Trees

10.2.1 Any essential remedial or protective work to trees adjacent to construction activity will be carried out by suitably trained or qualified personnel using recognised methods in accordance with BS 5837 "Guide for trees in relation to construction".

10.2.2 It is not envisaged that the trees within the site can be retained but in the event that it is reasonably practicable to retain any tree(s), appropriate protection measures for tree protection will be implemented as specified in BS 5837: 1991. This will include protective fencing and prohibition of storing or dumping materials within the protected area.

10.3 References - Ecology and Nature Conservation

- Wildlife and Countryside Act 1981, as amended
- Town and Country Planning (Trees) Regulations 1999 (SI 1999/1892)
- BS 3837:1991 Guide for Trees in Relation to Construction



11 Archaeology and Built Heritage

11.1 General

11.1.1 An initial study indicates that there is only limited potential for finds of archaeological interest as a result of VSU works. The works will require works to be carried out to two buildings of historical and architectural interest ("listed buildings") - Victoria Palace Theatre and Victoria mainline Station. Also it will be necessary to move the "Little Ben" clock tower (which is also a listed building) to a place of safe storage for the duration of the works. A further listed building in the vicinity of the works is the Apollo theatre and this will be the subject of some protective measures. No scheduled monuments are affected.

11.1.2 LUL will carry out the works in such a way as to ensure that disturbance to potential archaeological sites and deposits and listed buildings will be managed in accordance with accepted industry practice and, where disturbance is unavoidable, is controlled and limited as far as reasonably practicable.

11.2 Procedures

11.2.1 A watching brief will be undertaken and appropriate steps will be taken if anything of archaeological interest is found. Proposals for works directly affecting the Victoria Palace Theatre, Victoria mainline Station and "Little Ben" clock tower will be subject of applications for listed building consent.

11.3 Specific Provisions

11.3.1 Specific provisions will be addressed in the scope for the watching brief and applications for listed building consent. The provisions will include the following as necessary and/or appropriate:

- (a) Suitable precautions will be taken to avoid any unplanned impacts on identified cultural heritage resources.
- (b) Alterations to listed buildings will be undertaken in line with the listed building consents.
- (c) Where necessary, suitable screening and other protective measures will be erected around archaeological mitigation works and around listed buildings within and adjacent to works areas.



- (d) Where archaeological remains are encountered unexpectedly during works, an appropriate programme of mitigation will be agreed with stakeholders and implemented.
- (e) Procedures will be established and agreed for the emergency repair of damage to listed buildings.
- (f) Security procedures will be established and agreed to prevent unauthorised access to any excavation found to be of archaeological interest and the damage or theft of cultural heritage resources, including the use of metal detectors.
- (g) Procedures will be established and agreed to be followed in the event of the discovery of human remains.
- (h) Procedures will be established and followed in the event of the discovery of artefacts that fall within the criteria identified in the Treasure Act 1996. These procedures will be in line with the Treasure Act Code of Conduct 1997.
- (i) If necessary, an appropriate level of analysis and publication of the results of archaeological investigations will be agreed and implemented in a format suitable for public dissemination.
- (j) A clear policy will be agreed and implemented regarding the deposition at appropriate public archives of artefacts, records, and data recovered from archaeological investigations.
- (k) Condition surveys will be undertaken to define appropriate vibration limits for cultural heritage resources that may be potentially affected by vibration from construction works.
- (l) Where cultural heritage resources are very close to worksites, or attached to buildings or structures that form parts of worksites, detailed assessment will be undertaken prior to commencement of works to inform the selection of specific items of plant and working methods.
- (m) For listed buildings that are attached or contiguous to buildings that are proposed for demolition, the attached buildings will be unattached, where practicable, using non-vibratory techniques, such as diamond sawing, before demolition commences.
- (n) Where necessary, appropriate vibration monitoring regimes will be adopted during demolition or other major activities. This would, to provide full safeguarding, in the worst case, allow cessation of works should vibration levels exceed relevant limits.



12 Settlement

12.1 General

12.1.1 LUL will design and undertake construction of the scheme in a manner that will minimise the damage to land and property as a result of ground movement. Techniques for controlling settlement of buildings and protecting buildings from irreparable damage are well developed, based on other tunnelling projects within London such as the Jubilee Line Extension and Channel Tunnel Rail Link. Appropriate techniques will be implemented in order to control and limit, as far as reasonably practicable, the effects of settlement.

12.2 Specific Provisions

12.2.1 These will be developed as an ongoing part of the design process.



APPENDIX 1

Contents of the CoCP Part B

Part B of the CoCP will be developed to supplement Part A and will identify detailed site-specific measures, taking into account the environmental issues at each work site, such as site set up and servicing arrangements. Part B will include, but not be limited to:

- conditions imposed on planning permissions;
- assurances given in relation to planning and other consents;
- Site Environment Management Plan (SEMP)
- Other Environmental Management Plans, some of which may form part of the SEMP, including:
 - Dust Management Plan(s)
 - Energy Management Plan
 - Green Travel Plan
 - Site Waste Management Plan(s)
 - Traffic Management Plan(s)
- Health and Safety Plan
- Health & Safety File; and
- consents obtained /co-ordinated by the main contractor under Section 61 of the Control of Pollution Act



APPENDIX 2

Noise levels & provisions for Noise Insulation and Further Mitigation

Noise Limits

The Contractor will ensure that site works comply with the noise limits defined in the Section 61 Consent or any Dispensation granted. Where it is reasonably possible to do so, he shall also comply with the limits in column 4 of Table 1 below.

For the occupied dwellings nearest to the predominant source(s) of construction noise the values should be measured or calculated one metre in front of exposed windows.

Noise Insulation and Further Mitigation

LUL will carry out (or make a grant in respect of carrying out) noise insulation work to all residential properties which are classified as *eligible buildings* or (as the case may be) meet the cost of further mitigation for the occupants of such eligible buildings where the conditions set out below are met. The classification of eligible buildings shall be as provided by Regulation 7 of the Noise Insulation (Railways and Other Guided Transport Systems) Regulations 1996 [SI 1996 N0.428] (the Regulations).

Buildings which are not eligible but the use of which is particularly sensitive to noise (which may include commercial and educational establishments, hospitals and clinics) will be subject to individual consideration by LUL on the application of any body or person responsible for, or holding a legal interest or estate in, any such buildings.

The airborne noise trigger levels which will be applied in establishing entitlement to noise insulation for eligible buildings, or further mitigation, are presented in the Table 1 below. All noise levels are those predicted due to construction of the Project and are taken 1.0 metre away from the most exposed of any windows and doors in any façade of a building (which is an eligible dwelling) that serves a habitable room.

Noise insulation (or grant) will be offered in respect of qualifying doors or windows in eligible buildings where the predicted noise level from construction exceeds the trigger level for insulation set out in the Table, or the total noise level (ie construction noise plus existing ambient noise) exceeds a figure 5dB above the existing airborne noise level for the corresponding times of the day, whichever is the higher, for more than of 10 out of 15 consecutive working days or for a total of days exceeding 40 in any six month period.

In the exercise of its discretion under Section 28 of the Land Compensation Act 1973 LUL will offer further mitigation where the predicted construction noise level



exceeds either the trigger level for temporary re-housing, or a figure 10dB above the existing airborne noise level for the corresponding times of the day, whichever is the higher, for more than 10 out of 15 consecutive working days or for a total of days exceeding 40 in any six month period. One of the options for further mitigation will be voluntary temporary re-location.

Table 1
Airborne Noise Limits and Trigger Levels for
Noise Insulation and Further Mitigation

1	2	3	4	5
Time	Relevant time period	Relevant L_{Aeq} averaging time T	Noise Insulation trigger level L_{Aeq}	Further Mitigation Level L_{Aeq}
Monday to Friday	07.00-08.00	1hr	70	80
	08.00-18.00	10hr	75	85
	18.00-19.00	1hr	70	80
	19.00-22.00	3hr	65	75
	22.00-07.00	1hr	55	65
Saturday	07.00-08.00	1hr	70	80
	08.00-13.00	5hr	75	85
	1300-14.00	1hr	70	80
	14.00-22.00	3hr	65	75
	22.00-07.00	1hr	55	65
Sunday and Public Holidays	07.00-21.00	1hr	65	75
	21.00-07.00	1hr	55	65

Noise levels

Table 1 above sets out the noise limits which LUL require the Contractor to comply with where it is necessary and practicable to do so. Other limits might be specified in Section 61 Consents or Dispensations (see Appendix E). Note that different noise limits are given for different time periods throughout the 24 hours that constitute day, evening, and night for both weekdays and weekends. This should not be taken to imply that permission to generate these levels within these hours will automatically be granted by the Local Authority in a Section 61 Consent. Similarly the specification of a noise limit during periods for which the Local Authority normally specify no audible noise at the site boundary should not be taken to imply that permission to cause these levels from work outside those hours will automatically be granted in a Section 61 Consent. Nor should it be assumed that the quoted noise levels will automatically be permitted in any Dispensations that may be granted.

The actual noise levels, which will be permitted in any Consent or Dispensation that may be granted, will be determined by what is reasonable. Consequently, where it is reasonable to do so, lower noise levels may be specified if it is reasonably practicable to achieve them.

Westminster City Council CoCP

APPENDIX 3

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April 2008

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