

This document is shared for the purposes of learning legacy. It is a snapshot in time and hence many of the links within the document will become obsolete over time. Some links may refer to a document storage location that isn't accessible. Users should refer to the learning legacy website where these documents may be published separately.



Crossrail Act 2008
Crossrail Ltd

(Work Package/Worksite as applicable)>>

Environmental Management Plan

For Information

Doc No.: XX

Contents

1	General Environmental Management	3
1.1	Introduction.....	3
1.2	Environmental Management during Construction	4
2	Topic Management Plans	5
2.1	Introduction.....	5
2.2	Description of the Works.....	5
2.3	Area Management Plan.....	6
2.4	Contaminated Land	7
2.5	Emergency Plan	7
2.6	Site Waste Management Plan	8
2.7	Air Quality and Dust Management Plan.....	9
2.8	Archaeology and Built Heritage Management Plan.....	12
2.9	Ecological Management Plan	14
2.10	Lighting Management Plan	17
2.11	Noise and Vibration Management Plan	18
2.12	Water Management Plan	20
	Appendix 1: Legislation, codes of practice and guidance relevant to the EMP	25
	Appendix 2: Construction Site Plan.....	27

1 General Environmental Management

1.1 Introduction

1.1.1 Background

The Crossrail project has been the subject of an environmental impact assessment and consultation with a wide range of stakeholders, including members of the public, local authorities affected by the scheme and a range of statutory and non-statutory consultees. The Bill that would provide the powers to construct the railway have been scrutinised in both Houses of Parliament.

The Crossrail Project is subject to a number of environmental controls and requirements. As part of the enactment process an Environmental Impact Assessment was carried out, the results of which are laid down in the Environmental Statement and its associated technical reports. Environmental Control measures have been developed through the petitioning process in the Houses of Parliament and consultation with statutory bodies, such as Local Planning Authorities. These measures are documented in the Environmental Minimum Requirements (EMR) which comprise the Construction Code, Planning and Heritage Memorandum, Environmental Memorandum and a Register of Undertakings and Assurances.

Section 2.4 of the Construction Code requires the production of a number of Environmental Management Plans (EMPs) which will set out how the project will deliver the environmental requirements and how environmental issues that arise are handled to ensure compliance with relevant legislation and with the environmental policies of the nominated undertaker. The range of issues to be covered by EMPs is set out in Section 2.4.4 of the Code. In addition to this requirement Section 5 of the Environmental Memorandum identifies particular worksites across the Crossrail route as being environmentally sensitive. The EMPs for works that affect these sites will address the management of these sites under the relevant topic heading. Where appropriate an additional topic management plan will be added (for instance a Recreational Resources Management Plan).

The Construction Code requires that EMPs will be discussed with relevant qualifying local planning authorities and in preparing the EMPs the nominated undertaker will take into account their observations. In addition, for sensitive sites, the Environmental Memorandum requires that key consultees (as defined in the Environmental Memorandum) will also be consulted.

1.1.2 Purpose and Content of the EMP

This document comprises the Environmental Management Plan for <Insert work package name>. It covers the enabling works and main construction works to be undertaken for construction of the <Insert work package name>. In accordance with the requirements of Section 2.4 of the Construction Code it sets out CRL's approach to the management of environmental issues during the construction phase of the Crossrail Project at this site.

This document does not cover issues relating to lorry and traffic management, green travel or community liaison which are dealt with elsewhere.

1.1.3 Structure of the EMP

The document comprises two sections. Section 1 describes the general environmental management arrangements that will be employed. It outlines the context in which this EMP has been prepared, describes the role and objective of the EMP, the requirements for the content and the relationship with the Crossrail Environmental Management System.

Section 2 describes the processes by which particular environmental topics will be managed on the site.

1.2 Environmental Management during Construction

The contracts awarded for Crossrail enabling and construction works will include a requirement on the contractor to comply with this Environmental Management Plan.

1.2.1 Supporting Crossrail's Environmental Management System

Crossrail has developed an Environmental Management System which is consistent with the principles of BS EN ISO 14001.

The main construction contracts will be required to have an EMS which is consistent with the principles of BS EN ISO 14001. The contractors EMS will support and comply with the provisions of CRL's EMS. Where relevant the contractor will refer to CRL's EMS procedures.

1.2.2 Management of the Environmental Performance of Contractors

Contractors are required to comply with all relevant environmental legislation and to take account of published standards, accepted industry practice, national guidelines and codes of practice appropriate to Crossrail (see Appendix 1). For the duration of the contract CRL will monitor the environmental performance of the contractor through site inspections and audits.

The contractors will operate an induction scheme to ensure all employees are aware of their environmental responsibilities, to identify training needs for personnel and to provide appropriate training. The training will include toolbox talks for site operatives to maintain an appropriate level of awareness of environmental issues.

2 Topic Management Plans

2.1 Introduction

This section provides a number of topic management plans. The list of topic management plans has been determined based on the issues identified in Section 2.4.4 of the Construction Code.

*Include reference to an archaeological management plan and where necessary, a built heritage management plan. **Example Text:** ' In consideration of the potential archaeological resources in the <Insert Location> area, and the number of listed buildings in the vicinity of the works, archaeology and/or a built heritage management plan(s) have been provided'.*

Refer to Table 5.1 in the Environmental Memorandum to identify if work package includes any Environmentally Sensitive Worksites. If yes, state which worksite is designated as 'Environmentally Sensitive', identify the priority issues (as per Table 5.1) and confirm which topic management plans are to be used to address these priority issues. [Nb In a few cases, the works which led to designation of an ESW may no longer be planned, in which case, this should be highlighted].

2.2 Description of the Works

Describe the general location of the works.

Example Text: *'The works are located between <station name> and <station name> on the <name of railway line>. The site comprises X no. worksites, located at <insert location name>.*

An indicative construction site location plan is included in Appendix 2. *(Include plan in Appendix 2)*

The proposed works involve *< insert details copied from the relevant Schedule 7 Written Statement>.*

2.2.1 Advance Works

<insert description of advance works> e.g location, duration and type of work copied from the relevant Schedule 7 Written Statement.

Include details of any of the following advance works taking place:

- *Worksite establishment;*
- *Demolition of existing buildings;*
- *Dismantling*
- *Utility Diversions works*
- *General site clearance;*
- *Temporary power and water supplies to the works;*
- *Hoarding installation;*
- *Security installation;*
- *Construction site setup including welfare and office facilities, lay-down areas etc;*
- *Installation of any local traffic management arrangements; and*
- *Highway diversion works.*
- *Compensation grouting works*

2.2.2 Main Construction

<insert description of main construction works, highlighting key elements> copied from the relevant Schedule 7 Written Statement.

Further information on the works and the worksites is provided as part of the submission for construction arrangements under Schedule 7 to the Crossrail Act.

2.3 Area Management Plan

2.3.1 Working Hours

The project's core working hours are from 0800 to 1800 on weekdays and 0800 to 1300 on Saturday. There are certain exceptions to the core working hours, which are set out in Section 3.2 of the Construction Code. These include:

- A period of one hour before and up to one hour after core working hours may be used for start up and close down activities.
- Specific activities as set out in the Construction Code (paragraph 3.2.6) will normally be undertaken on a 24 hour per day and 7 day per week basis.
- Running of certain items of equipment such as pumps and generators.
- Certain works requiring temporary possession of roads and railways.
- Work required in response to an emergency.

2.3.2 Site Layout

As far as reasonably practicable and appropriate the site layout and appearance will be designed using the following principles:

- a) Sites at prominent locations will be screened.
- b) All sites will be fully secured.
- c) Existing features will screen the sites where appropriate.
- d) Storage sites, fixed plant and machinery equipment and temporary offices will be located to limit environmental impacts, as far as reasonably practicable, and having due regard to neighbouring accommodation, as far as allowed by the constraints of each site.
- e) Site lighting will be located and directed so as not to intrude into occupied residential properties, on sensitive areas or constitute a road or rail hazard (see also Section 2.10 on Lighting).
- f) Security cameras will be sited and directed so that they do not intrude into occupied residential properties.
- g) Site plant and facilities will be powered from mains electrical sources.

2.3.3 Hoardings

As far as reasonably practicable the visual intrusion of construction sites on nearby residents and users of local facilities and amenities will be contained and limited.

The type of hoarding or fencing used will vary from location to location but will accord with the following principles:

- a) At <insert location> the standard hoarding will be 2.4m in height and may be raised to 3.6m and possibly altered in form to enhance acoustic performance for specific locations. It will be plywood faced, timber framed hoarding suitably painted;
- b) suitable measures will be used for tree protection as set out in Section 10.4 of the Construction Code;
- c) where reasonably practicable existing walls, fences, hedges and earth banks will be retained;
- d) notices will be displayed on all site boundaries, where appropriate, to warn of hazards on site such as deep excavations, construction access, etc;
- e) appropriate sight lines/visibility splays will be maintained to ensure safety of both vehicles and pedestrians is preserved; and
- f) temporary fences may be used in certain areas, such as for short term occupation of sites or at more remote locations.

The detailed arrangements with regards to the site hoardings will be subject to further approval from <insert relevant Local Authority> as part of the Schedule 7 Construction Arrangements.

Please use *Temporary Hoardings & Fencing Specification for the Construction of Crossrail* document (CR-SD-PRW-X-SP-00001) to determine hoarding principles and requirements.

2.3.4 Site reinstatement

On the completion of works, reinstatement plans will be agreed with <insert relevant local authority> as appropriate within six months of the completion of the relevant works. (see Information papers IP D5 – Site Reinstatement and IP D13 – Restitution of Open Space).

2.4 Contaminated Land

Please refer to the *Crossrail Route Wide Generic Activities Land Contamination Report* or later ground investigation reports to determine contamination level of site, including the risk category and any further requirements.

Example Text for high risk sites: 'A desk based contaminated land assessment at <insert location> has indicated that the worksites are of high/medium risk (category 1/2). A phase 1 Contaminated Land Assessment has been undertaken and further ground investigation is planned, the results of which will inform the contamination status of the site, the waste characterisation of surplus or unsuitable arisings and the approach to safety management on the site. The ground investigation data will also allow a reassessment of the site's risk status, and CRL will share the results of the ground investigation with the <insert relevant local authority>, if required.'

Example Text for low risk sites: 'The <insert worksite location>worksites are considered to be low risk (category 3) and no further contamination surveys will be undertaken. Further soil quality tests may be undertaken as works progress for material and waste management purposes'.

2.5 Emergency Plan

2.5.1 General arrangements

A set of standardised emergency response procedures will govern the management of environmental incidents¹. Construction contractors will be required to adhere to and implement these procedures and ensure that site operatives are familiar with the emergency arrangements.

The emergency procedure will contain emergency phone numbers and the method of notifying local authorities and statutory authorities. Contact numbers for key personnel will also be included.

2.5.2 Dealing with spills

A site drainage plan will be kept on each of the work sites showing the water interests in the vicinity of the site. This plan will include the location of both foul water drains and surface water drains. Spill kits will be kept on each of the work sites. The precise contents and capacity of the spill kits will depend on the detailed inventory of products that will be stored and handled on the site. The box below provides an overview of the likely content of these spill kits.

oil-absorbent granules	string
floating "booms" or "sausages"	gloves
absorbent mats	knives
drain covers	shovels

¹ An environmental Incident is defined as "Any occurrence, including near-miss situations, which has the potential to cause or results in environmental damage"

polythene sheeting and bags

The spill kits will be clearly marked and sign-posted, close to the area where materials are stored and handled.

A number of specialist spill contractors will be identified that can be called upon should this be required to manage a major spill.

In the event a spill occurs the following actions will be taken:

- When a spill occurs the site manager will be informed immediately.
- In dealing with the spillage the personal safety of the site-workers and the general public will not be compromised.
- Where required to stop or contain the spillage work will be halted.
- The cause of the spillage will be stopped.
- The spill will be contained. Particularly pathways to any drains and water courses will be blocked as soon as possible.
- The spilled materials will be removed and disposed of in accordance with the waste regulations.

In the event of major or complicated spills, the following additional actions will be taken:

- The site manager will assess the incident and if appropriate request a specialist spill contractor to attend the site.
- A CRL representative will verify that all appropriate actions have been taken and if required instruct the contractor to carry out additional works or request the assistance of a specialist spill contractor.

2.6 Site Waste Management Plan

2.6.1 Objectives

The objectives of the site waste management plan are to:

- Manage the excavated materials and demolition/construction wastes generated at the worksites, so far as reasonably practicable, in accordance with the waste hierarchy and within the relevant regulatory controls and cost restraints.
- Minimise waste from construction activities as far as reasonably practicable.
- Reuse as much demolition waste and as much of the excavated material as is practicable on or near to the sites where it will be generated.

2.6.2 Waste Management

In developing solutions for the management of surplus a strategy will be adopted that conforms to the national hierarchy for sustainable waste management. For Crossrail this means that a hierarchy will be adopted as follows:

- minimise the generation of waste;
- reuse and/or recycle the materials within the Crossrail project;
- reuse and/or recycle the materials for beneficial use on other projects;
- dispose of the materials at a suitably licensed site.

The project design has sought to minimise the generation of excavated material by keeping to a minimum:

- a) the size of tunnels, shafts and stations; and
- b) building demolition without compromising the safety or functioning of the railway.

A well run construction site will minimise waste and its effect, for example, by ensuring the correct amount of construction materials are ordered and by minimising and/or recycling packaging where practicable. Appropriate industry standards will be adhered to in this respect so that construction waste will not have a major impact on the overall disposal requirements.

A Site Waste Management Plan (SWMP) is being produced in accordance with the Site Waste Management Plans Regulations 2008 and with the Non-Statutory Guidance for Site Waste Management Plans prepared by DEFRA in April 2008.

The SWMP will contain as a minimum the following information:

- The location of the site and the estimated cost of the project;
- Details of the client, the principal contractor and the person who drafted the plan;
- Any decision taken before the SWMP was drafted to minimise the quantity of waste produced on site;
- A description of each waste type expected to be produced during the project;
- An estimate of the quantity of waste that will be produced for each waste type;
- The proposed waste management action for each waste type;
- A declaration that all waste produced on the site is dealt with in accordance with the waste duty of care; and
- A declaration that materials will be handled efficiently and waste managed appropriately.

The SWMP will be updated at least every six months.

The SWMP will describe the procedures that are in place to ensure that the contractor and all other parties involved with the management of the waste generated from the site comply with the Environmental Protection (Duty of Care) Regulations 1991. To ensure compliance with these regulations the statutory guidance provided in "Waste Management – The Duty of Care, Code of Practice (HMSO 1996)" will be followed.

The SWMP will record the decisions taken to reduce the amount of waste. This will include the steps taken to minimise waste from the construction sites and steps taken to reuse excavated materials or demolition waste on or near to sites.

2.7 Air Quality and Dust Management Plan

2.7.1 Objectives

The objectives of the air quality and dust management plan are to:

- As far as is 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.
- Identify potential sources of emissions to the atmosphere and apply appropriate control techniques.
- Implement measures to reduce the impact of dust in a timely manner.

2.7.2 Vehicle and Plant Emissions

Adverse impacts of vehicle and plant emissions will be controlled by implementing the following measures where appropriate:

- a) 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) 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) All project vehicles, 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 haul routes and operate plant away from potential receptors such as houses, schools and hospitals.
- g) Avoiding the use of diesel or petrol powered generators and using mains electricity or battery powered equipment.
- h) Maximising energy efficiency (this may include using alternative modes of transport, maximising vehicle utilisation by ensuring full loading and efficient routing).
- 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 3 during any works.

2.7.3 Dust Management

Please insert work package specific detail here to include the risk level of dust emissions on site and relevant mitigation measures. **Example Text:** 'The <insert location>worksite has been identified as low/medium/high risk (Refer to the Crossrail Specialist Technical Report on Air Quality), and consequently <tier 1/ tier 2 / tier 3> dust control procedures as set out in the tables below) will be implemented where appropriate. Alternatives may be proposed to suite the detailed construction arrangements providing the resulting control is at least as effective as that arrived at using the specified measures.'

Insert the relevant table:

Table 1. Tier 1 measures controlling the emissions from dust from worksites.

ensure no burning of waste materials takes place on site;
ensure an adequate water supply on the site;
ensure disposal of run-off water from dust suppression activities, in accordance with the appropriate legal requirements;
maintain all dust control equipment in good condition and record maintenance activities;
keep site fencing, barriers and scaffolding clean using wet methods;
provide easily cleaned hardstanding for vehicles;
ensure regular cleaning of hardstandings using wet sweeping methods;
not allow dry sweeping of large areas;
provide and ensure the use of wheel-wash facilities near the site exit wherever there is a potential for carrying dust or mud off the site;
fit wheel-washes with rumble grids to dislodge accumulated dust and mud prior to leaving the site wherever there is a potential for carrying dust or mud off the site and where reasonably practicable;
ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits;
install hard surfaced long term haul routes, which are regularly damped down with fixed or mobile sprinkler systems and regularly cleaned;
inspect haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable;
record all inspections of haul routes and any subsequent action in a site log book which may be in hard or electronic format;
ensure that un-surfaced haul routes and work areas are regularly damped down in dry conditions;
routinely clean public roads and access routes using wet sweeping methods;
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;
impose and signpost maximum speed limits of 5 mph on un-surfaced haul routes and work areas and 10 mph on surfaced haul routes and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of CRL and with the agreement of the local authority, where appropriate);
ensure all vehicles carrying loose or potentially dusty material to or from the site are fully sheeted;
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;
mix large quantities of cement, bentonite, grouts and other similar materials in designated areas which

<i>will be enclosed or shielded;</i>
<i>store materials with the potential to produce dust away from site boundaries where reasonably practicable;</i>
<i>ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out;</i>
<i>minimise the amount of excavated material held on site;</i>
<i>sheet, seal or damp down unavoidable stockpiles of excavated material held on site, where required;</i>
<i>avoid double handling of material wherever reasonably practicable;</i>
<i>ensure water suppression is used during demolition operations;</i>
<i>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;</i>
<i>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;</i>
<i>use enclosed rubble chutes and conveyors where reasonably practicable or use water to suppress dust emissions from such equipment;</i>
<i>always use enclosed conveyors where crossing roads, other public areas and property which is not in the ownership or control of CRL;</i>
<i>sheet or otherwise enclose loaded bins and skips;</i>
<i>minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate;</i>
<i>seal or re-vegetate completed earthworks as soon as reasonably practicable after completion;</i>
<i>use design/prefabrication to reduce the need for grinding, sawing and cutting on site wherever reasonably practicable;</i>
<i>only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction;</i>
<i>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 the log book detailed;</i>
<i>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; (1mm) record any exceptional incidents causing dust episodes on or off the site and the action taken to resolve the situation in the log book detailed in above.</i>

Table 2. Tier 2 measures controlling the emissions from dust from worksites.

<i>strip insides of buildings, as far as reasonably practicable, before demolition;</i>
<i>bag and remove biological debris (such as birds nests and droppings) or damp down such material prior to demolition;</i>
<i>wherever reasonably practicable, retain walls and windows while the rest of the building is demolished to provide a screen against dust;</i>
<i>screen buildings, where dust producing activities are taking place, with debris screens or sheeting;</i>
<i>avoid carrying out earthworks during dry weather if reasonably practicable having regard to programme and contracting arrangements for the relevant works or provide and ensure appropriate use of water sprays to control dust;</i>
<i>seed or seal medium or long term excavated material and soil stockpiles;</i>
<i>ensure slopes on stockpiles are no steeper than the natural angle of repose of the material and maintain a smooth profile;</i>
<i>ensure equipment is readily available on site to clean any spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods;</i>
<i>ensure mixing of cement, bentonite, grout and other similar materials takes place in enclosed areas remote from site boundaries and potential receptors;</i>
<i>where appropriate use increased hoarding height to protect receptors; and</i>
<i>consider full enclosure of sites or specific operations where there is a high potential for dust production and the site is active for an extensive period.</i>

2.7.4 Dust Monitoring

Please insert work package specific detail here based on risk level of dust emissions at the site.

Example Text for medium risk sites:

The <insert location> worksite is a medium risk site, and consequently the dust monitoring will comprise passive deposition monitoring techniques (glass slides/Frisbee gauges/sticky pads) at locations on site boundaries or near to local receptors. The appropriate frequency of replacement of the gauges etc. depends on the detailed construction arrangements. The replacement frequency will be determined by the construction contractor and submitted to CRL for approval. Results will be filed and will be available for inspection upon request.

Example Text for high risk sites:

The <insert location> worksite is a high risk site, and consequently a baseline will be established prior to construction. This will be determined, where reasonably practicable, for a twelve month period derived from data sourced from local background PM₁₀ concentrations measured by the Automatic Urban and Rural Network (AURN) monitoring sites and appropriate local authority automatic monitoring sites. By establishing a baseline the nominated undertaker will ensure, as far as reasonably practicable that:

- a) Monitoring data will be readily available for appropriate periods prior to construction.
- b) Data will be collected as PM₁₀ µg.m⁻³, the same units as is suggested for the site action level in the London BPG.
- c) Localised unidentified sources creating a false baseline are avoided (eg local construction activity: local monitoring site operators should note any unusual activity in the vicinity of monitoring sites that may affect monitoring results).

During construction particulate monitoring will be undertaken using appropriate survey instruments such as Osiris, Topaz, DustScan or similar devices. Two instruments will be deployed at each high risk site and will be sited at locations such as site boundaries, potential receptors or in a transect orientated to the prevailing wind, as appropriate to specific site characteristics.

Instruments will be set-up at high risk sites to operate an alarm (PC based or mobile phone) when a predetermined site action level is reached. If the alarm is triggered the following actions will be taken:

- a) The nominated person or someone delegated by the nominated person will as quickly as reasonably practicable investigate activities on the site to ascertain if any visible dust is emanating from the site or activities are occurring that are not in line with dust control procedures.
- b) Any identified causes will be rectified where practicable. Actions will be recorded in the site logbook and the relevant local authority notified of the incident and actions by telephone or e-mail as soon as practicable after or during the incident.
- c) If no source of the incident is identified other Crossrail sites and local authority or AURN monitoring sites will be contacted to establish if there is a wider area increase in particulate concentrations.
- d) If the cause of the alarm is not related to site operations the outcome of any investigation will be recorded in the site logbook and reported to the relevant local authority at an appropriate time.

A site action level will be established by reference to local authority and AURN PM₁₀ monitoring data in consultation with the relevant local authority. Subject to consultation, a preliminary site action level of 250µg.m⁻³ (15 minute average) will be adopted.

Dust monitoring will be continued until the site has a risk score that assigns it to the low risk category. The cessation of monitoring when a site no longer represents a high or medium risk is subject to consultation with and the agreement of the local authority in whose area the worksite is situated that high or medium risk no longer applies, provided that such agreement is not unreasonably withheld, and the local authority is a qualifying authority for the purposes of Schedule 7 to the Crossrail Bill.

2.8 Archaeology and Built Heritage Management Plan

2.8.1 Objectives

The objective of this archaeology and built heritage management plan is to ensure that works are carried out in such a way as to avoid or minimise, as far as reasonably practicable, potential damage and disturbance to archaeological sites and deposits, and buildings of historic interest (both listed buildings and important non-listed above ground features and structural elements). These resources will be managed in accordance with the control mechanisms set out below and accepted industry practice guidance and relevant standards.

2.8.2 Archaeological Management

Please insert work package specific detail here, using Crossrail Generic Written Scheme of Investigation for reference and guidance. <insert reference to any archaeology priority zones as defined in the ES if applicable>

Example Text (where detailed design has been undertaken and scope of archaeology works are confirmed): 'In accordance with the Crossrail Generic Written Scheme of Investigation (WSI), a site specific WSI has been prepared for the <insert location>] worksite/s. The WSI includes consideration of important non-listed above ground features and structural elements of historical interest. Work will be undertaken in accordance with the requirements set out in the site specific WSI'.

Example Text (where detailed design is yet to be undertaken and scope of archaeology works are not confirmed): In accordance with the Crossrail Generic Written Scheme of Investigation (WSI), archaeological assessment work is being undertaken in order to design an appropriate package of archaeological mitigation for each Crossrail construction site. In relation to the proposed Crossrail station and infrastructure works in <insert relevant Local Authority>, varying levels of archaeological risk have been identified which have enabled the project team to target the future scope of archaeology design works.

The assessment has concluded that important archaeological or historic remains will not be impacted by the works at XXXX and no further archaeological investigation or built heritage works are deemed necessary for this site. Detailed Desk-Based Assessments (DDBAs) covering archaeology and non-designated built heritage will be prepared for works at XXXX and, where the DDBAs identify the need for on-site archaeological works, Site Specific Written Schemes of Investigation (SS-WSIs) will be produced. In accordance with the Crossrail Generic Written Scheme of Investigation (WSI), the SS-WSI will include consideration of important non-listed above ground features and structural elements of historical interest and work will be undertaken in accordance with the requirements set out in the SS-WSIs.

2.8.3 Listed Buildings

Please insert work package specific detail here, using Information Paper D12 for reference and guidance.

Example Text (where there are listed buildings affected by the works and covered by a Heritage Deed) [Maidenhead Viaduct, Slough Station, Hanwell Station]: 'CRL has entered into a Heritage Agreement with the <insert relevant local authority> and English Heritage regarding <list the structures that are the subject of the agreement>, In accordance with the agreement, a method statement for the works affecting the building will be approved by [insert relevant local authority>. The works will comply with the method statement that is approved under the terms of the agreement.'

Example Text (where there are listed buildings affected by the works not covered by a Heritage Deed): e.g. Wharnecliffe Viaduct – Explain the nature of the works and the consents which will be sought to cover them.

2.8.4 Listed Buildings and Settlement

Example Text (where there is a risk of settlement (mainly relates to tunnelling and excavation activities):

'All buildings within the zone that may be affected by settlement have undergone a settlement assessment to establish the risk of damage. Further work will be undertaken as part of the detailed design in order to specify the requirements for further survey, protective measures and monitoring as set out in Information Paper D12 (IPD12). The presence of these buildings will be identified and the measures that will be undertaken to protect them from damage will be specified. Consultation will be undertaken with <insert

relevant local authority and English Heritage as set out in the IPD12 and their written approval for “particulars” submitted will be sought in compliance with appendix 2 of the heritage deed between CRL, **<insert relevant local authority>** and English Heritage’.

2.9 Ecological Management Plan

2.9.1 Objectives

The objectives of the ecological management plan are to control and limit disturbance to areas of nature conservation interest and protected species in accordance with relevant legislative requirements and accepted industry practice.

2.9.2 Ecological Management

The works will be undertaken in accordance with the Crossrail General Ecological Management Plan which will set out general procedures for managing ecology on Crossrail worksites, and any site specific measures described in this section.

2.9.3 Ecological Resources

<Insert brief statement on ecological baseline> e.g. confirm location of any statutory or non-statutory designated sites in the vicinity of the works; describe any surveys undertaken (dates and scope); confirm any records of protected species (from information in the Crossrail ES or subsequent surveys); and describe the existing habitat (type of planting, presence of trees etc).

Example Text: ‘ Finsbury Circus Worksite is designated as a Site of Importance for Nature Conservation (SINC) comprising parkland with veteran trees, shrubberies, hedges and flower beds, supporting a small range of common bird species. A phase 2 botanical survey undertaken in 2004 did not record any wild species of note. One of the trees to be removed at Finsbury Circus worksite has been identified as having a moderate potential for roosting bats’.

2.9.4 Mitigation

Insert the mitigation measures relevant to the site as identified from the table below: [where there are multiple worksites with varying requirements, combine into a single list]

Code	Method	Description
Ec01	Minimise effects of temporary landtake	Temporary worksites (including site accesses) will be located within areas of low conservation value, as far as reasonably practicable.
Ec02	Ecological Restoration Survey	A suitably qualified ecologist will survey temporarily affected areas prior to works commencing to record the characteristic species of each of the habitats present, to inform the restoration design.

Ec03	Restoration of Temporarily Acquired Areas	<p>Restoration of temporarily affected areas will normally be to their pre-construction condition, in accordance with the EMR and Schedule 7 requirements, and to the satisfaction of the Nominated Undertaker. Restoration will be undertaken on or as reasonably practicably close to the end of the construction works as possible.</p> <p>Restoration proposals will be described within applications made under Schedule 7 to the Crossrail Act, and may require natural re-colonisation or planting and seeding with native species as appropriate to the area and necessary to achieve the restoration proposals.</p> <p>Top soil to be used in the restoration of temporarily acquired sites of nature conservation importance will be sourced from locations as close as reasonably practicable, to ensure the seed bank reflects local conditions.</p>
Ec04	Tree and Shrub Clearance	<p>Where required for the works, trees and shrubs will be removed outside of the bird breeding season (1st March to 31st July) wherever practicable. Removal within the bird breeding season will be subject to an Ecological Watching Brief.</p>
Ec05	Protection of Trees	<p>Measures to ensure the protection of trees to be retained will be implemented in accordance with BS5837: 2005 'Trees in relation to construction'.</p>
Ec06	Protective Fencing	<p>Protective Fencing will be provided to segregate works areas from ecological features to minimise accidental incursion of workforce or machinery. The fencing will be clearly labelled 'ecological protection zone' and with details of whom to contact should access to the protected area be required.</p>
Ec07	Visual Screening	<p>Hoarding or similar will be erected around construction sites in ecologically sensitive areas to minimise visual disturbance, for example to minimise disturbance to wintering birds on the River Thames foreshore, and for nesting birds on Thames-side grazing marshes.</p>
Ec08	Worksite Lighting	<p>Temporary worksite lighting will be located, angled and shielded to avoid spillage as far as practicable outside of the works area.</p>
Ec09	Ecological Watching Brief	<p>A suitably qualified ecologist will conduct a 'watching brief' prior to and during key stages of works, to search for protected species and ensure legal compliance. The searches undertaken where appropriate will be destructive to minimise the likelihood of the return of protected species.</p>
Ec10	Unanticipated Discovery	<p>In the event of a protected species being found during the 'watching brief', works will cease in the immediate area whilst the Nominated Undertaker is informed and, at the request of the Nominated Undertaker, appropriate mitigation measures are agreed with Natural England.</p>

Ec11	Relocation of Reptiles & Amphibians (excluding Great Crested Newts)	<p>Mitigation at sites supporting small populations of reptiles or amphibians (sites in Route Windows W25, W21,W15, W14, W13, W11, NE8, NE15, SE7and SE8) will be undertaken as follows:</p> <ul style="list-style-type: none"> - Search and removal of refuges from works area, repositioning refuges where possible within unaffected areas of habitat up to 100m from works site - Relocation of any animals caught to suitable areas of unaffected habitat, a short distance from the works site - Clearance of all vegetation from the areas affected by works to prevent return of animals. Reptile proof fencing may be installed at some sites to prevent any animals returning to the work sites.
Ec12	Translocation of Reptiles	<p>Mitigation at sites where the majority of the suitable habitat for reptiles will be lost to the works (sites in Route Windows NE9 and NE11)</p> <ul style="list-style-type: none"> - Identify a suitable receptor site as close as possible to the donor areas. - Undertake improvement works as necessary to the receptor site - Install artificial refugia within area (at an appropriate density for the site) and allow to settle for 5 days - Undertake capture surveys in accordance with best practice guidance until 10 animals or fewer have been caught in any 10 day period of suitable weather conditions - Undertake destructive search of site, culminating in the clearance of all vegetation from the work site - Monitoring of the translocated population will be undertaken for the following two years to ascertain that the new population has established successfully.
Ec13	Control of Pest Species	<p>The control of pest species (including vermin and rabbits) will be undertaken by appropriately trained personnel in accordance with legal provisions, including the Wild Mammals (Protection) Act 1996.</p>
Ec14	Measures to prevent the spread of Non-native Invasive Plant Species from neighbouring areas	<p>Where invasive, non-native species, including Japanese Knotweed and Giant Hogweed are found in the vicinity of worksites, the work site boundary will be relocated to exclude an area up to 7m (at the direction of a suitably qualified ecologist) from the nearest growing stem to prevent works from coming into contact with propagules (seeds or fragments of stem or root that may give rise to a new plant).</p>
Ec15	Measures to prevent the spread of Non-native Invasive Plant Species within worksites	<p>Where invasive, non-native species, including Japanese Knotweed and Giant Hogweed occur within worksites, consideration will first be given to excluding by fencing an area up to 7m (at the direction of a suitably qualified ecologist) from the nearest growing stem to prevent works from coming into contact with propagules.</p>

Ec16	Measures to prevent the spread of Non-native Invasive Plant Species within temporary worksites of 3 months or less duration	Should the invasive species occur in an area required for temporary works (less than 3 months), the above ground vegetation will be removed to a suitable landfill site and two layers of 2000grade terram or similar will be laid directly on the surface of the soil over an area at least 7m from the nearest growing shoot and weighted with hardcore to a depth of at least 300mm. Upon completion of the works, the hardcore will be removed and following inspection by a suitably qualified ecologist to confirm that invasive plants have not penetrated the hard core, will be reused as appropriate. The terram will be lifted with care to prevent disturbance to the ground and disposed of in a suitable landfill site.
Ec17	Measures to prevent the spread of Non-native Invasive Plant Species as a result of long (>3 months) duration and permanent works	To the direction of a suitably qualified ecologist, an area within 7m horizontally from the nearest growing stem and up to 3m below ground level will be excavated and removed to a suitable landfill site. The ecologist will determine the extent of material to be excavated according to the presence of plant propagules: only once all propagules have been removed will the excavation cease. Machinery and tools used for the excavation, including the boots of construction staff will be cleaned at the site of the excavation until no extraneous material (soil potentially supporting propagules) remains: the arisings of this cleaning process will be disposed of to a suitable landfill.
Ec18	Measures to prevent the spread of Non-native aquatic invertebrates	Should Zebra Mussel or Chinese Mitten Crab be encountered during works, care will be taken to ensure that they are not released as a result of the works. Where necessary, the species will be dispatched humanely.
Ec19	Translocation of fish	Prior to draining water bodies, populations of fish will be translocated to a suitable receptor pond.

2.9.5 Surveys

Summarise and describe the scope of any surveys yet to be undertaken and when these will be done.

2.9.6 Reinstatement

Reinstatement will be undertaken as detailed in the relevant Schedule 7 submission. <insert any relevant information from schedule 7 submission>

2.10 Lighting Management Plan

2.10.1 Objectives

The objectives of the lighting management plan are to provide adequate lighting on construction sites, ensuring a safe and secure worksite but avoiding incorrectly positioned site lighting that may cause nuisance or may unnecessarily interfere with local residents, railway operations, passing motorists or the navigation lights for air traffic.

2.10.2 Lighting Management

The extent of the area to be lit will vary during the different stages of construction according to area of construction, security and health and safety requirements, as set out in Section 3.4 of the Construction Code.

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, roads and amenity areas.

Appropriate industry standard procedures will be implemented at all construction sites for site lighting. Lighting will also be designed, positioned and directed so as not to unnecessarily intrude on adjacent buildings, wildlife sites and land uses and so as to prevent interference with local residents, railway operations, road traffic signals and signing, passing motorists or navigation lights for air or water traffic. The lighting will also be designed to comply with the provisions of BS5489, Code of Practice for the Design of Road Lighting, where applicable.

Where appropriate the following measures will be considered for implementation:

- do not “over” light
- dim or switch off lights
- use specifically designed equipment
- keep glare to a minimum, and
- position lights sensibly

Further guidance is contained within Guidance Notes for the Reduction of Light Pollution 2000 published by the Institute of Lighting Engineers.

2.11 Noise and Vibration Management Plan

2.11.1 Objectives

The objectives of the noise and vibration management plan are to, 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.

2.11.2 Context

Please insert work package specific information here summarising any sensitive receptors (as defined in the Crossrail ES) in the vicinity.

Example Text: *‘There are numerous residential properties around the worksites at <Insert Location>. Other noise sensitive receptors that were identified in the ES include Regent Hall church, Ukrainian Cathedral (King’s Weigh House Church) and users of Hanover Square Gardens’.*

2.11.3 Noise and Vibration Management

Consents under Section 61 the Control of Pollution Act 1974 will be obtained for the construction works. The works will be carried out in accordance with the conditions of the consent.

Section 61 consent applications will be made in accordance with the Crossrail Section 61 Guidance Note.

The contractor may agree with the local authority and CRL that for certain activities not anticipated to be noise sensitive such as site investigation and site set up, a Section 61 will not be necessary.

In any event Best Practicable Means (BPM) as defined under Section 72 of the Control of Pollution Act (CoPA) 1974 will be applied to all activities.

2.11.4 The Crossrail Noise and Vibration Mitigation Scheme

Where under certain circumstances despite the use of Best Practicable Means, construction noise levels at residential receptors are predicted to be acute, temporary re-housing and/or noise insulation may be provided, or a grant made available for this purpose under the provisions of the Crossrail Noise and Vibration Mitigation Scheme.

At <worksite name> the Crossrail ES identified <insert X number> of properties as being likely to be eligible for temporary re-housing (TRH) and/or noise insulation (NI) under the Crossrail Noise and Vibration Mitigation Scheme.

Actual eligibility for the scheme will be determined once detailed construction planning and construction noise assessments have been carried out.

Details of dwellings found eligible under the scheme will be included the relevant CoPA section 61 consent application.

2.11.5 Monitoring

Noise and vibration monitoring will be agreed in advance with the local authority, as part of a Section 61 consent application. The results of any noise and vibration monitoring will be made available, as required, to the local authority. 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.

2.11.6 Selection and Use of Equipment

Best Practicable Means will be employed on all worksites. In selecting equipment that will be used on the worksite the following documents and principles will be adhered to where practicable:

- Each item of plant used on the worksites will comply with the noise limits quoted in the relevant European Commission Directive 2000/14/EC/United Kingdom Statutory Instrument (SI) 2001/1701.
- 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 will be adopted unless agreed in advance with the relevant local authority.
- 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 to plant and equipment will be maintained in good and efficient working order and operated such that noise emissions are minimised as far as reasonably practicable.
- 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 should be electrically powered in preference to diesel or petrol driven.
- Vehicles and mechanical plant employed for any activity associated with the construction works will, where reasonably practicable, be fitted with effective exhaust silencers and will 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 should be shut down or throttled down to a minimum during periods between work.

- Static noise emitting equipment operating continuously will be housed within suitable acoustic enclosure, where appropriate.

2.11.7 Underground and Associated Surface Activities

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

- Conveyors:
 - the mounting for conveyors used to remove excavated material from the tunnel face will be designed and installed so as to mitigate the transmission of ground borne noise and vibration to buildings above the tunnel;
 - a maintenance programme will be implemented to ensure that the noise generation of the conveyor does not deteriorate over time; and
 - surface conveyor systems will be of a similar standard to underground conveyors and will be acoustically enclosed where they run through or adjacent to noise sensitive areas. They too will be the subject of a maintenance programme. Conveyors will be covered throughout their length to prevent material spillage; and
- 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.

2.11.8 Notifications

Occupiers of nearby properties will be informed in advance of the works taking place, including the duration and likely noise and vibration impacts. In the case of work required in response to an emergency, the local authority and local residents will be advised as soon as reasonably practicable that emergency work is taking place.

Potentially affected residents will also be notified of the Crossrail Helpline number.

2.11.9 Reversing Alarms

As far as reasonably practicable the noise from reversing alarms will be controlled and limited. This will be managed through the following hierarchy of techniques:

- a) The site layout will be designed to limit and where reasonably practicable, avoid the need for the reversing of vehicles. CRL will seek to ensure that drivers are familiar with the worksite layout.
- b) Banksman will be utilised to avoid, as far as reasonably practicable, the use of reversing alarms.
- c) Reversing alarms incorporating one or more of the features listed below or any other comparable system will be used where reasonably practicable; i) highly directional sounders; ii) use of broadband signals; iii) self adjusting output sounders; and iv) flashing warning lights.
- d) Reversing alarms will be set to the minimum output noise level required for health and safety compliance.

2.12 Water Management Plan

2.12.1 Objectives

The objectives of the water management plan are to implement working methods to protect surface and groundwater from pollution and other adverse impacts including change to flow volume, water levels and quality.

2.12.2 Water Resources

<insert brief details of the water resources and summary of ground conditions at the site> e.g nearest surface watercourse, flood zone, aquifer etc <Include details of any abstractions (licensed boreholes) in the vicinity>.

2.12.3 Water Management

Works will be undertaken in accordance with approvals from the Environment Agency where appropriate, as obtained in accordance with the regime set out in Schedule 17 to the Crossrail Act. Measures will be installed in line with the Construction Code (Section 7).

2.12.4 Site Drainage

Site drainage, including surface runoff and dewatering effluents, will be discharged to sewers where reasonably practicable and relevant permissions will be obtained from the sewerage undertaker (Thames Water Utilities Ltd) or statutory undertakers as required. Site drainage will meet the requirements for effluent and flood risk standards required by the relevant undertaker.

The relevant sections of BS6031: Code of Practice for Earthworks for the general control of site drainage will be followed.

Further topics to be covered if required:

- Protection of Watercourses
- Control of Pollution of Groundwater
- Mitigation of Impacts at Abstraction Boreholes
- Dewatering/Dredging
- Any specific provisions

2.12.5 Protection of Water Courses

[Insert brief statement on the location of any surface water courses in the vicinity of the site (if there are none, state this).]

[Example text for a worksite with no surface water courses in close vicinity:

There are no surface water courses in the vicinity of the worksites at [INSERT LOCATION]. The nearest surface watercourse to [INSERT LOCATION] is XXXX, approximately XXm from the worksite boundary. The [INSERT LOCATION] works are not expected to impact upon this watercourse.

[Example text for a worksite near a surface watercourse:

During construction protection measures to control the risk of pollution to the [INSERT NAME OF WATER COURSE] will be adopted. These will include where appropriate and reasonably practicable:

- Any containers of contaminating substances on site will be leakproof 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.
- 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.

- Only construction equipment and vehicles free of oil/fuel leaks which could cause material contamination will be permitted on site. Drip trays will be placed below static mechanical plant.
- All wash down of vehicles and equipment will take place in designated areas and washwater will be prevented from passing untreated into watercourses and will comply with EA's Pollution Prevention Guidance (PPG) note PPG13.
- EA note PPG 23 will be followed when carrying out maintenance of structures over water. As far as reasonably practicable, only biodegradable hydraulic oils will be used in equipment working in or over watercourses.
- Appropriate measures to be taken to protect erodable earthwork surfaces.

2.12.6 Control of Pollution of Groundwater

Protection measures to control the risk of pollution to groundwater will be consistent with the Groundwater Regulations 1998. Where reasonably practicable, the use of materials that could pollute groundwater will be avoided. 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).

2.12.7 Mitigation of Impacts at Abstraction Boreholes

[Include the following example text if there are licensed boreholes in the vicinity of the site likely to be impacted on by the works (if there are none, simply state that there are none).]

Example text: 'An abstraction borehole licensed to **<insert abstraction licences here>** is located adjacent to XXXX worksite. The nominated undertaker will so far as reasonably practicable recognise the rights of existing abstractors, and will consult them on measures to avoid or minimise loss or interruption of supply or provision of alternative supplies, so far as such measures or provision are reasonably practicable.

In order to protect this abstraction, the following precautionary actions will be applied, where applicable and reasonably practicable:

- (a) where agreed by the CRL and well owners, some routine water quality monitoring may be undertaken at abstraction sources. The period of monitoring will be appropriate to the timing and type of work undertaken. The need for intermediate monitoring holes and procedures for water and contaminant testing during construction and operation will be discussed with the owners;*
- (b) CRL will arrange any necessary monitoring of water levels in areas where dewatering of the deep aquifer is planned;*
- (c) where the water quality monitoring shows an adverse impact on water quality, then CRL will contact the relevant abstractor as soon as practicable and the nominated undertaker will, as far as reasonably practicable, put in place appropriate emergency measures to overcome the adverse impact, where this adverse impact has resulted from the Crossrail works.*
- (d) records of water pumped will be kept at all major dewatering sites where wells are constructed in the deep aquifer or where required under the terms of a discharge consent; and*
- (e) 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 a discharge consent or under the protective provisions'.*

2.12.8 Dredging/De-watering

[Include the following text if any dredging/dewatering is likely to be required (if there is none, simply state this):]

For example: 'The potential presence of a local perched water table within the Lambeth Group will be confirmed through geotechnical investigations. If present, the perched water table may require some passive dewatering wells for Davies Street and Hanover Square worksites.]

Approval from the Environment Agency for the arrangements to manage and monitor the dewatering process will be obtained in accordance with Schedule 17 to the Crossrail Act'.

2.12.9 Any specific provisions

Include, for example, any mitigation to be implemented on sites above a shallow aquifer.

Example Text 'The groundwater flows in the superficial deposits around the former River X could be affected by the construction of X. The investigation and monitoring of groundwater flows within the superficial deposits around the former River X will be undertaken where necessary, to provide mitigation'.

2.13 Recreational Resources Management Plan

[Include this section if the worksite is identified as an Environmentally Sensitive Worksite and Recreation is a Priority Issue]

2.13.1 Objectives

Working methods will be implemented in accordance with the Crossrail Construction Code. The objective will be to limit the disturbance to recreational users, where practicable, and to ensure that site recreation and reinstatement will be undertaken by the nominated undertaker in a timely manner as required under Schedules 5 and 7 to the Crossrail Act.

2.13.2 Key Principles

The key principle will be to minimise the effects of construction on <Insert name of recreational work package name> at <INSERT LOCATION> and that compensation and appropriate reinstatement is provided following the completion of works.

2.13.3 Existing Recreational Facilities

[Insert description of existing facilities]

Example text: Mile End Park and has informal recreational space and 4 all-weather sports pitches. The all-weather pitches are flood lit and available for use for sports including football and hockey.

2.13.4 Recreational Use during Construction

[Insert proposed arrangements during the works]

Example text: In the original proposal for the Mile End Park shaft worksite, one of the sports pitches would be lost to the construction of the shaft. To address concerns expressed by the LBTH, a review of the arrangements identified that the existing Mile End Stadium coach park could be moved and the sports pitch relocated into its position to compensate for the identified loss. The relocation of the sports pitch will take place prior to commencement of shaft construction and remain in this position following the completion of works.

There will a short time period (approximately 7 months, Oct 2012 to Apr 2013) during the relocation of the pitch where it will be unavailable for use. Crossrail will use reasonable endeavours to minimise the length of time during which the pitch is out of use. A separate planning application will be submitted to the LBTH regarding the relocation of the Mile End Stadium coach park and all-weather sports pitch.

2.13.5 Reinstatement

Site reinstatement will be undertaken in a timely manner by the nominated undertaker. A reinstatement plan for the site will be prepared and submitted to <INSERT LOCAL AUTHORITY> in accordance with Schedule 7 of the Act.

Information papers IP D5 – Site reinstatement and IP D13 – Restitution of Open Space, provides details regarding reinstatement of site following temporary occupation for construction works.

The reinstatement of the area occupied by the worksite will be undertaken by the nominated undertaker in line with the overall restoration plan for the area affected by the works. This will be subject to agreement with <INSERT LOCAL AUTHORITY>.

Appendix 1: Legislation, codes of practice and guidance relevant to the EMP

List of references to Crossrail documentation

To include but not limited to:

- Crossrail Route Wide Generic Activities Land Contamination Report
- Crossrail Specialist Technical Report on Contaminated Land
- Information Paper D5 - Site Reinstatement
- Information Paper D09 Noise and Vibration Mitigation Scheme
- Information Paper D10 Groundborne Noise and Vibration
- Information Paper D12 Ground Settlement
- Information Paper D13 - Restitution of Open Space)
- Information Paper D17 – Ecological Impacts
- Information Paper D22 - Archaeology
- Information Paper D25 Noise from Fixed Installations
- Information Paper D26 Surface Railway Noise and Vibration
- Written Scheme of Investigation for ,<Insert work package name>
- Crossrail Assessment of Settlement Impacts on the Built Heritage, chapter 5. Mitigation and Protective works
- General Ecological Management Plan
- Generic Archaeological Written Scheme of Investigation
- Crossrail Specialist Technical Report on Air Quality
- COPA 1974 Section 61 Applications, Noise and Vibration Procedure (Crossrail Procedure)
- The Crossrail Noise and Vibration Mitigation Scheme (Information Paper D9, Noise and Vibration Mitigation Scheme).
- Temporary Hoardings & Fencing Specification for the Construction of Crossrail

List of references to non-Crossrail documentation

To include but not limited to:

- BS 5837: 2005 Guide for Trees in Relation to Construction
- BS 5228: 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
- BS 6031: Code of Practice for Earthworks
- BS 6472: 1992 Evaluation of human exposure of vibration in buildings (1Hz to 80 Hz)
- BS 7385 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
- BSI (2001) Investigation of Potentially Contaminated Sites. Code of Practice. 10175
- 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
- CIRIA/Environment Agency Joint Guidelines: Masonry Bunds for Oil Storage Tanks
- CIRIA (1996) A guide to safe working on Contaminated Sites Report 132
- Guidance Notes for the reduction of obtrusive lighting, 2005 The Institute of Lighting Engineers
- Lighting in the Countryside: Towards Good Practice (1997) HMSO
- Mayor of London: The control of dust and emissions from construction and demolition, Best Practice Guidance, 2006
- DEFRA (2008) Non-Statutory Guidance for Site Waste Management Plans

- Environment Agency Pollution Prevention Guidance PPG01 General guide to the prevention of water pollution
- Environment Agency Pollution Prevention Guidance PPG02 Above ground oil storage tanks
- Environment Agency Pollution Prevention Guidance PPG05 Works near or liable to affect watercourses
- Environment Agency Pollution Prevention Guidance PPG06 Working at construction or demolition sites
- Environment Agency Pollution Prevention Guidance PPG21 Pollution incident response planning
- Environment Agency Pollution Prevention Guidance PPG23 Maintenance of structures over water
- Environment Agency Guidance Note: Piling into Contaminated Sites
- Environment Agency Technical Guidance WM2 Interpretation and Classification of Hazardous Waste provides assistance in classifying wastes.
- Waste Management - The Duty of Care, code of Practice (HMSO 1996).
- Buildings Research Establishment. 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.
- Control of Pollution Act 1974
- Salmon and Freshwater Fisheries Act 1975
- Wildlife and Countryside Act 1981, as amended
- Environmental Protection Act 1990
- Water Resources Act 1991
- Protection of Badgers Act 1992
- Land Drainage Act 1991
- Clean Air Act 1993
- Environment Act 1995
- Conservation (Natural Habitats &c) Regulations 1994, as amended
- Wild Mammals (Protection) Act 1996
- Pollution, Prevention and Control Act 1999
- Pollution Prevention and Control (England and Wales) Regulations 2000
- Countryside and Rights of Way (CROW) Act 2000
- Water Act 2003
- SI 1985/1968: The Construction Plant and Equipment (Harmonisation of Noise Emission Standards) Regulations 1985
- SI 1991/2839: Environmental Protection (Duty of Care) Regulations 1991
- SI 1998/2746: The Groundwater Regulations (EC Groundwater Directive: 80/68/EEC) 1998
- SI 2000/227: Contaminated Land (England) Regulations 2000
- SI 2001/1701: The Noise Emission in the Environment by Equipment for use Outdoors Regulations 2001 (EC Directive 2000/14/EC)
- SI 2001/2954: Control of Pollution (Oil Storage) Regulations 2001
- SI 2002/1559 Landfill (England and Wales) Regulations 2002
- SI 2002/2677: Control of Substances Hazardous to Health Regulations 2000
- SI 2005/894: Hazardous Waste (England and Wales) Regulations 2005
- SI 2008/314: Site Waste Management Plans Regulations 2008
- Planning Policy Statement 23: Planning and Pollution Control
- Defra/Environment Agency's Model Procedures for the Management of Contamination (CLR11)
- Contractors and Clients -Voluntary Code of Practice (Department of Trade & Industry - July 2004)
- Mayor of London, The London Plan, 2008
- Mayor of London, Clearing the air: The Mayor's Air Quality Strategy, December 2010
- OJ:L353/80/2012 amending Directive 97/68/EC on emissions of gaseous and particulate pollutants from internal combustion engines to be installed in non-road mobile machinery (Directive 2012/46/EU) 2012
- European Emission Standards defining limits for exhaust emissions of new vehicles pursuant to the series of EC Directives amending 70/220/EEC 1970

Appendix 2: Construction Site Plan

Learning Legacy Document

INSERT CONSTRUCTION SITES PLAN [Replicate Schedule 7 worksite plans]

Learning Legacy Document