SILVERTOWN TUNNEL

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Construction Materials Management Plan – Planning

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Contents

1. Overview

1.1 Introduction

The Silvertown Tunnel (STT) scheme involves the construction of a twin bore road tunnel providing a new connection between the A102 Blackwall Tunnel Approach on the Greenwich Peninsula (Royal Borough of Greenwich) and the Tidal Basin roundabout junction on the A1020 Lower Lea Crossing / Silvertown Way (London Borough of Newham). The project was formally granted development consent through a Development Consent Order (DCO) issued by the Department of Transport in May 2018. STT will be approximately 1.4km long and able to accommodate large vehicles including double-decker buses. It will include a dedicated bus, coach and goods vehicle lane, enabling TfL to provide additional cross-river bus routes.

Transport for London (TfL) have entered into a Project Agreement with the Project Company Riverlinx (Project Co) who are responsible for the detailed design, construction, financing and maintenance of the tunnel and supporting infrastructure. A 5 year period of design and construction will be followed be a further 25 years of operation and maintenance. The Project Co has appointed Riverlinx CJV as the Design and Construction (D&C) Contractor responsible for undertaking the detailed design and construction of the STT scheme all in accordance with the constraints and parameters of the Development Consent Order (DCO), TfL specifications and other commitments made by TfL to stakeholders. Riverlinx CJV is a joint venture formed between Ferrovial Agroman (UK) Ltd, BAM Nuttall and SK Engineering and Construction Co Ltd.

1.2 Purpose

The purpose of the Construction Materials Management Plan (CMMP) is to detail how Riverlinx CJV will handle and use materials in a way that prevents harm to human health and pollution of the environment and meets the objectives set out in the Construction, Demolition and Excavation (CD&E) Materials Commitments document that forms part of the Silvertown Tunnel Code of Construction Practice (CoCP). The CMMP describes the Riverlinx CJV approach to the management of CD&E materials and the proposed measures which will be taken to record and track progress towards achieving these commitments.

1.3 Project Details

The tunnel will cause changes to the existing road network on both sides of the River Thames. On the south side of the river, on the Greenwich Peninsula, the following changes to the A102 Blackwall Tunnel approach will be needed; widening the A102 Blackwell Tunnel approach to create space for STT approach lanes, building a new flyover for the southbound traffic from the Blackwall Tunnel to cross above the Silvertown Tunnel approach lanes and introducing new signage to direct traffic. On the north side of the river, in Silvertown, the following changes will occur; modification of the existing Tidal Basin Roundabout to connect the STT approach roads with Dock Road, realigning the Dock Road so that it links with the modified roundabout and introducing new pedestrian and cycle facilities within the modified roundabout.

2. Planning

2.1 Code of Construction Practice Requirements

The CoCP requires Riverlinx CJV to prepare a Construction Materials Management Plan (CMMP) that includes measures to ensure that materials are handled and used in a way that prevents harm to human health and pollution of the environment. Measures will include;

- Materials for the project will be received and controlled by a Riverlinx CJV appointed logistics lead.
- Materials will be stored to minimise the potential of damage or wastage. Measures will include off-ground storage e.g. on pallets, remaining in original packaging, protection from rain or collision by plant or vehicles.
- The materials storage area will be secured during out of hours to prevent unauthorised access.
- Source construction materials from suppliers with responsible sourcing certification (as practicable).
- Source aggregate supplies locally where possible.
- Materials will be ordered, where possible, in sizes to prevent wastage.
- Adopt “just in time” deliveries where possible so that storage is optimised, reduce opportunity for oversupply and damage on site.
- Wherever possible, standardisation of materials and building elements will be incorporated into the design in order to minimise required material resources and the production of waste, e.g. the use of prefabricated components.
- Where possible, consideration will be given to the reuse of material (e.g. uncontaminated soils) back into the project.
- Where applicable CJV will comply with the Good Practice Guide for Handling Soils (MAFF, 2000). Any contaminated soils encountered during excavation works will be screened, treated if necessary and either re-used on site or removed from site.

Riverlinx CJV shall seek to achieve the following objectives that align with the CD&E Materials Commitments made by TfL;

- where specification allows, utilise at least a 10% portion of construction materials to include reused and recycled content;
- minimise the use of primary aggregated by the selection of secondary materials, where possible;
- obtain all timber products from sustainable sources. All timber procured will be obtained from recycled, reclaimed sources or be accredited to meet sustainable forestry standard such as the Forestry Stewardship Council (FSC). Any remaining timber not sourced through the above will target a known temperate source using the Department for Environmental, Food and Rural Affairs (Defra) central point of expertise in timber (CPET);
- use low embodied carbon materials; and
- achieve a score of Very Good and ideally Excellent using CEEQUAL, adherence to materials and waste elements.

2.2 Environmental Statement

A sustainable design review workshop was held with TfL on 18 June 2015. The feasibility of setting up targets relevant to material resources and waste were discussed at the workshop and explored further during the PEIR consultation. Following consultation, the targets and commitments below were established;

- 50% of all CD&E materials and wastes by weight to be transported by river
- 100% of all suitable excavated material be transported by river
- diversion of 80% (by weight) of CD&E materials to schemes where the material can be used for beneficial use
- where specification allows, a portion of construction materials to include a reused and recycled content 10% recycled content (by value) in construction materials;
- use of primary aggregates will be minimised by the selection of secondary materials, where possible;
- materials specified will have low embodied carbon; and
- a score of Very Good and ideally Excellent using CEEQUAL, adherence to materials and waste elements.

2.3 Legislation

Riverlinx CJV will comply with the requirements defined with the following;

- Clean Neighbourhoods and Environment Act 2005
- Environment Act 1995
- Environmental Civil Sanctions (England) Order 2010
- Environmental Protection Act 1990
- Environmental Protection (Duty of Care) Regulations 1991
- Hazardous Waste (England and Wales) Regulations 2005
- List of Wastes (England) Regulations 2005
- Packaging (Essential Requirements) Regulations 2003
- Producer Responsibility Obligations (Packaging Waste) Regulations 2007
- Site Waste Management Plans Regulations 2008
- Waste Batteries and Accumulators Regulations 2009
- Waste Electrical and Electronic Equipment Regulations 2006
- Waste Management (England and Wales) Regulations 2006
- Trade Effluent (Prescribed Processes and Substances) Regulations 1989
- Environmental Permitting (England and Wales) Regulations 2010
- Control of Pollution (Applications, Appeals and Registers) Regulations 1996
- Silvertown Tunnel Development Consent Order (DCO)
- Silvertown Tunnel Code of Construction Practice (CoCP)
- Appendix C. CD&E Materials Commitments
- Appendix D. Receptor Site Assessment
- Appendix E. Site Waste Management Plan

2.4 Roles and Responsibilities

Riverlinx CJV will provide the appropriate resources to deliver the requirements of this plan and ensure that the requirements are communicated and acted upon. Table 1 provides details of the personnel working on the project with specific responsibilities in relation to materials management.

Role Title	Responsibilities
Project Director	• Provide adequate environmental resources and support to effectively deliver the requirements of this plan
Environmental Manager	• Develop and implement the CMMP • Identify and maintain compliance with the requirements and principles of the CMMP during construction • Assist lead auditors in auditing the CMMP • Identify, develop and provide environmental training as required specific to the CMMP • Approve method statements and consider CMMP requirements • Advise and instruct construction teams in the event of incidents and complaints • Liaise/meet with external stakeholders
Environmental Advisors	• Inspections on compliance with the CMMP requirements including Duty of Care checks • Brief CMMP requirements to relevant teams • Advise and guide project team in the implementation of materials management practices • Identify ideas for improvement to environmental manager for consideration. • Report best practice across the project • Assist in incident investigations and reporting • Encourage near miss reporting and identify trends

Role Title	Responsibilities
Waste Manager / Waste Champion	• Provide technical support on materials management issues • Establish effective reporting and monitoring regime • Lead on the control and management of materials generated on site • Assist in the investigation of any complaints or incidents as required
Section Manager	• Ensure the requirements of the CMMP are implemented on site • Ensure the requirements of the CMMP are integrated into all aspects of the construction works and detailed in method statements. • Ensure compliance with all materials management related procedures. • Manage the investigation and response to complaints.
Community Construction Liaison Manager	• Liaise with the local community regarding any complaint or query. • Notify the Section Manager and environmental team of any complaints regarding materials management. • Manage investigations into the complaints and provide the main point of contact with the helpline.
All Personnel	• Carry out the works in accordance with agreed methods and briefings. • Report anything that deviates from agreed processes. • Report all materials management incidents and examples of best practice to section managers • Attend environmental training.

Table 1 CJV CMMP Roles and Responsibilities

2.5 Training and Awareness

The Riverlinx CJV Environmental Team will provide training to staff and operatives at all levels (and, when appropriate, to others involved in or affected by work activities) to achieve and maintain a high standard of environmental awareness and risk control. Riverlinx CJV will work collaboratively to embed the requirements for effective materials management into working practices. The established practices will be briefed to all those who work for or on behalf of Riverlinx CJV in order to best achieve compliance with the plan including the performance-based elements. Environmental information on materials management will be displayed in offices and site cabins to increase awareness of specific materials management matters. Such information will include details on the management of excavated materials on site to maximise reuse potential. All those working for Riverlinx CJV or on behalf of Riverlinx CJV shall undertake an induction that includes an introduction to the key aspects of environmental management on the project including information on the CMMP. In addition, all Riverlinx CJV personnel will undertake the bespoke Environmental Awareness training session that will introduce personnel to how to manage site environment risks relevant to STT and provide practical guidance for specific topics including materials management. The Environmental Team, the Waste Champion and the Riverlinx CJV construction team will deliver materials management themed toolbox talks to site and office teams making use of best practice materials from parent companies and organisations such as CIRIA.

2.6 Communication

External communication on environmental matters will occur in a number of ways. The Riverlinx CJV Environmental Manager, Consents Manager and members of the Environmental Team will meet local authorities at appropriate and agreed intervals to discuss any materials management matters. The Riverlinx CJV Community Relations representative will seek to maintain dialogue with local communities and associations by various means including the Helpdesk.

3. Materials Management Strategy

3.1 Overview

The current plan is that a main construction compound will be established at Silvertown, utilising the existing barge facilities at Thames Wharf for the removal of spoil and delivery of materials by river. A secondary site compound is currently proposed to be located adjacent to the alignment of the proposed cut and cover tunnel on the Greenwich Peninsula. To support the DCO application TfL produced the "Construction, Demolition and Excavation (CD&E) Materials Commitments" document to define a series of overall objectives and commitments for the management of CD&E materials and the proposed measures which will be taken to record and track progress towards achieving these commitments. During the construction of STT, CD&E materials will be generated and transported to material/waste receptor sites for their management, treatment and end-use. CD&E materials (wastes) are defined under Article 3 (1) of the revised EU Waste Framework Directive as 'any substance or object which the holder discards or intends or is required to discard'. It should be noted that a material being classed as a waste does not preclude it from becoming a 'non-waste', providing that it demonstrated that it has reached its 'end of waste' status (see Article 6 of the revised EU Waste Framework Directive). Within the United Kingdom, the process of demonstrating a waste has reached its end of waste status is typically demonstrated through the CL:AIRE Development of Waste Code of Practice.

Where possible CD&E materials will be considered for use within the permanent works. Arrangements for suitable material/waste testing will be made and available on site in order to assist in the safe segregation of materials and onward treatment or disposal. Separate holding areas for waste segregation and material testing and treatment will be established to support both sites. Any contaminated soils encountered during excavation works will be screened, treated if necessary and either reused on site or removed from site. Material storage areas will be established in both sites to include a number of measures to protect the material from damage or wastage. This will include designated secure material storage areas away from regular site traffic to reduce the risk of accidental collision, use of original package/pallets to keep materials secure until required and use of material covers where required to protect materials sensitive to rainwater. Materials will be ordered to size and actual requirements in order to minimise over-ordering and potential wastage. Options to return unused materials to suppliers will be taken where possible.

3.2 Waste Arisings

STT is estimated to generate approximately 1,194,000 tonnes of CD&E materials throughout the construction phase, comprising 108,000 tonnes of non-excavated materials (arisings from construction and demolition activities) and 1,086,000 tonnes of excavated material, including material dredged from the River Thames to facilitate the construction and operation of the temporary jetty at the Silvertown site. These quantities are taken from the CoCP Site Waste Management Plan (SWMP), which formed part of the DCO application. The prevention of waste generation will be prioritised through the development of an efficient design, sustainable procurement of materials and seeking opportunities through the waste hierarchy. The waste hierarchy prioritises prevention as the preferred waste management option. Even though prevention of material generation will be prioritised, there will be unavoidable generation of CD&E material during the construction phase of the Scheme. At a minimum, 80% (by weight) of the scheme's CD&E materials shall be targeted for beneficial reuse (where possible and/ or technically feasible). As per the Duty of Care obligations (the (Environmental Protection (Duty of Care) Regulations 1991), all CD&E materials will be tracked from its origin to its final destination, including information on the quantities, classification and end destination.

Riverlinx CJV will adopt the Site Waste Management Plan (SWMP) produced for the DCO application and update it accordingly. It will be used to promote the efficient management of materials and waste generated and transported by the Scheme. The SWMP will help highlight materials and waste streams that could be more efficiently managed, for example redirecting recyclable/ recovered resources back to the manufacturing process, redirect usable materials to appropriate sites, and identifying materials and their adequate treatment to minimise impacts to the environment. The SWMP is a live document which will regularly updated. It helps to plan for the management of materials generated by CD&E activities as well as for recycling, re-use and recovery. The SWMP will be the principal method of monitoring progress against the commitment. The Receptor Site Assessment (for Excavated

Materials) produced during the DCO application will be used to identify and assess the receptor sites which will be suitable for receiving and managing the excavated materials generated from the scheme. The RSA takes a range of sites (facilities) and provides a clear scoring system to the capabilities and functions of each site. Sites that are considered to recycle, re-use etc. score higher than those who dispose (landfill) material. Progress in achieving the commitment will be monitored through population of the SWMP with the 'actuals' in terms of volume of waste produced and its end destination regularly recorded within the SWMP. The SWMP will help to track progress in achieving (or exceeding) the commitment.

3.3 Waste Hierarchy

The waste hierarchy is a widely adopted benchmark for assessing a project or an activity's environmental performance, where different waste management options and processes are prioritised into the most and least environmentally favourable alternatives. The "CD&E Materials Commitments" are based around the principles of the waste hierarchy, which prioritises waste prevention, preparing for re-use, recycling and recovery over disposal to landfill. Effective management of material usage and waste, actioned through following these principles, is crucial to improving resource management and minimising environmental impact. The waste hierarchy promotes the efficient use of material resources, reducing the amount of waste produced and reducing as far as reasonably practicable the amount of waste that falls under disposal. In line with the waste hierarchy, disposal to landfill should only be a last resort, due to the range of potential adverse environmental effects and in order to conserve existing landfill capacity. Each waste management option described below in the order of most to least preferred with regards to its environmental impact. The revised EU Waste Framework Directive defines the waste management options from the waste hierarchy as:

- Prevention: "Measures taken before a substance, material or product has become waste that reduce: (a) the quantity of waste, including through the re-use of products or the extension of the life span of products; (b) the adverse impacts of the generated waste on the environment and human health; or (c) the content of harmful substances in materials and products."
- Preparing for Re-use: "Checking, cleaning or repairing recovery operations, by which products or components of products that have become waste are prepared so that they can be re-used without any other pre-processing."
- Recycling: "Any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes. It includes the reprocessing of organic material but does not include energy recovery and the reprocessing into materials that are to be used as fuels or for backfilling operations."
- Other Recovery: "Any operation the principal result of which is waste serving a useful purpose by replacing other materials which would otherwise have been used to fulfil a particular function, or waste being prepared to fulfil that function, in the plant or in the wider economy. Annex II sets out a non-exhaustive list of recovery operations."
- Disposal: "Any operation which is not recovery, even where the operation has as a secondary consequence the reclamation of substances or energy."

3.4 CD&E Commitments

The "CD&E Materials Commitments" are challenging, but achievable, and in line with similar infrastructure schemes and industry benchmarks. They aim to provide a clear message to stakeholders of what the scheme sets out to achieve with regards to the management and end-use of CD&E materials. The CD&E material commitments are as follows;

1. 80% (by weight) of CD&E materials to be re-used on site or removed from site for beneficial use with an aspiration to reach 95% (by weight).
2. Safely manage CD&E materials in order to minimise their impact on the environment and communities.
3. Follow the self-sufficiency and the proximity principles through the local management and end-use of CD&E materials.

3.5 Beneficial Reuse

The Receptor Site Assessment (RSA) was produced for the DCO application to help ensure that the beneficial use of material poses no harm to the environment or human health. The purpose of the RSA is to demonstrate that the commitment is feasible and achievable, and a transparent process and methodology in the evaluation of potential sites that may receive material / waste has been followed. Riverlinx CJV will use the RSA process to determine whether a facility is suitable to receive materials / wastes generated by the scheme in order that this commitment can be met. A RSA, if required, will form part of the SWMP. Beneficial use is an activity that meets one of the following criteria:

- Ecological benefit or land reinstatement/landscaping: The activity will assist in ecological benefit and/or help to facilitate an approved change/alteration in land use or form.
- Works (linked to a consented planning activity or permit) that aims to restore, enhance or be part of a land management scheme i.e. landfill or quarry.
- Reduce the requirement for alternative material (waste or not) to be used for the purposes of any such Scheme.

The beneficial reuse commitment is based on the anticipated quantities and composition of material. For materials that cannot be re-used, recycled or recovered by the scheme, these would need to be transported to an externally managed and appropriate facility.

3.6 Safe Management of CD&E

The safe management of CD&E materials will be implemented through a range of industry best practices in order to minimise the materials' impact on the environment and communities. The safe management of CD&E materials will be achieved by using one or more of the following best industry practices along with liaison with stakeholders.

- Code of Construction Practice (CoCP): The purpose of the CoCP is to set a framework to control possible impacts arising from the construction of a Scheme. The CoCP covers environmental, public health and safety aspects that may affect the interests of local residents, businesses, the general public and the surroundings in the vicinity of the Scheme. The control measures set out in the CoCP are based on the findings set out in the Environmental Statement.

- The CL:AIRE Definition of Waste Development Industry Code of Practice (DoW CoP): demonstrating 'safe' in terms of limiting risks the environment and human health, the DoW CoP is used (where applicable) in order to maximise the re-use of excavated materials in a safe and efficient manner. The objective of the DoW CoP is to implement good industry practice (on a case by case basis) for classifying excavated materials which reached 'end of waste' status, as per the revised EU Waste Framework Directive 2008/98/EC. DoW CoP also provides a detailed step by step process to demonstrate that the requirements set within the DoW CoP has been followed and encourages the use of industry best practices, such as using a Materials Management Plan (MMP) for the materials generated on site, basing the MMP on a risk assessment, and demonstrating the use of the MMP in a Verification Report. Should the DoW CoP be used, the CoCP imposes a requirement to produce an MMP in liaison with relevant stakeholders.

- Transportable Moisture Limit (TML): defined in The Merchant Shipping (Carriage of Cargoes) Regulations 1999 as the 9/10ths (or 90%) of the flow moisture point. This limit sets the standard for accepting cargoes which may liquefy for marine transport. Cargoes with a moisture content above the TML will not be transported by barge unless "appropriate safety arrangements are made to the satisfaction of the Certifying Authority to ensure adequate stability in the case of cargo shifting, and the ship has adequate structural integrity." Details of the commitments relating to the river transport of CD&E materials are set out within the CoCP.

3.7 Self Sufficiency and Proximity

The self-sufficiency and proximity principles are established in the revised EU Waste Framework Directive 2008/98/EC, which states that waste should be "recovered in one of the nearest appropriate installations, by means

of the most appropriate methods and technologies, in order to ensure a high level of protection of the environment and public health." Transport of CD&E materials to the nearest receptor sites will be a key aspect of meeting this commitment and forms part of the RSA methodology. The nearest receptor sites which are the most suitable for the management and end-use of the excavated materials will be identified through the RSA. The RSA will be used to identify and assess the receptor sites which will be suitable for receiving and managing the excavated materials generated from the Scheme. The criteria helps ensure the commitment to self-sufficiency and proximity for the management and end-use of CD&E materials is being met for the scheme. Permit or exemption details of all sites that have the potential to receive the excavated materials generated during the Scheme will be checked as part of the RSA methodology document to ensure all sites are legally complaint.

3.8 Materials Requirements

Riverlinx CJV will seek to adopt the following measures to minimise the environmental impacts of construction materials;

- where specification allows, utilise at least a 10% portion of construction materials to include reused and recycled content;
- minimise the use of primary aggregated by the selection of secondary materials, where possible;
- obtain all timber products from sustainable sources. All timber procured will be obtained from recycled, reclaimed sources or be accredited to meet sustainable forestry standard such as the Forestry Stewardship Council (FSC). Any remaining timber not sourced through the above will target a known temperate source using the Department for Environmental, Food and Rural Affairs (Defra) central point of expertise in timber (CPET);
- use low embodied carbon materials; and
- achieve a score of Very Good and ideally Excellent using CEEQUAL, adherence to materials and waste elements.

4. Checking

4.1 Compliance Checks

During the construction phase Riverlinx CJV will monitor the effectiveness of the CMMP. This will be undertaken by the Environmental Team, Waste Manager/Champion and Section Managers and will include inspections and audits to confirm compliance with the plan. Any findings or non-conformances will be addressed, and further action will be taken where deemed appropriate. The effective management of materials could give rise to a number of further assessments, environmental permits, waste exemptions, a Materials Management Plan. Any such element would require an established assurance process which will be developed as such items are required, developed and implemented. Suitably expertise will be sought to undertake the assurance checks to ensure compliance is achieved.

4.2 Management Review

The Environmental Manager will meet with senior team members, including the Project Director, Quality Manager, and Engineering Manager, at least annually for formal management reviews. The annual review will include specific focus on the CMMP. These reviews will not preclude more frequent intermediate reviews, as required. At the management reviews improvement plans and related actions will be developed if required. The Environmental Manager will issue all review attendees with a report including the following items before the meeting:

- Adequacy of environmental resourcing
- Training undertaken and planned
- Analysis of site inspections, audits, incidents and non-conformities
- Recurring issues and time taken to complete actions
- Follow-up actions from previous management review
- Recommendations for improvement.