Lower Thames Crossing

6.3 Environmental Statement Appendices
Appendix 2.2 - Code of Construction Practice, First Iteration of Environmental Management Plan - Annex A - Outline Site Waste Management Plan (Tracked changes version)

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Lower Thames Crossing

6.3 Environmental Statement Appendices Appendix 2.2 - Code of Construction Practice, First Iteration of Environmental Management Plan - Annex A - Outline Site Waste Management Plan (Tracked changes version)

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1 Executive summary

1.1.1 This Outline Site Waste Management Plan (oSWMP) is included as part of appendices to the Code of Construction Practice (CoCP) (Application Document 6.3) and as such forms part of the delivery of National Highways commitment to best practice.

1.1.2 The purpose of this oSWMP is to set out the overarching principles and procedures that would be applied to the management of waste during the construction of the Project.

1.1.3 This oSWMP has been developed to provide a consistent framework for the following:

a. The management and recording of material resources used and waste arising from construction, demolition and excavation (CD&E) activities

b. Evidence that the Project meets regulatory requirements

c. Reduction of waste management costs

d. Recording of design and construction decisions that demonstrate good and best practice in material resource use and waste minimisation and management

1.1.4 This oSWMP sets out the overarching principles and procedures for the management of waste. It also provides an initial estimate and type of the likely wastes arisings to be generated by the Project.

1.1.5 This oSWMP also defines specific roles and responsibilities to ensure waste would be managed effectively.

1.1.6 National Highways would implement circular economy principles throughout design and construction, including the waste hierarchy, moving waste management practices as far up the hierarchy as practicable and reducing impacts on waste infrastructure receptors.

1.1.7 The detailed assessment of the likely significant effects from materials and waste management is discussed in Environmental Statement Chapter 11: Material Assets and Waste (Application Document 6.1) and the associated technical appendices (Application Document 6.3). These have been submitted as part of the Development Consent Order application.

1.1.8 This oSWMP:

a. Estimates waste arisings during the CD&E activities and identifies actions to reduce waste arisings and associated cost

b. Provides an initial indication as to whether material resources and waste arisings have the potential to be reused, recycled or recovered or whether they would need disposal

c. Proposes end destinations for waste arisings

1.1.9 Prior to the commencement of construction, the contractors would, for each part of the authorised development, prepare and submit a Construction Site Waste Management Plan (CSWMP) for the approval of the Secretary of State, under Requirement 4 of the draft Development Consent Order (Application Document 3.1). The CSWMP would need to be written in accordance with this oSWMP and would need to be updated as a live document throughout the construction phase.

2 Introduction

2.1 Purpose of this document

2.1.1 National Highways (the Applicant) has submitted an application under section 37 of the Planning Act 2008 for an order to grant development consent for the A122 Lower Thames Crossing (the Project)

2.1.2 This document sets out the overarching principles and procedures that would be applied for the management of waste during the construction phase of the Project. This is applicable to all works for the Project.

2.1.3 This outline Site Waste Management Plan (oSWMP) is part of a suite of documents which accompanies the application to grant development consent. A full description of all the Application Documents is provided in the Introduction to the Application (Application Document 1.3) which also accompanies the application.

2.1.4 Waste would arise at many locations within the Project footprint from enabling works and CD&E activities. The transportation of waste and materials, both internally within the Order Limits using a combination of the existing highway network and dedicated haul routes and externally on the surrounding highway network, are detailed in the Outline Materials Handling Plan (oMHP) (Annex B to Appendix 2.2: Code of Construction Practice (CoCP) Application Document 6.3).

2.1.5 The detailed assessment of the likely significant effects from materials and waste management is discussed in Environmental Statement Chapter 11: Material Assets and Waste (Application Document 6.1). These have been submitted as part of the Development Consent Order application.

2.2 The need for the Project

2.2.1 For over 56 years the Dartford Crossing has provided the only significant road crossing of the River Thames East of London. It is a critical part of the country's road network, connecting communities and businesses and providing a vital link for the nearby major ports. However, traffic flows on the Dartford Crossing are consistently in excess of the design capacity of the road which results in frequent congestion and poor journey time reliability, making it one of the least reliable sections of the strategic road network. The current operational challenges have significant negative impacts on users and non-users in terms of economic productivity and trade, social and user experience and environmental impacts. For more information on the needs case, refer to the Need for the Project (Application Document 7.1).

2.3 The Project

2.3.1 The A122 Lower Thames Crossing (the Project) would provide a connection between the A2 and M2 in Kent, south-east of Gravesend, crossing under the River Thames through a tunnel, before joining the M25 south of junction 29. The Project route is presented in Plate 2.1.

2.3.2 The A122 would be approximately 23km long, 4.25km of which would be in tunnel. On the south side of the River Thames, the Project route would link the tunnel to the A2 and M2. On the north side, it would link to the A13, M25 junction 29 and the M25 south of junction 29. The tunnel entrances would be located to the east of the village of Chalk on the south of the River Thames and to the west of East Tilbury on the north side.

2.3.3 Junctions are proposed at the following locations:

a. New junction with the A2 to the south-east of Gravesend

b. Modified junction with the A13/A1089 in Thurrock

c. New junction with the M25 between junctions 29 and 30

2.3.4 To align with NPSNN policy and to help the Project meet the Scheme Objectives, it is proposed that road user charges would be levied in line with the Dartford Crossing. Vehicles would be charged for using the new tunnel.

2.3.5 The Project route would be three lanes in both directions, except for:

a. link roads

b. stretches of the carriageway through junctions

c. the southbound carriageway from the M25 to the junction with the A13/A1089, which would be two lanes

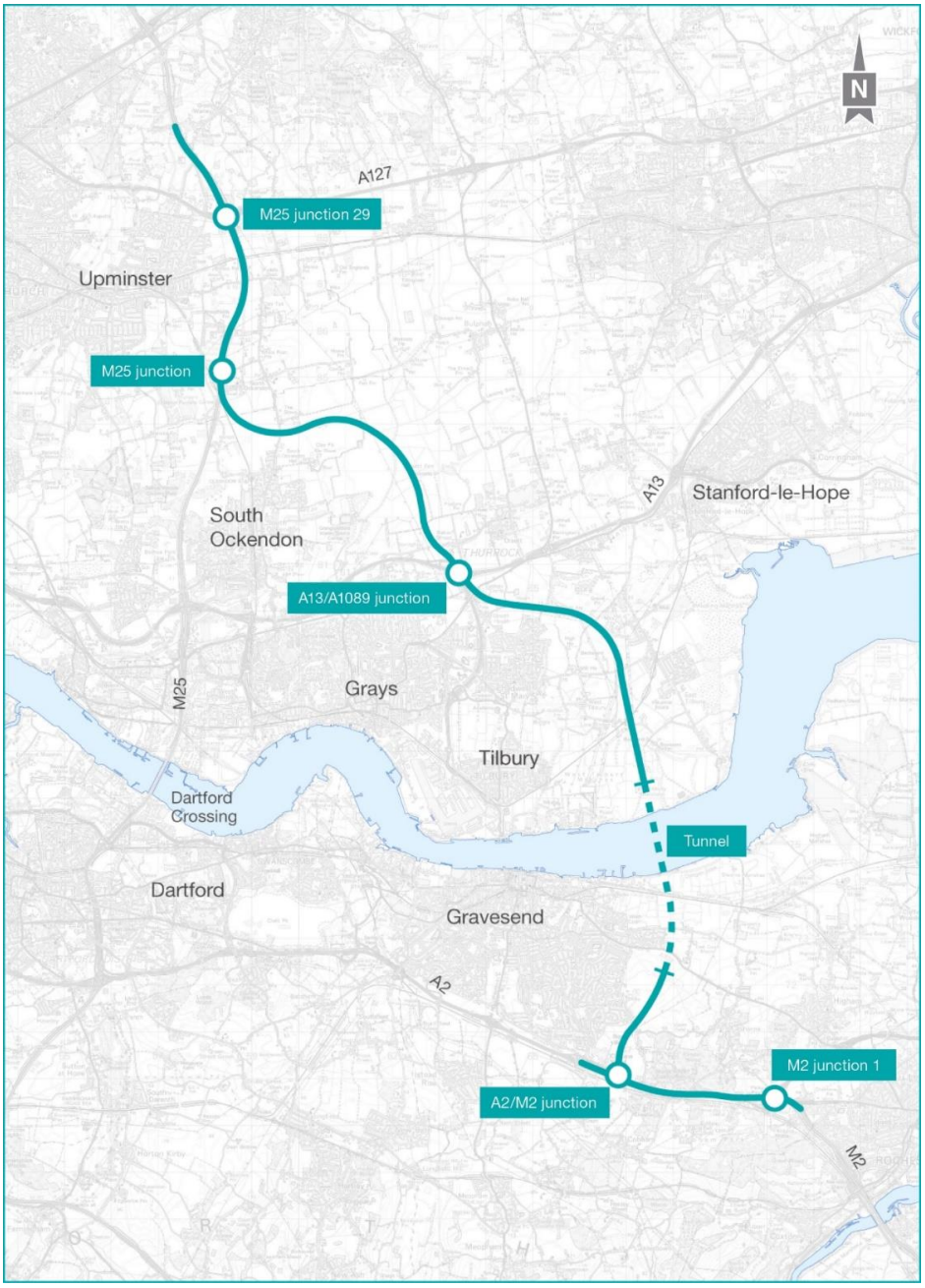
2.3.6 In common with most A-roads, the A122 would operate with no hard shoulder but would feature a 1m hard strip on either side of the carriageway. It would also feature technology including stopped vehicle and incident detection, lane control, variable speed limits and electronic signage and signalling. The A122 design outside of the tunnel would include emergency areas. The tunnel would include a range of enhanced systems and response measures instead of emergency areas.

2.3.7 The A122 would be classified as an ‘all-purpose trunk road’ with green signs. For safety reasons, walkers, cyclists, horse-riders and slow-moving vehicles would be prohibited from using it.

2.3.8 The Project would include adjustment to a number of local roads. There would also be changes to a number of public rights of way, used by walkers, cyclists and horse riders. Construction of the Project would also require the installation and diversion of a number of utilities, including gas mains, overhead electricity powerlines and underground electricity cables, as well as water supplies and telecommunications assets and associated infrastructure.

2.3.9 The Project has been developed to avoid or minimise significant effects on the environment. Some of the measures adopted include landscaping, noise mitigation, green bridges, floodplain compensation, new areas of ecological habitat and two new parks.

Plate 2.1 Lower Thames Crossing route



2.4 Structure of this document

2.4.1 This oSWMP has been produced to set out those matters which contractors will be required to consider and, where relevant, reflect in preparing the construction Site Waste Management Plan (CSWMP) for approval.

2.4.2 The oSWMP also defines specific roles and responsibilities to ensure waste would be managed effectively. The oSWMP covers all works (enabling, demolition, highways and tunnelling) occurring within the Order Limits during the construction phase of the Project.

2.4.3 Prior to the commencement of construction, the contractor would, for each part of the authorised development, prepare and submit a CSWMP for the approval of the Secretary of State, under Requirement 4 of the draft Development Consent Order (Application Document 3.1). The CSWMP would need to be prepared in accordance with this oSWMP and would need to be updated as a live document, throughout the construction phase.

2.4.4 This oSWMP has been developed to provide a consistent framework for the following:

a. Supporting the implementation of the waste hierarchy

b. The management and recording of material resources used and waste arising from CD&E activities

c. Evidence that the Project meets regulatory requirements

d. Reduction of waste management costs

e. Recording of design and construction decisions that demonstrate good and best practice in material resource use and waste minimisation and management

2.4.5 The intention of this oSWMP is to reflect the Project's proposed design, the associated quantities of waste arisings that are anticipated to be generated and to enable better control over material resources and waste arisings throughout the construction phase of the Project. Volumes of waste described in this document present a forecast and will be regularly updated by the Contractors as part of the CSWMP.

2.4.6 This oSWMP:

a. Estimates waste arisings during the CD&E activities and identifies actions to reduce waste arisings and associated cost

b. Provides an initial indication as to whether material resources and waste arisings have the potential to be reused, recycled or recovered or whether they would need disposal

c. Proposes end destinations for waste arisings

2.5 Outline Materials Handling Plan

2.5.1 The principles of waste and material transport, both internally within the Order Limits using a combination of the existing highway network and dedicated haul routes and externally on the surrounding highway network, are detailed in the Outline Materials Handling Plan (oMHP) (Application Document 6.3).

2.5.2 The oMHP is a companion document to the oSWMP, providing the principles of handling waste associated with the Project. It provides further detail of waste generated from the Project's earthwork activities within the Order Limits.

2.5.3 The oMHP covers environmental setting and existing infrastructure, construction logistics on large-scale projects, materials movement, movement of excavated material and transport options for material movement.

3 Regulatory framework

3.1.1 A non-exhaustive list of key legislation regulating construction waste management on the Project is presented in Table 3.1.

3.1.2 Contractors would need to comply with the requirements defined in the legislation detailed in Table 3.1 and any other relevant legislation.

3.1.3 A review of national, regional and local policies is presented in Appendix 11.6: Material Assets and Waste Legislation and Policy of the Environmental Statement (Application Document 6.3).

Table 3.1 Key legislation regarding construction waste

Description of legislation
Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives (Waste Framework Directive) The Waste Framework Directive (WaFD) contains the European Union's legal definition of waste, which is adopted by Member States. This definition is used to establish whether a material is classified as waste or not. This Directive is transposed into UK law through the Waste (England and Wales) Regulations 2011 (as amended), which remain in force. The legal definition of waste is '*any substance or object which the producer discards or intends or is required to discard*'. The legal definition of waste also covers substances or objects which fall outside of the commercial cycle or out of the chain of utility. In particular, most items that are sold or taken offsite for recycling are wastes, as they require treatment before they can be resold or reused. In practical terms, wastes include surplus earthworks materials and soil, scrap, unwanted surplus materials, packaging, recovered spills, office waste, and damaged, worn-out, contaminated or otherwise spoiled plant, equipment and materials. Article 2 of WaFD states that '*uncontaminated soil and other naturally occurring material excavated in the course of construction activities where it is certain that the material will be used for the purposes of construction in its natural state on the site from which it was excavated*', are excluded from the scope of the WaFD. The use of the waste hierarchy in waste management (prevention, preparation for reuse, recycling, other recovery and disposal) is mandated. In addition, it sets a target for increasing the recycling of non-hazardous construction and demolition waste to a minimum of 70% (measured by weight) by 2020 (Article 11). Annex III of Commission Decision of 18 November 2011 establishing rules and calculation methods for verifying compliance with the targets set in Article 11(2) of Directive 2008/98/EC of the European Parliament and of the Council (2011/753/EU) sets out the methodology implemented when calculating construction waste diversion from landfill. The Directive defines recovery as '*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*'. Disposal is defined as '*any operation which is not recovery even where the operation has as a secondary consequence the reclamation of substances or energy*'.
Waste (England and Wales) Regulations 2011 Implements the EU Waste Framework Directive within the UK. It requires business to confirm they have applied the waste hierarchy along with other aspects such as introducing aspects such as waste broker and carrier registration.

Description of legislation
Directive 1999/31/EC of 26 April 1999 on the landfill of waste (Landfill Directive) The Landfill Directive establishes a framework for the management of waste and is implemented by the Environmental Permitting (England and Wales) Regulations 2016. The Directive outlines the management and monitoring required for each landfill class, including Waste Acceptance Criteria for incoming waste and a requirement for pre-treatment. A ban is also placed on the disposal of specific wastes, such as liquids and tyres, to landfill, and the mixing of waste to meet Waste Acceptance Criteria is prohibited.
Environmental Permitting (England and Wales) Regulations 2016 (as amended) These Regulations were created to standardise environmental permitting and compliance in England and Wales to protect human health and the environment. This includes provisions for the permitting of waste and recovery operations within the Order Limits by Contractors and at offsite third-party facilities receiving waste. The Regulations also include a schedule of activities that are exempt from the requirements of obtaining a permit, although registration may still be required.
Environmental Protection Act 1990 (Part II) This Act outlines the basic provisions for the management of all waste, which includes details on the definition of waste, and outlines the Duty of Care placed on those involved in managing wastes. Duty of Care requirements are set out in section 34 of the Environmental Protection Act 1990 and require parties who produce or handle (import, store, transport, treat or dispose of) waste to take all reasonable steps to ensure that the waste is managed properly. Anyone in possession of waste must take all reasonable steps to: • prevent unauthorised or harmful deposit, treatment or disposal of waste • prevent a breach (failure) by any other person to meet the requirement to have an environmental permit, or a breach of a permit condition • prevent the escape of waste • ensure that waste is only transferred to an authorised person • provide an accurate description of the waste when it is transferred to another person The duty exists from the moment the waste is produced, until it is fully recovered or disposed of at an appropriately permitted facility. The Environmental Protection (Duty of Care) Regulations 1991 outline the statutory requirements for record completion and retention.
Environment Act 2021 This Act has two main functions: to provide a legal framework for environmental governance in the UK and to bring into effect measures for the improvement of the environment in relation to waste, resource efficiency, air quality, water, nature and biodiversity and conservation. The Environment Act increases the Government's powers to manage the impact of products throughout their lifecycle, and contains several provisions relating to waste that waste collection and waste disposal authorities will need to take account of. The Act also creates powers for the SoS to make regulations to establish an electronic waste tracking system and gives the SoS the power to make regulations in connection with the regulation of hazardous waste in England. A target for resource efficiency and waste reduction is also proposed: '*Reduce residual waste (excluding major mineral wastes) kg per capita by 50% by 2042 from 2019 levels. It is proposed that this will be measured as a reduction from the 2019 level, which is estimated to be approximately 560 kg per capita.'*

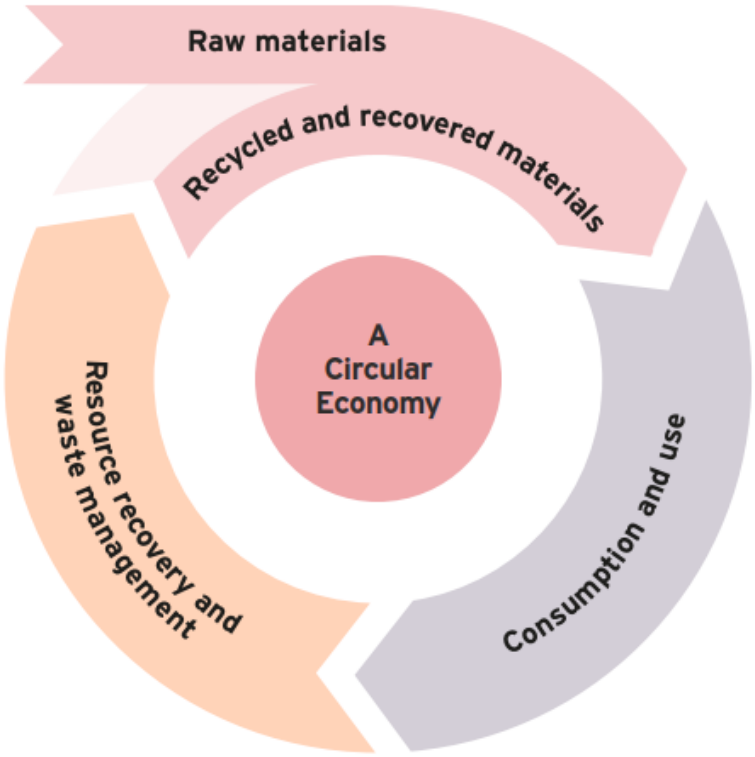
Description of legislation
Hazardous Waste (England and Wales) Regulations 2005 These Regulations transpose the Hazardous Waste Directive into English and Welsh law. The Regulations implement a duty to separate and prohibit the mixing of hazardous and non-hazardous waste. They also require that a Hazardous Waste Consignment Note be produced for each consignment of hazardous waste removed from site.
European Regulation (EC) No 1272/2008, Classification, Labelling and Packaging Adopts and implements the United Nations global harmonised system of the classification and labelling of chemicals across the EU and the UK. The harmonised system supports the assessment of hazardous properties within wastes where the substance or product is unknown.

4 Proposals for reducing, reusing and recycling waste

4.1 General measures

4.1.1 Circular economy principles (see Plate 4.1) have underpinned the design and development of the material assets and waste commitments presented in the Register of Environmental Actions and Commitments (REAC). The REAC forms part of Appendix 2.2: Code of Construction Practice (CoCP) (Application Document 6.3).

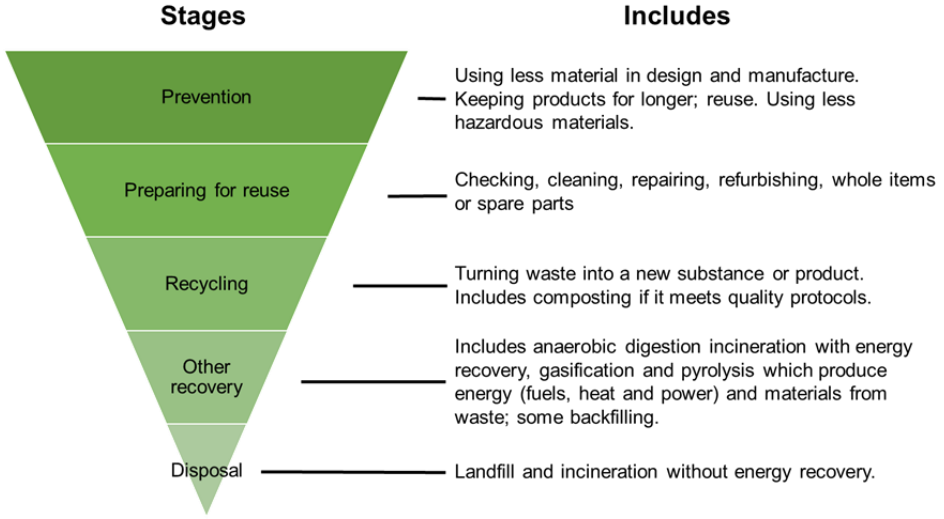
Plate 4.1 The circular economy (Department for Environment, Food and Rural Affairs (Defra), 2018)



4.1.2 A circular economy is an alternative to a traditional linear economy (make, use, and dispose of) in which resources are kept in use for as long as possible, the maximum value is extracted from them whilst in use, then products and

materials are recovered and regenerated from them at the end of each service life. Life cycle thinking takes a holistic view across all stages of a product or process life cycle. These principles would be considered in the waste management choices of the Project including moving waste higher up the waste hierarchy (see Plate 4.2), and minimising impacts on waste infrastructure receptors (Waste and Resources Action Programme (WRAP), 2020).

Plate 4.2 Waste hierarchy (Defra, 2011)



Waste prevention measures

4.1.3 Waste minimisation and prevention is at the top of the waste hierarchy and is concerned with avoiding the production of waste in the first place. While complete avoidance of waste is impossible for a project of this scale, adopting certain waste minimisation practices would ensure that the overall quantity of materials not beneficially used within the Order Limits would be kept to a minimum.

4.1.4 Opportunities with the greatest potential for improving resource efficiency and contributing to the circular economy in construction projects occur during the feasibility and early design stage. Circular economy principles have been implemented during design, such as:

a. Designing out materials

b. Identifying, securing and using materials onsite

c. Designing for long life

d. Designing for the future

4.1.5 A number of factors, including the aim of reducing waste, have influenced the Project throughout the design development process, from early route options assessment through to refinement of the Project design. An iterative process has facilitated design updates and improvements, informed by environmental assessment and input from the Project engineering teams, stakeholders and public consultation.

4.1.6 Waste prevention has been achieved in a variety of ways, for example:

a. Moving towards a balanced cut and fill to reduce the offsite management of excavated materials;

b. Altering the tunnel alignment and portal locations to reduce excavation volumes;

c. Reviewing the extent of the Order Limits to reduce the need to demolish buildings and structures;

d. Reusing demolition materials as recycled aggregate within the temporary and permanent works design;

e. Retaining vegetation from site clearance for use in ecological mitigation works;

f. Developing an efficient design which has a reduced material assets demand and resultant reduction in generation of waste; and

g. Retention and reuse of all topsoil within the Order Limits subject to relevant testing / quality checks.

4.1.7 Additional measures have been proposed to continue to drive waste prevention and reduction throughout detailed design and the construction phase. The REAC includes a number of actions and commitments relating to waste management and enhancing waste prevention during the construction phase. The REAC is included within the CoCP (Application Document 6.3) and is secured by Requirement 4 of the draft Development Consent Order. Each entry in the REAC has an alpha-numerical reference code (e.g. REAC Ref. MW0XX) to provide a cross-reference to the secured commitment.

4.1.8 In terms of prevention, mitigation measures and targets would be implemented for the works (see Table 4.1).

Table 4.1 REAC for waste management – waste prevention

REAC Ref.	Commitment
MW001	Where design specification permits, key construction materials used would include a measurable recycled or secondary content. In line with the target set out in DMRB LA 110 Material assets and waste (Highways England, 2019a), 31% of aggregates used in construction would be recycled or secondary, for those applications where it is technically and economically feasible to substitute these alternative materials for primary

REAC Ref.	Commitment
	aggregates. To facilitate compliance with this target, the Contractor would calculate the total aggregate required to achieve the detailed design, and the total where design specification dictates only primary aggregate is used. During construction, the Contractor would record the amount of primary and secondary/recycled aggregate by weight and calculate compliance with the target (offsetting the amount excluded by design specification). Use of primary materials would be minimised, during detailed design, by specification of materials that are renewable, reclaimed or have a recycled content: • In line with the target set out in DMRB LA 110 (Highways England, 2019a), 70% of suitable, uncontaminated concrete from demolition activities would be recycled and reused within the Order Limits to substitute use of primary material. • Suitable uncontaminated concrete from demolition and construction activities would be processed to achieve non waste status in accordance with the Aggregates from Inert Waste Quality Protocol (WRAP, 2013).
MW008	The Contractor shall use the information and data available to identify what site won excavated materials can be used as Class I-IV material or aggregate. Should it be required, supplementary data and information shall be obtained in order to assess the potential availability and suitability of excavated materials to meet the relevant material specifications.

Preparing for reuse

4.1.9 The Waste Framework Directive 2008/98/EC defines reuse as '*any operation by which products or components that are not waste are used again for the same purpose for which they were conceived*'.

4.1.10 Excavation activities have the potential to generate a significant quantity of waste arisings. The classification of waste material generated from the proposed Project should be undertaken in accordance with Waste Classification: Guidance on the classification and assessment of waste, WM3 (Scottish Environment Protection Agency, Natural Resources Wales and Environment Agency, 2021). Uncontaminated material, where identified, would be reused where possible within the Order Limits.

4.1.11 Where applicable, surplus excavated materials could be suitable for reuse under one or more of the following routes, for example:

a. CL:AIRE Definition of Waste Code of Practice (CL:AIRE CoP) (see REAC Ref. MW007).

b. Compliance with the criteria and thresholds of certain exemptions for example, U1 or U11 may be applicable.

c. Environmental permits under the Environmental Permitting Regulations 2010 (as amended).

4.1.12 Any chosen option would need to meet current legislative requirements. The material could be reused in other schemes in the surrounding area, if one were proceeding at the same time, to avoid disposal at landfill and its associated impacts and costs, but would need to meet current legislative requirements in agreement with the Regulator.

4.1.13 Table 4.2 provides some examples of preparing for reuse options.

Table 4.2 Examples of preparing for reuse options

Management route	Example
Preparing for reuse	• Retaining existing elements, such as street furniture, lighting columns and fencing, for reuse within the Order Limits • Bringing excess materials, e.g. kerbs, drainage pipework or temporary piles, from previous projects for use within the Order Limits • Retaining and reusing offcuts such as metal and timber for reuse elsewhere within the Order Limits • Ensuring that materials are ordered in line with programme requirements and stored to prevent damage, thus allowing them to be used and avoid becoming waste • Retaining packaging materials and returning to the supplier for reuse • Reuse of suitable demolition materials in habitat creation, e.g. hibernacula • Identifying offsite opportunities for reuse of construction waste materials, e.g. in community projects

4.1.14 In terms of preparing for reuse, mitigation measures would be implemented for the works (see Table 4.3).

Table 4.3 REAC for waste management – preparing for reuse

REAC Ref.	Commitment
MW005	During construction, it will be necessary to demolish various buildings, concrete structures and steel gantries. Pre-demolition surveys of these structures and buildings would be undertaken. Demolition materials would be identified and quantified including potential opportunities for the reuse (with or out without treatment) and use within the Project; this would include hazardous materials such as asbestos.
MW007	Excavated material (and all wastes) would be managed in line with the waste hierarchy. Preference would be given to appropriate reuse, recycling and/or recovery before disposal where feasible and permitted by the design. Where excavated materials and soils are to be reused, recycled and/or recovered within the Order Limits this would be subject to the relevant regulatory controls. For example: Directive 2008/98/EC on Waste (Waste Framework Directive), Article 2, environmental permit (as per the Environmental Permitting (England and Wales) Regulations (2016)), exemption

REAC Ref.	Commitment
	and/or a Materials Management Plan (as per the Definition of Waste: Development Industry Code of Practice (CL:AIRE, 2011). Where excavated materials and soils cannot be reused, recycled and/or recovered within the Order Limits opportunities would be sought within schemes or facilities outside of the Order Limits. The final option would be disposal and it would be reported in the CSWMP that no practicable alternative management route was available.
MW012	The Contractors would use the methodology described in ES Appendix 11.1, Excavated Materials Assessment (Application Document 6.3), to identify offsite facilities and/or schemes that score positively against a sustainability scoring system agreed with National Highways. Sites would be considered acceptable where they perform no worse than those sites on the detailed assessment list (at the time of submission of the DCO application).

Recycle

4.1.15 Following best endeavours to prevent generation of waste and promote the reuse of excavated materials, waste may still be generated as a result of the Project. In this case, recycling of waste will be considered to allow use either on or off the Project. Table 4.4 provides some examples of waste recycling options.

4.1.16 To promote recycling of waste during construction it will be segregated onsite (through provision of containers for plastics, cardboard, timber, metal, and rubble) and/or by waste management contractors at offsite waste sorting facilities.

Table 4.4 Examples of waste recycling options

Management route	Example
Recycling	• Reprocessing asphalt planings and utilising for tracks, compounds or in the permanent works • Crushing and reusing concrete and inert materials for use in the permanent or temporary works • Chipping vegetation for use as mulch and weed suppression in landscaping

4.1.17 In terms of recovery, mitigation measures and targets would be implemented for the works as detailed and described in Table 4.5. Again, these have been secured through their inclusion within the REAC as part of the CoCP and as part of this document.

Table 4.5 REAC for waste management – reycling

REAC Ref.	Commitment
MW013	Through a combination of one or more of reuse, recycling and/or recovery the Contractors would divert a minimum of 90% (by weight) of non-hazardous excavated wastes and a minimum of 90% (by weight) of non-hazardous construction and demolition waste that are destined for off-site waste management outside the Order Limits from final disposal in landfill.

Deleted: shall achieve

Deleted: 70% (by weight) with a target of

Deleted: of 70% (by weight) with a target

Deleted: , and therefore would be diverted

Recovery and disposal

4.1.18 A project of this size cannot eliminate all waste due to complexities in varied ground conditions and construction activities; thus, having applied the principles of designing out waste set out above, recovery of waste on or offsite is the next preferable option.

4.1.19 The definitions of 'recovery' and 'disposal' are set out in Table 3.1.

4.1.20 Examples of opportunities the Contractors could adopt, to help achieve the waste recovery include sending waste for energy recovery (e.g. reuse as fuel) and the use of biological recovery (e.g. composting and anaerobic digestion).

4.1.21 Disposal of waste is at the bottom of the waste hierarchy, as this is the least sustainable method of waste management.

4.1.22 Diversion from disposal and into reuse, recycling and/or recovery is required to reduce the impact on finite landfill capacity and divert potential waste into resource streams and thus deliver a circular economy.

4.1.23 Mitigation measures and targets would be implemented for the works as detailed and described in Table 4.6. Again, these have been secured through their inclusion within the REAC as part of the CoCP and as part of this document.

4.1.24 All commitments have been drafted to ensure that waste would be handled in such a way as to enhance reuse, recycling and recovery rates achieved by the Project.

4.1.25 The commitments set out how waste would be managed both on and offsite, including requirements for storage, segregation, labelling, sampling and classification.

4.1.26 Soil resources would be managed in line with the following GS009, GS010, GS011, GS012, GS013, GS014 and GS015 REAC commitments as set out in the Geology and Soils chapter (Application Document 6.1)

4.1.27 Excavated materials are anticipated to be the largest sources of waste from the Project. A target has been set to achieve 95% (by weight) of inert construction, demolition and excavation wastes destined for offsite waste management outside the Order Limits would be diverted from final disposal in landfill has been set (REAC Ref. MW011).

4.1.28 In order to validate this proposal, an Excavated Materials Assessment (Application Document 6.3, Appendix 11.1) has been undertaken, which verifies

that sufficient capacity is available in the study area to accept excavated materials for recovery activities.

Table 4.6 REAC for waste management – waste management and diversion from landfill

REAC Ref.	Commitment
MW010	Contractors would implement the following, where practicable, in order to reduce the quantities of waste requiring offsite management, enhance reuse, recycling and recovery rates and minimise the generation of hazardous waste: 1. All waste arisings would be characterised. All waste arisings would be monitored using the Site Waste Management Plan (SWMP) (or equivalent in substance) during construction. 2. All wastes would be classified with relevant European Waste Catalogue (EWC) codes and, in the case of mirror entry codes, the wastes would be sampled to determine classification in line with the prevailing technical guidance (currently Waste Classification: Guidance on the classification and assessment of waste, WM3 (Scottish Environment Protection Agency, Natural Resources Wales and Environment Agency, 2021). 3. Waste management off-site would be completed under relevant UK waste regulation. 4. Satisfy the need under the Waste (England and Wales) Regulations 2011 (as amended) for pre-treatment of waste and confirm this in a written declaration on the associated waste documentation. 5. Demonstrate and document that sufficient space has been allowed within the construction working areas for stockpiles for topsoil, material not suitable for reuse on site, materials to be reused, excess clean material and imported materials for construction. This would enable the segregation of waste types, prevent the mixing of hazardous and non-hazardous wastes and enhance recovery rates by minimising degradation, damage and loss. 6. Segregate hazardous and non-hazardous waste, separating waste at source by type, where practicable, providing separate skips for general waste, metal, dry recycling and timber as a minimum at each compound. Suitable provision would also be made for common hazardous wastes, e.g. used absorbents, aerosol cans, oily rags and waste electronics. 7. Provide impermeable surfaces with sealed drainage for remediation, quarantine and hazardous waste storage areas to minimise cross-contamination of other waste streams and surrounding ground. 8. Label stockpiles and skips with contents, to prevent the mixing of hazardous and non-hazardous wastes. 9. Comply with any specific waste storage and handling requirements required by the prevailing legislation, e.g. for asbestos or waste electronics. 10. Re-use of vegetation waste within the Order Limits wherever possible, e.g. for ecological mitigation (unless contaminated by invasive species). 11. Where possible, agree with material suppliers to reduce the amount of packaging on materials or to participate in a packaging take-back scheme. 12. Implement a material delivery system to avoid materials being stockpiled, which increases the risk of their damage and disposal as waste. 13. Monitor material quantity requirements to avoid over-ordering to reduce opportunity for oversupply and damage onsite that would generate waste materials. 14. Prioritise off-ground storage, e.g. on pallets, retention of materials in original packaging, protection from rain and collision by plant or vehicles.

REAC Ref.	Commitment
	15. Ensure that the storage of lightweight or liquid/sludge waste materials will prevent dispersion by wind and precipitation. 16. Prohibit the burning of waste and unwanted materials within the Order Limits. 17. In line with the requirements of DMRB LA 110 Material assets and waste (Highways England, 2019a), or as amended, enhancement opportunities would be identified, reported and implemented during detailed design and construction to minimise the demand for material and the amount of waste sent for final disposal in landfill.
MW011	Through a combination of one or more of reuse, recycling and/or recovery the Contractors would achieve a minimum of 95% (by weight) of inert excavation wastes and a minimum of 95% (by weight) of inert construction and demolition waste destined for offsite waste management outside the Order Limits would be diverted from final disposal in landfill.
MW015	The Contractors would seek to achieve a target of 70% (by weight) of hazardous construction, demolition and excavation (CDE) waste to be diverted from landfill. It is anticipated that this would be achieved by undertaking remediation or treatment within the Order Limits or off-site at third-party facilities. It is acknowledged that the nature of some hazardous construction waste may preclude this. Where a hazardous construction waste cannot be diverted from landfill, the justification and evidence will be provided to National Highways and logged by the Contractors in the SWMP.

5 Waste management

5.1 Introduction

5.1.1 This section outlines how waste would be controlled to reduce impacts. It provides details on the forecast excavated materials and waste quantities.

5.2 Waste segregation

5.2.1 The management of separate waste streams onsite requires a designated area to be laid out and labelled to facilitate the separation of materials for potential recycling, recovery, reuse and return if required. Successful recycling and reuse rely upon early planning, identification of clear responsibility, and provision of space within a compound for segregation and storage. Skips and bins for the segregation of waste and recycling would be kept clean and clearly marked to avoid contamination.

5.2.2 It is essential that all works are planned and undertaken in close consultation with the waste management contractors (further details are provided in Section 6) so that the best techniques for managing waste are deployed to ensure a high level of recovery of waste for reuse, recycling and/or recovery is achieved.

5.2.3 Discussions would need to take place between the contractors working onsite to identify the space requirements within the compounds to accommodate skips and storage of waste and materials.

5.3 Waste disposal characterisation

5.3.1 Under Schedule 10 of the Environmental Permitting Regulations 2016 (as amended), waste is classified as either inert, non-hazardous, or hazardous. Prior to removal from site characterisation of the waste would be in accordance with Waste Classification: Guidance on the classification and assessment of waste, WM3 (Scottish Environment Protection Agency, Natural Resources Wales and Environment Agency, 2021) and demonstration of pre-treatment in line with the Waste (England and Wales) Regulations 2011.

5.4 Geology and ground conditions

5.4.1 A brief description of the underlying geology from south to north of the Order Limits is described below. A full description of the existing ground conditions is described in ES Chapter 10: Geology and Soils (Application Document 6.1) and the Ground Model of the Project route is presented in Appendix 10.5 (Application Document 6.3).

5.4.2 On high ground around the A2 connecting road from Cobham through the Shorne Woods Country Park to Higham, bedrock comprises the London Clay Formation underlain by the Harwich Formation at the highest parts which unconformably overlays the Lambeth Group and Thanet Formation.

5.4.3 Made Ground is anticipated to be present with previously developed areas such as the North Kent Railway line, Thames and Medway Canal and former military

airport (Royal Air Force (RAF) Gravesend). Made Ground is also present in the area of the Filborough landfill site.

5.4.4 The bedrock geology underlying much of the area south of the River Thames comprises the White Chalk (Seaford Chalk Formation and Newhaven Chalk Formation (to west) or Lewes Nodular Chalk Formation (to east) which outcrops at the surface where superficial deposits are absent.

5.4.5 In the low-lying marshes on either side of the River Thames and beneath the River Thames Channel, the geology consists of Alluvium overlying River Terrace Deposits overlying the White Chalk (Seaford Chalk Formation and Newhaven Chalk Formation).

5.4.6 On the northern side of the River Thames, Made Ground (as a result of landfilling activities) has been recorded associated with Goshems Farm landfill area and Tilbury Ash Disposal landfills which contain pulverised fuel ash (PFA) from the (now disused) Tilbury power station. This coincides with the area of the proposed North Portal.

5.4.7 Made Ground is also anticipated to be present associated with previous and current developed areas and various light industrial activities, for example, the Low Street Brickworks historical landfill is present adjacent to the Tilbury Loop railway line. In this location, the Alluvium overlies River Terrace Deposits (Taplow Gravel Member and Kempton Park Gravel) which overlie the White Chalk.

5.4.8 Further to the north between the Tilbury Loop railway line and the A13, the land slopes up from the River Thames valley and the East Tilbury Marshes. Here the Thanet Formation unconformably overlies the White Chalk (Seaford Chalk Formation and Newhaven Chalk Formation).

5.4.9 Adjacent to the north of the A13 junction and east of Baker Street, there is Made Ground (landfill) associated with Millers sand and gravel pits historical landfill site. Around the A13, the geology is topography related, with River Terrace Deposits overlying the Lambeth Group on the higher ground. Underlying the Lambeth Group is the Thanet Formation which in turn is underlain by the White Chalk.

5.4.10 From Orsett northwards the geology comprises Head Deposits, Alluvium and River Terrace Deposits (Lynch Hill Gravel) overlying the London Clay Formation. Alluvium deposits lie along the route of the Mardyke River and various subsidiary channels and increase in lateral extent further north up the river valley up to the A127.

5.4.11 Head Deposits are the predominant superficial deposits in this area and are present on the gently sloping valley sides from the Romford/Upminster-Grays Railway line in the west to beyond Bulphan in the east. River Terrace Deposits (Boyn Hill Gravel Member and Black Park Gravel Member) are present overlying the London Clay Formation in the North and South Ockendon area.

5.4.12 In localised areas no superficial deposits are present and there are outcrops of London Clay Formation at the ground surface.

5.4.13 There are many old clay pits within the London Clay Formation. Between Ockendon and the M25 junction there is Made Ground/landfill associated with

the Ockendon Landfill complex and at Hall Farm and Groves Farm there are historical landfill sites.

5.5 Waste forecast

5.5.1 In order to assist the management and segregation of waste and the completion of the CSWMP, estimations have been made of the types and quantities that would be generated during the construction phase of the Project.

5.5.2 The following information was collated:

a. The types and quantities of waste arising from the Project (demolition, excavation arisings and remediation)

b. The predicted amount of waste (by weight) that would be recovered and diverted from landfill either within the Order Limits or offsite

c. The type and quantity of hazardous waste

5.5.3 Calculations exclude excavated materials sourced and reused within the Order Limits as these are classed as non-waste, e.g. under Article 2 of the Waste Framework Directive or using a Materials Management Plan in line with CL:AIRE (2011).

5.5.4 The estimated recovery rates are based on the 'good practice quick win' recovery rates set out in the Achieving Good Practice Waste Minimisation and Management report published by WRAP (n.d.). The overall recovery rate is calculated by tonnage.

5.5.5 The recovery potential of each waste stream is stated and indicates where Contractors are likely to increase recovery of this waste stream either within the Order Limits or offsite.

5.5.6 All the materials identified for use in construction were designated for use in either permanent or temporary works. All materials designated for use in the temporary works were assumed to be removed from the Order Limits as waste following the completion of construction to provide a worst-case estimate.

5.5.7 As outlined in Section 6.1 of this oSWMP, it is expected that Designers, Contractors would identify waste management options (MW005, MW007 MW010) to enhance reuse, recycling and/or recovery of waste and further improve upon the data presented.

5.5.8 In addition to directly generated wastes, e.g. excavated soils and welfare bins, a wastage rate was also applied to all key materials used in construction (in both permanent and temporary works). The wastage factors defined in the Net Waste Tool (WRAP, 2008) were applied to account for damage and defects.

5.5.9 Table 5.1 provides a breakdown of the surplus excavated material. These are presented based on the contract areas, which comprise:

a. Kent Roads

b. Tunnels and Approaches

c. Roads North of the Thames

Indicative waste types and quantities from non-earthwork-related activities are summarised in

5.5.10 Table 5.2.

The waste data presented in

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Table 5.2.

5.5.11 Table 5.2 have been separated into proposed contract areas to facilitate use in individual Contractors' CSWMPs. Where applicable waste generated from enabling works and demolition activities that form part of these contracts have also been reported.

5.5.12 Annexes A.1 to 0 provide a template for waste forecasting to be adopted by the Contractors as part of the development of the CSWMP, and as a result, the entries in these tables have been marked TBC.

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Table 5.1 Indicative types, quantities and anticipated management route of surplus excavated material

Location	Waste generated	Estimated m3	Anticipated management
Section A – Kent Roads			
South of the River Thames Material is anticipated to be chalk (as dug), with lesser contributions of made ground and Head Deposits	Contaminated excavated material (potentially hazardous)	1,050	30% sent for offsite disposal [MW015]
	Contaminated excavated material (potentially hazardous)	2,450	70% recovered/recycled [MW015]
Section B			
South of the River Thames – Tunnels and approaches Material is anticipated to be chalk (as dug) with lesser contributions of made ground, Alluvium, River Terrace Deposits and Head Deposits	Contaminated excavated material (potentially hazardous)	0	30% sent for offsite disposal [MW015]
	Contaminated excavated material (potentially hazardous)	0	70% recovered/recycled [MW015]
North of the River Thames – Tunnels and approaches Material is anticipated to be chalk slurry (from tunnel boring machine) with made ground (landfill), pulverised fuel ash, peat and Alluvium from the launch ramp and North Portal area	Non-hazardous excavated material	660,000	Transportation to Ingrebourne Valley Limited receiver site, which is located within the Order Limits
	Contaminated excavated material (potentially hazardous)	46,200	30% sent for offsite disposal [MW015]
	Contaminated excavated material (potentially hazardous)	107,800	70% recovered/recycled [MW015]

Location	Waste generated	Estimated m3	Anticipated management
Section C – Roads North			
North of the River Thames Material is anticipated to be made ground, Alluvium, River Terrace Deposits and clay	Non-hazardous excavated material	175,000	70% diverted landfill
	Contaminated excavated material (potentially hazardous)	0	30% sent for offsite disposal [MW015]
	Contaminated excavated material (potentially hazardous)	0	70% recovered/recycled [MW015]
Section D – Roads North			
North of the River Thames Material is anticipated to be made ground, Alluvium, River Terrace Deposits and clay	Non-hazardous excavated material	175,000	70% Diversion from landfill
	Contaminated excavated material (potentially hazardous)	1,800	30% sent for offsite disposal [MW015]
	Contaminated excavated material (potentially hazardous)	4,200	70% recovered/recycled [MW015]
Summary			
Total volume for offsite management (m^3)	Non-hazardous excavated material (recovery outside the Order Limits)	350,000	
	Non-hazardous excavated material (disposal outside the Order Limits)	150,000	
	Non-hazardous excavated material (management within the Order Limits)	660,000	All material generated by the tunnel excavation within Section B North. Transportation to Ingrebourne Valley Limited receiver site via the haul road network, which would be located within the Order Limits

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Non-hazardous excavated material ...

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Inert excavated material ...

Location	Waste generated	Estimated m3	Anticipated management
	Contaminated excavated material (potentially hazardous)	163,500	

Table 5.2 Indicative waste types (excluding surplus excavated materials) and quantities

Activity	Waste generated	Kent Roads		Tunnels		Roads North		Inert/Non-Hazardous/Hazardous
		Estimated tonnes	Estimated m^3	Estimated tonnes	Estimated m^3	Estimated tonnes	Estimated m^3	
Site clearance/ utility connections/ enabling works	Steel (gas pipeline and electricity pylons - removed and wastage)	1,947	246	16,230	2,054	1,745	221	Non-Hazardous
	Concrete (pre-cast pipes, slabs, foundations, sewer) - wastage and temporary works	734	306	34,004	14,168	44,061	18,359	Inert

Activity	Waste generated	Kent Roads		Tunnels		Roads North		Inert/Non-Hazardous/Hazardous
		Estimated tonnes	Estimated m^3	Estimated tonnes	Estimated m^3	Estimated tonnes	Estimated m^3	
	Asphalt - wastage and temporary works	829	460	18,994	10,552	45,515	25,286	Non-Hazardous
	Plastic (utility pipework) - wastage and temporary works	489	543	212	235	1,205	1,339	Non-Hazardous
	Primary aggregate	144,694	80,385	104,889	58,272	455,610	253,117	Inert
	Recycled aggregate	65,007	36,115	47,124	26,180	204,694	113,719	Inert
	Rubber			548	365			Non-Hazardous
	Sand			357	297	119	99	Non-Hazardous

Merged Cells

Split Cells

Activity	Waste generated	Kent Roads		Tunnels		Roads North		Inert/Non-Hazardous/Hazardous
		Estimated tonnes	Estimated m^3	Estimated tonnes	Estimated m^3	Estimated tonnes	Estimated m^3	
	Clay					0.4	0.3	Non-Hazardous
	Cement			49,769	20,737	77	32	Non-Hazardous
	Copper	3	0.3	69	8	2	0.2	Non-Hazardous
	Bentonite			16,061	20,238			Non-Hazardous
	Admixtures			9,374	31,247			Non-Hazardous
	Excess vegetation from site clearance					26,118	48,858	Non-Hazardous
	Vegetation from site clearance - reused on site					39,177	73,287	Non-Hazardous
Demolition (properties and structures)	Concrete from demolition reused as recycled aggregate	854	356			6,063	2,526	Inert

Merged Cells

Split Cells

Activity	Waste generated	Kent Roads		Tunnels		Roads North		Inert/Non-Hazardous/Hazardous
		Estimated tonnes	Estimated m^3	Estimated tonnes	Estimated m^3	Estimated tonnes	Estimated m^3	
	Concrete from demolition - sent offsite	384	160			2,728	1,137	Inert
	Steel	420	53			1,570	199	Non-Hazardous
	Other inert (e.g. brick, glass etc)	503	209			3,088	1,287	Inert
	Insulation	23	45			138	277	Non-Hazardous
	Mixed metal	261	33			1,603	203	Non-Hazardous
	Plastic	48	54			298	331	Non-Hazardous
	Timber	23	33			140	200	Non-Hazardous
	Plasterboard	11	23			70	140	Non-Hazardous
	Hazardous waste (eg asbestos)	Unknown	Unknown			Unknown	Unknown	Managed in line with mitigation MW015
Construction	Concrete (permanent	5,925	2,469	63,039	7,980	11,667	4,861	Inert

Split Cells

Activity	Waste generated	Kent Roads		Tunnels		Roads North		Inert/Non-Hazardous/Hazardous
		Estimated tonnes	Estimated m^3	Estimated tonnes	Estimated m^3	Estimated tonnes	Estimated m^3	
	works, including pre-cast and poured)							
	Steel	1,031	131	2,506	1,044	3,203	405	Non-Hazardous
	Plastic	30	34	34	38	271	301	Non-Hazardous
	Primary aggregate	15,279	8,488	29,586	16,437	26,300	14,611	Inert
	Recycled and primary aggregate	6,864	3,813	13,292	7,385	28,518	15,843	Inert
	Cement			7,693	3,205			Non-Hazardous
	Aluminium			23	12			Non-Hazardous
	Asphalt	10,074	5,597	10,401	5,778	21,526	11,959	Non-Hazardous
	Resin	84	42	52	26	232	116	Non-Hazardous
	Bitumen	19	19	64	64	52	52	Non-Hazardous

Activity	Waste generated	Kent Roads		Tunnels		Roads North		Inert/Non-Hazardous/Hazardous
		Estimated tonnes	Estimated m^3	Estimated tonnes	Estimated m^3	Estimated tonnes	Estimated m^3	
	Copper					0.05	0.01	Non-Hazardous
	Glass fibre reinforced polymer	19	21	5	6	34	38	Non-Hazardous
	Lime			62	62	17	12	Non-Hazardous
	Admixtures			2	7			Non-Hazardous
	Stone					325	271	Inert
	Timber	3	4	1	0.5	12	13	Non-Hazardous
	Contaminated excavated material * potentially hazardous			294,300	163,500			Hazardous
	Non-hazardous excavated material			900,000	500,000			Non-Hazardous
	Non-hazardous excavated material -			1,188,000	660,000			Non-Hazardous

Activity	Waste generated	Kent Roads		Tunnels		Roads North		Inert/Non-Hazardous/Hazardous
		Estimated tonnes	Estimated m^3	Estimated tonnes	Estimated m^3	Estimated tonnes	Estimated m^3	
	retained in Order Limits							
	General waste skips	4,636	4,636	7,650	7,650	18,900	18,900	Non-Hazardous
	Cardboard (packaging)	2,475	5,650	4,051	9,000	11,925	26,500	Non-Hazardous
	Dry mixed recycling	3,825	9,563	7,650	19,125	18,900	47,250	Non-Hazardous
	TBM and ancillaries x2			13,714	3,182			Non-Hazardous

5.6 Waste treatment and disposal options

5.6.1 The contractor's appointed waste contractors would be responsible for sourcing and selecting their waste management supply chain and ensuring they are suitably permitted.

5.6.2 Materials generated from the Project that are confirmed to be suitable for reuse without causing harm to human health or the environment would be reused within the Order Limits. Where surplus excavated material cannot be reused within the Order Limits other opportunities should be sought outside of the Order Limits. Where the timeline of opportunities outside the Order Limits matches the generation of material or wastes within the Project, the contractor will ensure that the activities undertaken are carried out under the relevant regulations and guidance.

5.6.3 The Excavated Materials Assessment (Application Document 6.3, Appendix 11.1) has been developed in order to validate available offsite capacity at third-party potential receiver sites as well as to determine which of the receiver sites would be capable of accepting excavated materials from the Project. As detailed in Section 4 disposal to landfill is the least sustainable method of waste management and at the bottom of the waste hierarchy. The Excavated Materials Assessment provides a method to assess whether there is sufficient offsite capacity for the reuse of the inert excavated materials.

6 Implementation of the oSWMP

6.1 Roles and responsibilities

6.1.1 Many parties would be involved in constructing the Project, including National Highways, designers, Contractors and Subcontractors. Each would have their own role to play in ensuring effective waste management.

6.1.2 Given the Project would be divided into different contracts, multiple Contractors and Designers are anticipated; however, all would be subject to the same responsibilities outlined below.

6.1.3 These responsibilities have been secured as Project commitments in the REAC, and the appropriate reference is included (e.g. MW0XX).

6.1.4 The key roles and associated responsibilities for delivery of the CSWMP are summarised below. These roles and responsibilities are based on those required by the now-revoked Site Waste Management Plan Regulations 2008. However, it is considered appropriate to follow these regulations, as this provides a suitable framework for setting out a CSWMP.

6.1.5 The contractor will ensure that relevant information resulting from works undertaken by themselves or other organisations within the Order Limits is aligned with the requirements of this oSWMP.

National Highways

6.1.6 National Highways' is responsible for operating, maintaining and improving England's motorways and major A roads. Its responsibilities would include the following:

a. Appointing the Contractors and Designers

b. Monitoring the implementation of the CSWMP and Project commitments

c. Providing necessary direction to Contractors, e.g. setting contractual obligations

d. Monitoring the CSWMP as necessary in liaison with the Contractors, ensuring it is kept up to date

e. Sharing responsibility for ensuring that all waste from the site is dealt with in accordance with the waste Duty of Care in section 34 of the Environmental Protection Act 1990 and the Waste (England and Wales) Regulations 2011

Designer

6.1.7 The Designer would be appointed with the Contractor to develop the preliminary design, which has been submitted in the application for a Development

Consent Order, into the detailed design to be executed in construction. Their responsibilities would include the following:

a. Supporting the Contractors to identify, prioritise and implement ways of meeting the Project targets for waste

b. Identifying further opportunities to reduce total waste and improving material resource management

c. Identifying opportunities to increase reused and recycled content (where there is no impact on cost or performance)

d. Supporting the development/implementation of the CSWMP from an early design stage, including the provision of waste forecasts and pursuing further waste reduction through design

Contractors

6.1.8 The Contractors would use the oSWMP and information from the detailed design process to inform the CSWMP (or equivalent) to set out procedures for the characterisation, management and monitoring of waste arisings (REAC Ref. MW009).

6.1.9 The CSWMP would contain the following:

a. Initial forecast of construction waste listed by waste type, waste code, source and anticipated weight from detailed design.

b. Calculation of construction waste listed by waste type, waste code and source.

c. Identify waste management options to enhance the reuse, recycling and recovery of waste and further improve upon the data presented.

d. All wastes entered would have a final destination entered and the offsite destination, i.e. reuse, recycling, recovery or disposal.

e. Data in the document would be used to calculate the reuse of site-won materials.

f. Data in the document would be used to calculate recycling and reuse of demolition materials as recycled aggregate to demonstrate compliance with the Project target (REAC Ref. MW001).

g. Data in the document would be used to calculate offsite reuse of inert excavated materials to demonstrate compliance with the Project target (REAC Ref. MW011).

h. Data in the document would be used to calculate overall construction waste diversion from landfill to demonstrate compliance with the Project target (REAC Ref. MW013).

i. The document would be used to record relevant Duty of Care documentation (waste carrier registration, receiving site environmental

permit number, waste transfer documentation reference) associated with the waste movement. All permits and/or licenses must be periodically reviewed to ensure they are still in date and the most recent versions are available.

6.1.10 Where a Materials Management Plan (as defined by CL:AIRE (2011)) is required (see REAC Ref. MW007), the CSWMP would be compatible with the materials tracking element to enable the full traceability of all materials excavated during construction.

6.1.11 The CSWMP used to track the management of waste would be stored in an accessible location onsite. The CSWP would be in an electronic format and capable of producing reports that can be shared with National Highways and/or other relevant party.

6.1.12 A Materials and Waste Manager would be appointed (REAC Ref. MW006) to ensure:

a. Procedures within the CSWMP and commitments outlined in the REAC are followed during both the detailed design and construction

b. The waste hierarchy is implemented and further opportunities to reduce waste generation or improve recovery/recycling rates are identified

c. Compliance with waste mitigation requirements and ensuring the CSWMP is written and updated

6.1.13 The Contractors would provide appropriate environmental training to employees working on site, including content on waste management and the CSWMP.

6.1.14 Should waste targets be unlikely to be met, the Contractors would notify National Highways as soon as practicable and provide justification. Where targets are projected to be missed, the Contractors will be required to provide a plan setting out how they can rectify the situation and bring it back to compliance.

Subcontractors

6.1.15 Subcontractors are companies or persons who would carry out, manage or control works under the direction of the Contractors. Their responsibilities would include the following:

a. Carrying out the relevant waste management tasks detailed in the CSWMP

b. Assisting with required inputs, providing forecasts of waste produced through their activities when requested in accordance with the oSWMP

c. Measuring and reporting progress for waste and reused and recycled waste in tonnes and/or cubic metres

d. Reporting performance for construction and excavation waste streams separately, measured in tonnes and/or cubic metres

e. Supporting the development/implementation of the CSWMP and working in full compliance with the methods detailed within the CSWMP, in particular complying with all actions to reduce and reuse waste and increase levels of recovery

f. Participating in site briefings/toolbox talks for operatives on materials handling and waste disposal

g. Informing the Contractors (in advance) where waste targets set out in the CSWMP are unlikely to be met, and providing justification

h. Identifying additional ways to reduce and reuse waste and/or increase recovery and informing the Contractors

6.2 Waste management contractors

6.2.1 The Project would be located in the south-east of England in an area with a high density of registered waste carriers and appropriately licensed waste handling facilities.

6.2.2 Waste management contractors would provide evidence of registration/ permitting prior to waste leaving the Project, and the relevant details entered on the accompanying waste documentation, e.g. Waste Transfer Note (WTN) and the CSWMP.

Waste carriers and facilities

6.2.3 The Contractors would manage all waste generated by the Project in accordance with all legal requirements. Details of the waste carriers used for each waste stream would be recorded in the CSWMP.

6.2.4 Credentials of waste management contractors would be verified using the public registers managed by Defra (Defra, 2021).

6.2.5 Disposal and recovery facilities within the study area are presented in Environmental Statement Appendix 11.3 (Application Document 6.3).

Waste documentation

6.2.6 The Contractors would ensure that all movements of waste from site are accompanied with a Waste Transfer Note as required by the Waste (England and Wales) Regulations 2011 (as amended). The Waste Transfer Note would contain the following:

a. The name of the person receiving the waste and what they are authorised to do with that waste including the registration number, e.g. a registered waste carrier can only transport waste

b. Type of waste

c. The Standard Industrial Classification (SIC) code

d. The six-digit European Waste Catalogue (EWC) code

e. Address of the producing site and details of the waste producer

f. Quantity of waste

g. How it is contained (e.g. 8 cubic yard skip)

h. Address of the receiving site (e.g. landfill) and the Environmental Permit or Exemption No. associated with the receiving site

i. The date to which the Waste Transfer Note applies

j. If the material is non-hazardous waste and it is destined for disposal directly to landfill, pre-treatment must have been applied and a declaration detailing the treatment appended to the Waste Transfer Note

k. A declaration that the waste has been treated in line with the requirements of the waste hierarchy

6.2.7 The Waste Transfer Notes would be kept for a minimum period of two years (for non-hazardous waste) in accordance with Regulation 35 of the Waste (England and Wales) Regulations 2011 (as amended). Contractors would consider using electronic waste transfer notes rather than paper based notes.

Waste consignment notes (hazardous waste)

6.2.8 The Contractors would ensure that a Hazardous Waste Consignment Note is completed for every movement of hazardous waste in accordance with the Hazardous Waste (England and Wales) Regulations 2005. The Hazardous Waste Consignment Note would include the following:

a. Hazardous waste premises code

b. Consignment note code

c. SIC code

d. Name and address of the site from which the waste is being moved

e. Date of removal

f. Type of waste produced, including the quantity and the EWC code

g. The name of the person who is receiving the waste and what they are authorised to do with that waste, e.g. a registered waste carrier can only transport waste

h. The final disposal site that is authorised to accept the waste

i. Retention period for hazardous waste

6.2.9 The Hazardous Waste Consignment Notes would be kept for a minimum period of three years in accordance with the Hazardous Waste (England and Wales) Regulations 2005.

6.3 Training

6.3.1 The Contractors would incorporate the CSWMP requirements into the site induction and would provide onsite instructions of appropriate separation, handling, reuse, recycling and return methods to be used by all parties at all appropriate stages of the Project.

6.3.2 The Contractors would ensure that all personnel working on the site are appropriately inducted.

6.4 Updating the CSWMP

6.4.1 The CSWMP would be updated on a daily or as needed basis to record accurate information on progress, and whenever changes occur onsite or relating to materials.

6.4.2 Updates to the CSWMP would give a current picture of how work is progressing against the waste estimates and targets contained in the plan. Therefore, for waste that is reused or recycled onsite, the CSWMP should be updated to describe how much of the estimated volume or tonnage has been processed. It would also evidence and report on the application of the waste hierarchy. For waste that is removed from the site, the CSWMP would be updated to record the identity of the company removing the waste, the type (and quantity) of waste and the site to which it has been taken.

6.5 Monitoring

6.5.1 As outlined in Section 6.2 all Contractors would assist in collating waste data and Duty of Care records.

6.5.2 The Contractors would utilise this information in addition to site audits to monitor ongoing compliance against all legal requirements including those set out in Table 3.1 and the Project targets and commitments laid out in Table 4.1 and Table 4.6.

6.5.3 The Contractors would submit quarterly monitoring waste reports to National Highways, which would present the following information as a minimum:

a. Evidence of no warning letters or notices from a regulating within the reporting period

b. Summary of waste management performance against targets, consents, environmental permits and exemptions registered for construction activities within the Order Limits in the monitoring period

c. A summary of waste sent offsite, its end destination and status (i.e. recovered, reused, recycled or disposed) at the end destination and compliance against the Project targets (see Table 6.1)

d. Where targets are projected to be missed, the Contractors will be required to provide a plan setting out how they can rectify the situation and bring it back to compliance

e. A copy of the latest progress towards compliance with REAC items MW001 to MW015

6.5.4 Table 6.1 provides a summary of the Project targets.

Table 6.1 Project targets

REAC Ref.	REAC requirement
MW001	Where design specification permits, key construction materials used would include a measurable recycled or secondary content. In line with the target set out in DMRB LA 110 Material assets and waste (Highways England, 2019a), 31% of aggregates used in construction would be recycled or secondary, for those applications where it is technically and economically feasible to substitute these alternative materials for primary aggregates. To facilitate compliance with this target, the Contractors would calculate the total aggregate required to achieve the detailed design, and the total where design specification dictates only primary aggregate is used. During construction, the Contractors would record the amount of primary and secondary/recycled aggregate by weight and calculate compliance with the target (offsetting the amount excluded by design specification). Use of primary materials would be minimised, during detailed design, by specification of materials that are renewable, reclaimed or have a recycled content: • In line with the target set out in DMRB LA 110 Material assets and waste (Highways England, 2019a), 70% of suitable, uncontaminated concrete from demolition activities would be recycled and reused within the Order Limits to substitute use of primary material. Suitable uncontaminated concrete from demolition and construction activities would be processed to achieve non-waste status in accordance with the Aggregates from Inert Waste Quality Protocol (WRAP, 2013).
MW011	Through a combination of one or more of reuse, recycling and/or recovery the Contractors would achieve a minimum of 95% (by weight) of inert excavation wastes and a minimum of 95% (by weight) of inert construction and demolition waste destined for offsite waste management outside the Order Limits would be diverted from final disposal in landfill.
MW013	Through a combination of one or more of reuse, recycling and/or recovery the Contractors shall achieve a minimum of 90% (by weight) of non-hazardous excavated wastes and a minimum of 90% (by weight) of non-hazardous construction and demolition waste that are destined for off-site waste management outside the Order Limits, and therefore would be diverted from final disposal in landfill.
MW015	The Contractors would seek to achieve a target of 70% (by weight) of hazardous construction, demolition and excavation (CDE) waste to be diverted from landfill. It is anticipated that this would be achieved by undertaking remediation or treatment within the Order Limits or off-site at third-party facilities. It is acknowledged that the nature of some hazardous construction

Deleted: 70% (by weight) with a target of

Deleted: of 70% (by weight) with a target

REAC Ref.	REAC requirement
	waste may preclude this. Where a hazardous construction waste cannot be diverted from landfill, the justification and evidence will be provided to National Highways and logged by the Contractors in the SWMP.

6.6 Post construction review

6.6.1 Within three months of the end of construction, the Contractor would produce the SWMP reporting on the performance of the SWMP.

6.6.2 This would include:

a. confirmation that the plan has been monitored on a regular basis to ensure that work is progressing according to the plan;

b. a comparison of the estimated quantities of each waste type against the actual quantities of each waste type;

c. an explanation of any deviation from the plan;

d. an estimate of the cost savings that have been achieved by completing and implementing the plan;

e. review of performance against the Project standards; and

f. details on the lessons that have been learned from the Project.

7 Conclusion

7.1.1 This oSWMP sets out the overarching principles and procedures that would be applied for the management of waste during the construction of the Project. It also defines specific roles and responsibilities to ensure waste would be managed effectively.

7.1.2 Prior to the commencement of construction, the Contractors would, for each part of the authorised development, prepare and submit a CSWMP for the approval of the Secretary of State, under Requirement 4 of the draft Development Consent Order (Application Document 3.1). The CSWMP would need to be prepared in accordance with this oSWMP and would need to be kept as a live document and regularly updated throughout the construction phase.

References

Contaminated Land: Applications in Real Environments (CL:AIRE) (2011). Definition of Waste: Development Industry Code of Practice, Version 2. Accessed July 2020. [redacted]

Department for Environment, Food and Rural Affairs (Defra) (2011). Guidance on applying the Waste Hierarchy.

Department for Environment, Food and Rural Affairs (Defra) (2018) https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/765914/resources-waste-strategy-dec-2018.pdf

Department for Environment, Food and Rural Affairs (Defra) (2021). Public registers. Accessed January 2021. https://environment.data.gov.uk/public-register/view/index.

Department for Transport (2014). National Policy Statement for National Networks. Accessed July 2020. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/387223/npsnn-web.pdf.

Waste and Resources Action Programme (WRAP) and Environment Agency (2013). Aggregates from Inert Waste: End of waste criteria for the production of aggregates from inert waste. Accessed April 2020. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/296499/LIT_8709_c60600.pdf.

Highways England (2019). Design Manual for Roads and Bridges, LA 110 Material assets and waste. Accessed July 2020. [redacted]

Waste and Resources Action Programme (WRAP) (n.d.). Achieving Good Practice Waste Minimisation and Management: Guidance for construction clients, design teams and contractors.

Waste and Resources Action Programme (WRAP) (2008). Net Waste Tool, Guide to Reference Data, Version 1.0.

Waste and Resources Action Programme (WRAP) (2020). WRAP and the Circular Economy. Accessed July 2020. [redacted].

Annex A CSWMP data templates

Annexes A.1 to A.5 provide a template for waste forecasting to be adopted by the Contractors as part of the development of the CSWMP.

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A.1 Enabling Works Template

Activity	Waste generated	Possible EWC code	Estimated tonnage	Estimated m^3
Site clearance/ utility connections/ enabling works	Steel (gas main and power transmission towers) – removed and wastage	*170405*	19,922	2,522
	Concrete (pre-cast pipes, slabs, foundations, sewer) – wastage and temporary works	*170101*	78,799	32,833
	Cement	*170101*	49,846	20,769
	Sand	*170504*	476	396
	Admixtures	*170101*	9,374	31,247
	Asphalt – wastage and temporary works	*170302*	65,338	36,299
	Excess vegetation from site clearance	*200201*	26,118	48,858
	Vegetation from site clearance – reused within the Order Limits	*200201*	39,177	73,287
	Bentonite	*101014*	16,061	20,238
	Rubber	*191204*	548	365
	Aggregate	*170504*	1,022,019	567,788
	Copper	*170401*	74	8
	Plastic (utility pipework) – wastage and temporary works	*170203*	1,906	2,118

A.2 Demolition Works Template

Activity	Waste generated	Possible EWC code	Estimated tonnage	Estimated m^3
Demolition (properties and structures)	Concrete from demolition reused as recycled aggregate	*170101*	6,917	2,882
	Concrete from demolition – sent offsite	*170101*	3,113	1,297
	Steel	*170405*	1,990	252
	Other inert (e.g. brick, glass)	*170107*	3,590	1,496
	Insulation	*170604*	161	322
	Mixed metal	*170407*	1,864	236
	Plastic	*170203*	346	385
	Timber	*170201*	163	233
	Plasterboard	*170801** *170802*	81	163
	Hazardous waste (e.g. asbestos)	*170603** *170605**	Unknown	Unknown

** Potentially hazardous*

A.3 Construction: Kent Roads template

Activity	Waste generated	Possible EWC code	Estimated tonnage	Estimated m^3
Construction (earthworks, compounds, haul roads and highways)	Concrete	*170101*	5,925	2,469
	Steel	*170405*	1,031	131
	Plastic	*170203*	30	34
	Aggregate	*170504*	22,143	12,302
	Glass fibre reinforced polymer	*070213*	19	21
	Bitumen	*200301*	19	19
	Resin	*070213*	84	42
	Asphalt	*170302*	10,074	5,597
	Timber	*170201*	3	4
	General waste skips	*200301*	4,636	4,636
	Cardboard (packaging)	*200101*	2,475	5,650
	Dry mixed recycling	*200102* *200108* *200139* *200140*	3,825	9,563

A.4 Construction: Tunnels and Approaches Contract template

Activity	Waste generated	Possible EWC code	Estimated tonnage	Estimated m^3
Construction (earthworks, compounds, haul roads and tunnels)	Concrete	*170101*	63,378	8,022
	Steel	*170405*	2,015	840
	Admixtures	*170101*	2	7
	Plastic	*170203*	34	38
	Aggregate	*170504*	42,878	23,821
	Cement	*170101*	7,714	3,214
	Bitumen	*200301*	64	64
	Lime	*101304*	62	62
	Glass fibre reinforced polymer	*070213*	5	6
	Timber	*170201*	1	0.5
	Gypsum	*170802*	1	1
	Aluminium	*020110*	25	12
	Asphalt	*170302*	10,401	5,778
	Resin	*070213*	79	39
	Hazardous excavated material	*170503**	294,300	163,500
	Non-hazardous excavated material – retained in Order Limits	*170504*	1,188,000	660,000
	General waste skips	*200301*	7,650	7,650
	Cardboard (packaging)	*200101*	4,051	9,000
	Dry mixed recycling	*200102* *200108*	7,650	19,125

Activity	Waste generated	Possible EWC code	Estimated tonnage	Estimated m^3
		200139 *200140*		

A.5 Construction: Roads North of the Thames template

Activity	Waste generated	Possible EWC code	Estimated tonnage	Estimated m^3
Construction (earthworks, compounds, haul roads and highways)	Concrete	*170101*	11,667	4,861
	Steel	*170405*	3,203	405
	Copper	*200301*	0.05	0.01
	Plastic	*170203*	271	301
	Aggregate	*170504*	54,818	30,454
	Bitumen	*200301*	52	52
	Resin	*070213*	232	116
	Asphalt	*170302*	21,526	11,959
	Timber	*170201*	12	13
	Stone	*170504*	325	271
	Lime	*101304*	17	12
	Glass fibre reinforced polymer	*070213*	34	38
	Hazardous excavated material	*170503**	10,800	6,000
	Non-hazardous excavated material -off site management	*170504*	900,000	500,000
	General waste skips	*200301*	18,900	18,900

Activity	Waste generated	Possible EWC code	Estimated tonnage	Estimated m^3
	Cardboard (packaging)	*200101*	11,925	26,500
	Dry mixed recycling	*200102* *200108* *200139* *200140*	18,900	47,250

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