Tideway

EXCAVATED MATERIAL AND WASTE COMMITMENTS (ALTERATION NO.3)

(Doc ref: APP142)

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Excavated Material and Waste Commitments (Alteration No.3)

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TIDEWAY

Excavated Material and Waste Commitments

List of contents

List of tables

1 Introduction

1.1.1 This Excavated material and waste commitments (EMWC) document presents the measures that would be undertaken to deliver the effective management of excavated material and hazardous and non-hazardous waste arising from the construction, operation and maintenance of the Thames Tideway Tunnel project (the 'project') in one place. This version of the document (Alteration No. 3) has been amended under the approval process provided in project-wide requirement PW12.

1.1.2 Two previous amendments to the document have been made. Alteration No.1 approved in 2015 amended the document so that where excavated material or waste is being managed under the CL:AIRE DoW CoP, the receptor sites do not need to be assessed using the EMOA process;[1] Alteration No.2 approved in 2016 amended the project definition of 'beneficial use' set out under Objective 12 of the EMOA methodology following a change to EA Guidance in October 2016. This version of the document (Alteration No.3) has introduced amendments to the document to reflect current on site practices regarding the management and reporting of waste including the removal of the site waste management plan template from the document.

1.1.3 The commitments set out in the EMWC relating to the construction of the project are secured by project-wide Requirement PW12. The effect of that Requirement is that excavated material and waste arising during construction of the authorised development is managed in accordance with the EMWC. It should be noted that the commitments in this document are subject to any future changes to relevant legislation or guidance. In the event that any such changes arise which make it reasonably necessary to amend the EMWC, a revised version of the document showing the amendments will be provided to the Mayor of London for approval and the approved revised version will be published and shared with stakeholders.

1.1.4 The commitments set out in this document are underpinned by the *Excavated material and waste strategy* (EM&W strategy) set out in the *Environmental Statement* (*ES*) (Doc ref: 6.2.03, Vol 3: Project-wide effects assessment, Appendix A.3 in Appendices (A to A.4)) which is supported by the Excavated materials options assessment (EMOA) also set out in the *ES* (Doc ref: 6.2.03, Vol 3, Appendix A.4).

1.1.5 The EM&W strategy:

a. develops the approach for the control and sustainable management of excavated materials and waste from the construction, operation and maintenance of the project;

b. demonstrates that the management of excavated material and waste would not have an adverse effect on the capacity of existing waste management facilities to deal with other waste arisings in the area.

[1] Contaminated Land Applications in Real Environments – The Definition of Waste Code of Practice

1.1.6 To identify the potential preferred options for the management of the excavated material, a detailed EMOA has been prepared. The EMOA supports the EM&W strategy by demonstrating that there is sufficient capacity at suitable potential receptor sites for managing excavated materials. The EMOA also provides a methodology for assessing any additional suitable potential receptor sites that may become available for the treatment, handling or use of the project's excavated material.

1.1.7 This EMWC document is structured as follows:

a. Section 2 sets out the project objectives and the associated targets in respect of excavated material and waste management.

b. Section 3 provides details on the project-wide waste management plan (WMP) and site waste management plans (SWMPs), which are key tools for the management of the excavated material and waste.

c. Section 4 details the EMOA methodology to be used by contractors (including a commitment to no disposal of excavated material at sea), for the identification and assessment of additional receptor sites. It also includes the planning stage preferred list (PSPL) of excavated material receptor sites.

d. Section 5 sets out the review and monitoring processes that would be put in place and section 6 sets out the roles and responsibilities of those involved in the project.

e. Section 7 sets out the commitments for managing waste once the project is operational.

Terminology

1.1.8 The following terminology is used in the EMWC document consistent with that used in the Code of Construction Practice (CoCP):

a. The 'Employer' is the party in whom the DCO powers are vested, or transferred under the terms of the DCO, and implements the project, including where appropriate the Employer's project management organisation.

b. The 'Contractor' is the party engaged by the Employer to exercise the powers described in the DCO.

c. 'Responsible person' is someone who is suitably qualified and who is given the responsibility of managing waste. This term is used both on a site basis and on a project-wide basis.

2 Thames Tideway Tunnel project objectives

2.1.1 In order to set a clear vision and provide strategic direction for the project, a number of high-level waste-related objectives have been developed. The *Sustainability Statement* (Doc ref. 7.07, para 6.6.7) sets out an overarching objective to:

"Minimise waste arisings and its impacts on the environment and communities and to promote re-use, recovery, recycling and beneficial use."

2.1.2 To support the delivery of this objective the EM&W strategy contains three objectives. Achievement of the objectives would be assessed, by the Employer, using specific reporting targets.

Objective W1

2.1.3 Objective W1: To minimise waste to landfill by prioritising prevention and seeking to maximise reuse and recycling.

2.1.4 The target used to report progress against objective W1 is to divert at least 80 per cent of construction and demolition waste from landfill with an aspiration to divert 95 per cent of construction and demolition waste from landfill over the duration of construction.

Objective W2

2.1.5 Objective W2: To maximise beneficial use of excavated material arising from tunnel construction.

2.1.6 The targets used to assess the delivery of objective W2 are:

a. Beneficially use a minimum of 85 per cent of clean excavated material with an aspiration to beneficially use 100 per cent of clean excavated material.

b. All of the receptor sites used for the project excavated material (except where material is managed under the CL:AIRE DoW CoP) would be assessed against the EMOA (Section 4) and perform no worse than those sites on the PSPL (see Appendix C).

Objective W3

2.1.7 Objective W3: To minimise the impact of excavated material and waste on the environment and communities.

2.1.8 The target used to assess the delivery of objective W3 is that all of the project construction sites have a SWMP which is updated quarterly by the contractor and combined by the Employer across the whole project to create a project-wide WMP.

2.1.9 Excavated material and waste would be managed using the individual SWMPs full details of which are provided in Section 3.3 below.

2.1.10 The project-wide WMP would combine information contained in the SWMPs and would be used to ensure that overall the projects excavated material and waste

targets are met (paras. 2.1.4, 2.1.6 and 2.1.8). Further details on the project's monitoring and review processes are provided in Section 5 of this document.

3 Construction phase: Waste management

3.1.1 Excavated material and waste generated by the project would primarily be managed using the individual SWMPs which would be used to control the on-site management of excavated material and waste. These would be combined to provide a central location for project waste information.

3.2 Project-wide waste management plan

3.2.1 The individual SWMPs for each site would be combined to provide an overarching project-wide WMP. The project-wide WMP would provide a central location for all project waste information in a single document. The template for the project-wide WMP is provided in Appendix A. The project-wide WMP would:

a. record the responsible person for each site, provided by the contractor

b. record the waste types generated by the entire project

c. provide the details of all waste minimisation actions

d. provide project-wide waste forecasts for each waste type

e. contain a complete register of all approved waste carriers and receptor sites for the project, provided by the contractor

f. contain a summary of the information relating to waste transactions from each site provided by the contractor.

3.3 Site waste management plan

3.3.1 The SWMPs provide a framework for managing and documenting the excavated material and waste that would be generated by the construction sites and would provide the relevant information for the project-wide WMP template in Appendix A. The Employer would require that a SWMP is produced for each site and is updated by the contractor(s) on a quarterly basis.

3.3.2 The SWMPs would identify:

a. The approach taken to excavated material and waste management taking account of:

   i. the waste hierarchy

   ii. the CL:AIRE DoW COP, to determine when treated excavated waste can cease to be waste for a particular use

   iii. Waste & Resources Action Programme (wrap) aggregate quality protocol for construction and demolition material

   iv. the potential to reuse material from other projects in London to infill the cofferdams on foreshore sites subject to meeting the delivery requirements in the *River Transport Strategy* (Doc ref. APP180.02) which is secured via the project wide requirement PW15.

v. using local permitted and exempt sites that can accept, process and recycle construction materials

b. that each construction site will have a dedicated area for the handling and storage of excavated materials

c. where the practicable opportunities for the use of material with recycled content during construction will be adopted

d. the types of excavated material and waste removed from site, its description and estimated quantities of waste generated

e. the authorised waste carrier details and their waste carrier registration number

f. through segregation, maximise opportunities for the potential for reusing and recycling

g. the types of training that will be provided to all site workers on waste management and recycling procedures

h. disposal routes and permitting requirements

i. details of the site that the waste and/or material will be and was taken to

j. details of the environmental permit or exemption held by the receptor site where excavated material will be and was taken.

3.3.3 Contractors would be required to record, by European Waste Catalogue code, the type, quantities and management method for all waste generated on site (as set out in the *CoCP*) in the SWMP. This information would then be consolidated under a summary of key performance indicators (KPIs) heading which summarises percentages:

a. diverted from landfill

b. for beneficial use

c. recycled

d. reused on site

e. reused off site.

3.3.4 The information from the individual SWMPs would then be consolidated in the project-wide WMP, under the Reporting and KPIs sections.

3.3.5 This information would be used to monitor, manage and report against the targets under objectives W1 and W2.

3.3.6 The commitment detailed in para. 3.3.1 would deliver the target under objective W3.

3.3.7 In addition, all works would be undertaken in accordance with the project's *CoCP.* *CoCP* Part A (Doc ref: 7.19.1, Section 10) specifically relates to waste management, the provisions of which reflect the commitments contained in this document, particularly relating to:

a. the application of the waste hierarchy (*CoCP,* Section 10.1.5)

b. the project wide plan (*CoCP,* Section 10.1.3)

c. the production of a SWMP for each site (*CoCP,* Section 10.1.4)

d. the development of demolition reuse plans (*CoCP,* Section 10.1.11)

e. measures relating to the on-site management of excavated material (*CoCP,* Section 10.1.2 and 10.1.3).

4 Excavated material options assessment

4.1.1 The EMOA process identifies suitable receptor sites for the treatment, handling or use of the project's excavated material taking into consideration the application of the waste hierarchy. The assessment is designed to provide a systematic and transparent approach for assessing the most suitable management options for reuse, treatment and/or disposal of the excavated materials that would arise from the project during its construction phase.

4.1.2 The commitment of the project is to beneficially reuse excavated material (in line with objective W2 Para 2.1.5 above) and therefore disposal of excavated material at sea would not be considered acceptable. As stated in the Habitats Regulation Assessment: No significant effects report (Doc Ref 6.3 Para. 7.53) there would be no disposal of excavated material at sea.

4.1.3 The result of this assessment is the PSPL (see below) which demonstrates the potential capacity to manage the excavated material in a sustainable manner. The location and name of the excavated material receptor sites on the PSPL is provided in Table 4.1. Further information on this list can be found in Table C.1 of this document and the updated version of the EMOA as set out in the ES (Doc ref: 6.2.03, Vol 3, Appendix A.3, para 6.4) which was submitted to the Planning Inspectorate on the 23 September 2013.

Table 4.1 Planning stage preferred list

Name	Location (county)
Bournewood Inert Landfill Site	Kent
Cliffe Works	Kent
Lydd Quarry	Kent
Borough Green Quarry	Kent
Kingsmead Quarry	Berkshire
Barrington Landfill	Cambridgeshire
Shipton-on-Cherwell Quarry	Oxfordshire
Tyttenhanger Quarry	Hertfordshire
Little Belhus Landfill	Essex
RSPB – Wallasea Island (Wallasea Wetland Creation Project)	Essex
Summerleaze - Denham Quarry	Buckinghamshire
East Burnham Quarry	Berkshire
Veolia Essex - Rainham Landfill	Essex
Cliffe Pools	Kent
Calvert Landfill	Buckinghamshire
Sutton Courtenay	Oxfordshire

4.1.4 To enable the contractors to utilise suitable receptor sites that arise in the future but at the same time provide reassurance to stakeholders in relation to beneficial reuse of excavated material, only receptor sites that meet or exceed the performance of the sites on the PSPL would be used for the receipt and management of excavated material (except where material is managed under the CL:AIRE DoW CoP).

4.1.5 Contractors would be required to use the EMOA methodology, detailed in Appendix B of this document, to assess suitable receptor sites for the treatment, handling or use of the project's excavated material (excluding sites that would manage excavated material using the CL:AIRE DoW CoP).

4.1.6 Contractors would need to demonstrate to the Employer that any new receptor sites that they propose to use (i.e. sites not on the planning stage preferred list but excluding sites that would manage excavated material using the CL:AIRE DoW CoP) have been assessed using the EMOA and that they perform no worse than those sites on the planning stage preferred list. Table 4.2 defines the performance that any proposed new receptor sites would need to achieve against the EMOA evaluation objectives.

Table 4.2 Criteria for meeting the performance of the sites on the planning stage preferred list

EMOA evaluation objectives	Required minimum performance
1: To ensure prudent use of land and other resources	No evaluation indicator grade" of "--" or "---"
2: To reduce climate change impacts	No evaluation indicator grade of "--" or "---"
3: To protect local amenity	No evaluation indicator grade of "--" or "---"
4: To conserve landscapes and townscapes at receiving site	No evaluation indicator grade of "--" or "---"
5: To protect quality of and access to open space	No evaluation indicator grade of "--" or "---"
6: To protect water quality	No evaluation indicator grade of "--" or "---"
7: To protect biodiversity	No evaluation indicator grade of "--" or "---"
8: To protect cultural heritage	No evaluation indicator grade of "--" or "---"
9: To provide employment opportunities	No evaluation indicator grade of "--" or "---"
Total for objectives 1 to 9 combined	No more than two evaluation indicator grades of "--" and "---" across all evaluation indicators under objectives 1 to 9
11: To ensure operational suitability of the receptor site; and for the individual evaluation indicators under objective 11:	At least one "+++" evaluation indicator grade; At least two positive evaluation indicator grades; and No more than one "---" evaluation indicator grade
11a) Likelihood of implementation within the required timescale	No "---" evaluation indicator grade

EMOA evaluation objectives	Required minimum performance
11b) Acceptability of material with material characteristics by the receptor sites	No evaluation indicator grade of "--" or "---"
11d) Ability of the receptor sites to accept material at the anticipated rate	No "---" evaluation indicator grade
11e) Site operations have appropriate planning/permitting consent	Only a neutral or positive evaluation indicator grade unless the site has existing planning/ permitting consents which need amending
11f) Can accept excavated material from multiple transport modes	No "---" evaluation indicator grade
12: To conform to the waste hierarchy	Evaluation indicator grade of "+++"
13: To conform to proximity principle and 14: To conform to sustainable transport policy	No negative grade against objective 13 unless objective 14 has a neutral or positive grade; and No negative grade against objective 14 unless objective 13 has a positive grade
15: To conform to health and safety good practice	No negative grades

4.1.7 To demonstrate the performance of any new receptor site against the EMOA evaluation objectives, a contractor would need to grade the receptor site against each evaluation indicator and provide justifications for each grade. The justifications must be comparable to the justifications used in the Excavated materials options suitability (EMOS) reports, which form part of the EMOA, as set out in the *ES* (Doc ref: 6.2.03, Vol 3, Appendix A.4), submitted to support the application for development consent.

4.1.8 The Employer would review the proposed receptor sites put forward by the contractor to determine whether those sites:

a. are suitable for the treatment, handling or use of the project's excavated material, and

b. meet or exceed the performance of the receptor sites on the planning stage preferred list.

4.1.9 If the Employer is satisfied that proposed new receptor sites meet the performance of the receptor sites on the planning stage preferred list, the contractor's grading and justification for the receptor sites would be provided to the Environment Agency (EA) and the Mayor of London. This would provide the EA and Mayor of London with the opportunity to review the proposed receptor sites for the treatment, handling or use of the project's excavated material.

4.1.10 These measures would contribute to the achievement of the target under objective W2, related to the use of receptor sites. In addition, under the SWMPs (Section 3) the contractors would be required to identify the actual facilities used, which provides a further verification process.

5 Review and monitoring the EM & W strategy

5.1.1 The EM&W strategy would be reviewed by the Employer annually for the duration of the project.

5.2 Monitoring progress of excavated material and waste strategy objectives

5.2.1 Achievement of the EM&W strategy objectives would be assessed using the following targets, as set out in Section 2:

a. To divert at least 80 per cent of construction and demolition waste from landfill with an aspiration to divert 95 per cent of construction and demolition waste from landfill.

b. Beneficially use a minimum of 85 per cent of clean excavated material with an aspiration to beneficially use 100 per cent of clean excavated material.

c. All of the receptor sites used for the project's excavated material would be assessed against the EMOA (Vol 3, Appendix A.4) and perform no worse than those sites on the planning stage preferred list (except where material is managed under the CL:AIRE DoW CoP).

d. All of the project's construction sites have a SWMP which is updated quarterly and combined across the whole project to create a project-wide WMP.

5.2.2 Construction and demolition waste is defined as all wastes in the List of Waste (LoW)[2] excluding excavated material arising from excavation of a CSO drop shaft or tunnel.

5.2.3 Excavated material is the material arising from the excavation of the CSO drop shafts and tunnels.

5.2.4 For an activity to be classified as beneficial use it needs to be reused at an EMOA site and therefore meet the evaluation objectives of the EMOA.

5.2.5 The project-wide WMP which combines data from across all project sites, would be used to review progress towards the targets contained in the EM&W strategy, including how individual waste streams are conforming to the waste hierarchy. If the progress suggests that the targets may not be achieved, actions would be agreed with the contractor to ensure that the targets are achieved. Actions to address non-conformity with EM&W strategy objectives and targets may include:

a. Review of existing SWMPs for adequacy

b. design additional targeted investigation to better characterise the issue

c. develop a strategy and plan of measures to mitigate the issue and enable the targets to be met

[2] List of Waste. European Commission Decision 2000/532/EC (as amended). May 2000

d. implement mitigation and/or remedial measures

e. ongoing monitoring and review to confirm the effectiveness of measures implemented.

5.2.6 The progress would be reported annually in the form of a written report to the Greater London Authority and the 14 directly affected local authorities. The written report would present performance against the EM&W strategy objectives and targets, including data for each of the waste streams (broken down into European Waste Catalogue codes) as well as any remedial actions agreed with the contractors.

5.3 Review and reporting of the project-wide waste management plan and site waste management plan

5.3.1 The individual SWMPs would be updated and reviewed on a quarterly basis by the contractor.

5.3.2 The contractor would be responsible for ensuring that all operations associated with the construction site comply with the approved SWMP.

5.3.3 The project-wide WMP which combines data from across all project sites would be updated annually as the project progresses. On completion of the project, the final report would provide a record of the types of waste and volume of excavated material generated by the works and would demonstrate the extent to which the objectives and targets set for the project have been met.

5.4 Delivery mechanism

5.4.1 The management of excavated materials and waste would be carried out by the Contractor(s) and would be overseen by the Employer.

5.4.2 The measures for the management of excavated material and waste arising from the project, as set out in this document, would be secured via Requirement PW12. In addition, the measures relating to on-site management of waste and excavated materials as contained in Section 10 of the CoCP Part A would be secured by Requirement PW6. Table 5.1 shows the mechanisms for delivering the measures relating to excavated materials and waste.

Table 5.1 Delivery mechanisms for the management of excavated material and waste

Deliverable	Summary	Delivery mechanism
On-site management of waste and excavated material	The *CoCP* sets out measures to protect the environment and limit disturbance from construction activities, including waste and excavated material management. Measures relating to on-site management of waste and excavated materials include: • compliance with the project-wide WMP and SWMP (*CoCP*, Section 10.1.3 and 10.1.4) • the development of demolition reuse plans (*CoCP*, Section 10.1.11) • measures relating to the on-site management of excavated material (*CoCP*,Section 10.1.2 and 10.1.3).	Requirements to comply with the EMWC document (PW12) and the *CoCP*, Part A, Section 10 (PW6)
Selection of suitable receptor sites for excavated materials	All of the receptor sites used for the excavated materials arising from the construction activities would be assessed against the EMOA and would perform no worse than those sites on the preferred receptor site list (except where material is managed under the CL:AIRE DoW CoP). The EA would be provided with the opportunity to review the proposed receptor sites for the treatment, handling or use of the project's excavated material.	Requirement (PW12) to comply with the EMWC document
Monitoring waste objectives against targets	Reporting of progress towards targets will be undertaken through the production of an annual report.	Requirement (PW12) to comply with the EMWC document

6 Roles and responsibilities

6.1 Introduction

6.1.1 This section sets out the roles and responsibilities of those involved in the construction of the project related to excavated material and waste management.

6.2 Governance

6.2.1 Our EM&W strategy assumes that:

a. the construction of the project would be carried out by the Employer using Contractor(s). It is assumed that the Employer would have oversight of the entire project.

b. the Contractor(s) would be responsible for the management of any subcontractors they employ.

6.3 The Employer

6.3.1 The Employer would:

a. require compliance with the following:

i duty of care and other legislative requirements

ii planning and permit conditions

iii the *CoCP*

iv the site specific SWMPs

v the EM&W strategy and EMOA.

b. set waste management performance indicators and standards through the contract

c. monitor and record waste management performance indicators.

d. Review progress towards the targets contained in the EMWC annually through the preparation of a written report which would combine data for all of the waste streams from each site.

6.4 Contractor(s)

6.4.1 The Contractor(s) would be required to:

a. comply with duty of care and other legislative requirements

b. comply with the project's *CoCP,* EM&W strategy, and SWMPs.

c. use the EMOA methodology to identify appropriate receptor sites of the excavated material and only use sites that perform no worse than those sites on the planning stage preferred list (except where material is managed under the CL:AIRE DoW CoP).

d. meet performance indicators and standards as required by Employer.

7 Thames Tideway Tunnel project operational waste

7.1.1 Thames Water's 25-year Sludge Strategy sets out its approach to implementing a sustainable sludge strategy, maximising beneficial use and considering issues of acceptability, energy, transport, odour, nutrients and local constraints.

7.1.2 The additional operational waste anticipated to be generated by the project would be inseparable from the existing solid waste stream. This will be dealt with in accordance with Thames Water's waste management procedures for waste water and relevant legislative requirements.

7.1.3 The management arrangements for the solid waste produced at Beckton Sewage Treatment Works will therefore aim to maximise recycling and recovery and avoid landfill disposal where possible, in accordance with the Sludge Strategy.

7.1.4 Once the project is operational, routine maintenance will be carried out at three to six-monthly intervals at all sites. Waste generated during the routine maintenance will be managed in accordance with Thames Water's waste management procedures and relevant legislative requirements.

7 Thames Tideway Tunnel project operational waste

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Appendices

List of figures

List of tables

Appendix A – Project-wide waste management plan template

A.1 Project-wide waste management plan

Introduction

A.1.1 This outline Project-wide WMP provides an overarching framework for the SMWP that will be prepared and implemented for each of the project CSO sites and drive sites.

A.1.2 The Project-wide WMP has been prepared to provide consistent information to the management of materials and wastes produced at the Thames Tideway Tunnel project construction sites. It will assist with the monitoring of the SWMPs and the EM&W strategy objectives.

A.1.3 This template has been reviewed and updated following construction commencing.

A.1.4 The Project-wide WMP provides overall information on roles and responsibilities, project wide waste actions, a summary of the overall waste arisings and progress to achieving the targets. It also contains project wide information that will be applicable to all Thames Tideway Tunnel project CSO sites and main tunnel drive sites.

A.1.5 The CoCP sets out a series of objectives and measures to be applied throughout the construction period at all Thames Tideway Tunnel project construction sites and should be referred to in conjunction with the Project-wide WMP.

A.2 Project-wide waste management plan template

Responsibilities

A.2.1 This section provides a summary of roles and responsibilities for all the project sites.

Table A.1 Summary of roles and responsibilities for all the project sites

Site number	Project site name	Site address	Contractor	Person responsible for waste management at the site	SWMP author	On-site waste management coordinator

Project details

A.2.2 This section provides a summary of all the project site locations and a summary of the estimated waste management costs for the project.

Table A.2 Summary of site information for all the project sites

Project site name	Site number	Site address	Estimated tonnage	Actual tonnage	Start date	Completion date
Total						

Waste actions

A.2.3 This section provides a summary of actions associated with waste management identified when planning and implementing the SWMPs for all the project sites. It provides a means of maintaining a record of the actions and identifying actions that could be translated to other sites.

Table A.3 Summary of waste actions for all the project sites

Action	Applicable sites	Action owner	Waste stream	EWC code	Material type	Intended results	Waste reduced
							t

Forecast of waste types and quantities

A.2.4 This section provides a summary of the types and quantities of waste that are expected to be generated at all the project sites. It provides a means to effectively monitor waste generation levels.

Table A.4 Summary of estimated waste types and quantities for all the project sites

Project site name	Forecast quantities for inert	Forecast quantities for non-hazardous	Forecast quantities for hazardous	Total (t)
	t	t	t	

Waste carriers information

A.2.5 This section provides a list of waste carriers that have been contracted at a project level and can be used on the project sites. It provides a means to ensure that the waste carriers used on the project are valid.

A.2.6 Waste carriers information is also detailed on a site specific basis and recorded in the SWMPs.

Table A.5 Summary of waste carrier's information used on the project sites

Waste carriers name	Contact details	Registration number	Expiry date	Information checked with the Environment Agency (name/date)	Project sites which have used this waste carrier. (Provide the project site name)

Waste management facilities information

A.2.7 This section provides a list of the waste management facilities that have been contracted at a project level.

A.2.8 Information on waste management facilities will be detailed on a site-specific basis and recorded in the SWMPs.

Table A.6 Summary of waste management facilities information used during project

Name of facility	Type of facility	Facility address (including postcode)	Permit / exemption number	Permitted waste types

Actual waste movements

A.2.9 This section provides a summary of actual waste movements for all the project sites. It provides a means to effectively monitor actual waste generation levels.

Table A.7 Summary of actual waste movements for all the project sites

Project site name	Actual waste quantities for inert	Actual waste quantities for non-hazardous	Actual waste quantities hazardous	Total (t)
	t	t	t	

Reporting

A.2.10 This section provides a summary of the overall forecasted waste and actual waste arisings for all the project sites.

A.2.11 It will be used to compare the forecasted and actual waste arisings for all the project sites.

Table A.8 Summary of forecasted and actual waste arisings from all the project sites

			Waste and material arisings		Waste sent offsite		Materials kept onsite		Sent to landfill		Diverted from landfill	
Forecast (F)/Actual (A)			**F**	**A**	**F**	**A**	**F**	**A**	**F**	**A**	**F**	**A**
Unit (tonnes)			**t**	**t**	**t**	**t**	**t**	**t**	**t**	**t**	**t**	**t**
Class	Inert											
	Non-hazardous (Non haz)											
	Hazardous (Haz)											
Assigned waste stream[a]												
Class	**EWC code**	**Description**										
Inert	*17 05 04*	*Soil and stones other than those mentioned in 17 05 03*										
Haz	*17 05 03**	*Soil and stones containing dangerous substances*										
Non Haz	*17 04 05*	*Iron and steel from construction and demolition*										
Non Haz	*17 04 07*	*Mixed metals from construction and demolition*										
Inert	*17 01 01*	*Concrete*										
Inert	*17 01 02*	*Bricks*										
Inert	*17 01 03*	*Tiles and ceramics*										

			Waste and material arisings		Waste sent offsite		Materials kept onsite		Sent to landfill		Diverted from landfill	
Non Haz	*17 02 01*	*Wood*										
Non Haz	*17 02 02*	*Glass*										
Non Haz	*17 02 03*	*Plastic*										
Haz	*17 06 01**	*Insulation materials containing asbestos*										
Non Haz	*17 08 01**	*Gypsum-based construction materials contaminated with dangerous substances*										
Haz	*17 08 02*	*Gypsum-based construction materials other than those mentioned in 17 08 01*										
Non Haz	*17 09 04*	*Mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03*										
Haz	*16 02 13**	*Discarded equipment containing hazardous components other than those mentioned in 16 02 09 to 16 02 12*										
Non Haz	*16 02 14*	*Discarded equipment other than those mentioned in 16 02 09 to 16 02 13*										
Non Haz	*20 10 08*	*Biodegradable kitchen and canteen wastes*										
Total												

Key performance indicators (KPIs)

A.2.12 This section details the performance of the project.

Table A.9 Summary of forecasted and actual waste arisings from all the project sites

	Excavated material (Shaft and Tunnel)		Non excavated material (C&D and other excavated material not from shaft and tunnel)	
	Forecast	Actual	Forecast	Actual
	t	t	t	t
Total excavated material				
Total non-excavated material				
Total recycled/reused				
% Diverted from landfill				
% Beneficial use				
% Recycled				
% Reused on site				
% Reused off site				

Comparison of forecast and actual waste streams

A.2.13 This section details the reasons for the difference between forecast and actual figures to understand any variance between these and implications/benefits for this project/future stages or future projects, together with lessons learnt and any cost savings/increases.

Table A.10 Comparison of forecast and actual waste streams

	Reasons
Explanation for deviations from original / previous plan	
Lessons learnt	
Details of any cost savings made or increases to costs	
Revisions to plan (revision number, date, details)	

Training

A.2.14 This section provides details on the central communications and training that has been carried out on all Thames Tideway Tunnel project sites.

A.2.15 This includes training on the SWMP, roles and responsibilities, Duty of Care, waste procedures on site, hazardous waste and materials storage.

Table A.11 Summary of training carries out on the project sites

Name	Company	Date	Trainer	Type of training	Date next training due

Monitoring and measurement

A.2.16 This project-wide WMP will be updated on a three-monthly basis, following the receipt of the SWMPs from the contractor(s).

A.2.17 Throughout the project the contractor will be responsible for reviewing the performance of all parties which are involved in the management of waste at the sites.

A.2.18 The project-wide WMP will be used to review progress towards the targets contained in the EM&W Strategy every six months, including how individual waste streams were conforming to the waste hierarchy. If the progress suggests that the targets may not be achieved, actions will be agreed with the contractor to ensure that the targets are achieved.

Appendix B – EMOA Methodology

B.1 Introduction

B.1.1 The EMOA provides a systematic and transparent approach for assessing the management options for reuse, treatment and/or disposal of the excavated materials arising from the Thames Tideway Tunnel project during its construction phase.

B.1.2 The results of the assessment, in the application for development consent, identified a planning stage preferred list. This list consists of 16 sites that meet the project's requirements with regards to delivery, sustainability and environmental protection.

B.1.3 To enable the contractors to utilise suitable receptor sites that arise in the future but at the same time provide reassurance to stakeholders in relation to beneficial reuse of excavated material, the project has made the commitment that only receptor sites that meet or exceed the performance of the sites on the PSPL would be used for the receipt and management of excavated material (except where material is managed under the CL:AIRE DoW CoP).

B.1.4 This appendix sets out the elements of the EMOA methodology that contractors would need to use to assess suitable receptor sites for the treatment, handling or use of the project's excavated material (except where material is managed under the CL:AIRE DoW CoP).

B.2 Use of the EMOA during the construction of the approved scheme

B.2.1 Potential contractors would need to identify their proposed solutions for the management of project excavated material. The EMOA is designed to be flexible and to take account of any changes in circumstances at potential receptor sites and therefore allows contractors to propose:

a. the use of receptor sites on the planning stage preferred list

b. the use of alternative receptor sites which, when evaluated using the EMOA, perform no worse than the sites on the PSPL (at the time of submission of the application).

B.2.2 The full EMOA methodology was designed to provide an extensive assessment of the full range of potentially suitable receptor sites and consider a range of options from different sectors.

B.2.3 The project commitment is that only receptor sites that perform no worse than the receptor sites on the PSPL, will be used for reuse, treatment and/or disposal of the excavated materials arising from the construction of the project.

B.2.4 Therefore, while contractors should have regard for the earlier assessment stages of the EMOA, any additional receptor sites proposed by a contractor will need to be assessed using the EMOA detailed assessment (Section B.3).

Use of receptor sites on the planning preferred list

B.2.5 If a contractor proposes to use a receptor site on the existing PSPL, it would need to confirm that the information in the EMOA is still current (in agreement with Thames Water or their agents) and that any changes do not materially affect the assessment.

Use of receptor sites not on the planning stage preferred list

B.2.6 If a contractor proposes to use a receptor site(s) that is not on the PSPL, it would need to:

a. assess the receptor site(s) using the elements of EMOA methodology set out in Section B.3.

b. demonstrate that the receptor site(s) performs no worse than the receptor sites on the PSPL.

B.2.7 In order to make the EMOA process manageable during the application stage, receptor sites with a capacity of less than 200,000t were excluded from the assessment. This was not intended to prevent such receptor sites from forming part of the solution of the management of project excavated material.

B.2.8 If a contractor wishes to use a receptor site that has capacity of less than 200,000t, evaluation objective 11c (capacity of the receptor site to accept the required volume of material) can be suspended provided that the contractor can demonstrate that:

a. the proposed receptor site(s) has appropriate capacity to accept the identified proportion of excavated material

b. the permitted input rates at the proposed receptor site(s) are consistent with the excavated material production schedule

c. in relation to other evaluation objectives, the receptor site(s) performs no worse than the receptor sites currently on the PSPL.

B.2.9 Evaluation objective 10 is excluded from the assessment during the construction phase because at the application stage this criterion was an estimated cost used for comparison purposes within the EMOA. The actual cost agreed between a contractor and a receptor site during the construction phase would be a commercial matter for the contractor.

B.2.10 A contractor will need to grade proposed receptor sites against each evaluation indicator and provide justifications for each grade. The justifications must be comparable to the justifications used in the EMOS reports, submitted to support the application for development consent.

B.3 The EMOA detailed assessment methodology

B.3.1 The EMOA has 15 evaluation objectives that address:

a. environmental, social and economic issues

b. operational issues (including costs and reliability of delivery)

c. conformity with the EM&W strategy, waste management policy and health and safety good practice.

B.3.2 The evaluation objectives are the same for each stage in the assessment process and are shown in Table B.1.

Table B.1 Excavated materials options assessment evaluation objectives

Evaluation objectives
1. To ensure prudent use of land and other resources
2. To reduce climate change impacts
3. To protect local amenity
4. To conserve landscapes and townscapes
5. To protect quality of and access to open space
6. To protect water quality
7. To protect biodiversity
8. To protect cultural heritage
9. To provide employment opportunities
10. To minimise the costs associated with the management of excavated material
11. To ensure operational suitability of the receptor site
12. To conform with the waste hierarchy
13. To conform with the proximity principle
14. To conform with sustainable transport policy
15. To conform with health and safety good practice

B.3.3 To assess the performance of each receptor site, a set of evaluation indicators, are used for each of the EMOA evaluation objectives. The evaluation indicators are measurable attributes that reflect the performance of each receptor site against the overall objectives.

B.3.4 The evaluation criteria should be used to determine the performance of each receptor site against each of the evaluation indicators. In the detailed assessment seven grades of impact (where possible) are used to assess the evaluation indicators. These performance grades are assessed against different scales of effect depending on the objective being assessed as set out in Table B.2.

Table B.2 Performance grades used in the detailed assessment

Evaluation objective 1 to 9	Primary scale	Secondary scale
Major beneficial effect	Green	+ + +
Moderate beneficial effect	Green	+ +
Minor beneficial effect	Green	+
Negligible effect	Amber	0
Minor adverse effect	Red	-
Moderate adverse effect	Red	- -
Major adverse effect	Red	- - -
Evaluation objective 11	**Primary scale**	**Secondary scale**
Completely viable	Green	+ + +
Viable with minor reservations	Green	+ +
Viable with moderate reservations	Green	+
Potentially viable with minor issues to be resolved	Amber	0
Potentially viable with moderate issues to be resolved	Red	-
Significant issues to be overcome	Red	- -
Limited viability	Red	- - -
Evaluation objective 12 to 15	**Primary scale**	**Secondary scale**
Substantially exceeds expectations	Green	+ + +
Exceeds expectations	Green	+ +
Slightly beyond expectations	Green	+
Meets expectations	Amber	0
Slightly below exceptions	Red	-
Poor performance	Red	- -
Very poor performance	Red	- - -

B.3.5 The evaluation criteria for awarding these grades against each evaluation indicator and the assumptions applied when grading the performance against each evaluation indicator are presented below. The description of the criteria provides an indication of the primary scale followed by the detailed criteria for the secondary scale.

Objective 1: To ensure prudent use of land and other resources

Evaluation indicator	1a) Extent to which resources such as sand, gravel and Chalk are conserved by processing or storage of project material at receptor sites
Description	Where receptor sites intend to process the excavated materials into product it is assumed that this product would substitute demand for virgin materials. It is assumed that those receptor sites which would use the materials for restoration would be able to source materials of a similar nature from other excavation or construction projects occurring in the region, rather than having to use virgin resources to meet their restoration requirements.
+++	Project material would directly substitute virgin material (greater than or equal to 75 per cent replacement of virgin material with project material)
++	Project material would directly substitute virgin material (less than 50 per cent and greater than 75 per cent replacement of virgin material with project material)
+	Project material would directly substitute virgin material (less than 50 per cent replacement of virgin material with project material)
0	Project material is unlikely to affect virgin material use, eg, material replaces other reusable materials or no material substitution required
-	To enable the receptor site to accept project material, virgin material would also be required (project material would comprise greater than 75 per cent of the material requirements for this receptor site)
--	To enable the receptor site to accept project material, virgin material would also be required (project material would comprise greater than 50 per cent and less than 75 per cent of the material requirements for this receptor site)
---	To enable the receptor site to accept project material, virgin material would also be required (project material would comprise less than 50 per cent of the material requirements for this receptor site)

Evaluation indicator	1b) Extent to which material would effect landtake at (footprint of) receptor sites in the long term
Description	Where receptor sites propose to reclaim land from the estuary, it is assumed that this would increase the receptor site's landtake (this should be awarded a red in accordance with the evaluation criteria). However, once reclaimed, this land would become available for other uses (this should be awarded a green in accordance with the evaluation criteria). In these instances, a grade of amber is awarded. Receptor sites which have not yet determined the final end use but which are anticipated to result in a change of land use are awarded an amber grade where no further landtake is anticipated.
+++	The acceptance of material would contribute to reducing the footprint of the receptor site by over 0.5x
++	The acceptance of material would contribute to reducing the footprint of the receptor site by up to 0.5x
+	The acceptance of material would contribute to reducing the footprint of the receptor site by up to 0.25x
0	The acceptance of material would not contribute to the requirement for additional land extending the receptor site's boundary
-	The acceptance of material would contribute to the requirement for additional land extending the receptor site's boundary by up to 0.5x
--	The acceptance of material would contribute to the requirement for additional land extending the receptor site's boundary by up to 2x.
---	The acceptance of material would contribute to the requirement for additional land extending the receptor site's boundary by greater than 2x

Objective 2: To reduce climate change impacts

Evaluation indicator	2a) Greenhouse gases emitted through treatment, handling and use of material at receptor sites (excludes transport)
Description	It is assumed that those receptor sites which intend to stockpile material prior to distributing it where it is required would use mobile plant to distribute the material on the receptor site. This would therefore produce more greenhouse gas emissions than material distributed by a conveyor system or delivered directly to their final location and therefore these receptor sites are graded red.
+++	NOT USED
++	NOT USED
+	There is a Carbon management plan in place with systems in place to offset GhG emissions from the treatment, handling and use of material.
0	Material would not require treatment and minimal handling required, eg, passive drying used and material moved by conveyor where possible.
-	Material requires active treatment at receptor sites (eg, turning, washing, grading); material would be double handled and/or no process to reduce transport by vehicle on site
--	NOT USED
---	NOT USED

Evaluation indicator	2b) Extent to which flood risk is altered by material at the receptor site (or in the local catchment)
Description	Where final restoration plans for the receptor site are unknown, then the impact of use of material on flood risk cannot be adequately assessed and an amber grading is awarded pending further assessment at the detailed assessment stage. Receptor sites which are not located in flood risk zones or which are located behind flood defences are awarded amber grades. Receptor sites which provide improved flood defences are awarded a green grade.
+++	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would substantially reduce flood risk (from any source or a combination of sources) resulting in beneficial effects to the site and surroundings.
++	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would moderately reduce flood risk (from any source or a combination of sources) resulting in beneficial effects to the site and surroundings.
+	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would slightly reduce flood risk (from any source or a combination of sources) resulting in beneficial effects to the site and surroundings.
0	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would not change flood risk (from any source or a combination of sources) to the site and surroundings.
-	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would slightly increase flood risk (from any source or a combination of sources) resulting in adverse effects to the site and surroundings
--	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would moderately increase flood risk (from any source or a combination of sources) resulting in adverse effects to the site and surroundings

Evaluation indicator	2b) Extent to which flood risk is altered by material at the receptor site (or in the local catchment)
---	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would substantially increase flood risk (from any source or a combination of sources) resulting in adverse effects to the site and surroundings

Evaluation indicator	2c) Greenhouse gases emitted through transport of material to the receptor sites
Description	This assessment provides a method for comparing approximate GhG emissions associated with transport to each receptor site in order to compare receptor sites and does not provide precise measure of anticipated transport emissions. Using the Defra/DECC greenhouse gas conversion tool a number of modelling assumptions are made to produce the estimated indirect kg CO_2 equivalent (kg CO_2 eq) produced for transporting material to the receptor sites. The following assumptions are made with respect to transport mode: a. It is assumed that excavated material would be transported from three main tunnel drive sites, each excavating just one type of material. It is assumed that clay would be produced at Carnwath Road Riverside, sands and gravels at Kirtling Street and Chalk at Chambers Wharf. This assumption is made to enable a comparison between the receptor sites and does not reflect the exact transportation logistics which would be assessed in detail elsewhere. b. It is assumed that for all receptor sites located east of London excavated materials would be transported from the main tunnel drive sites on bulk cargo barges to a transhipment point at Barking (postcode IG11 0EG). It is assumed that the barges would be less than 5,000t (dead weight) and that they would be 60 per cent loaded. At the transhipment point material would be unloaded from the barges and then loaded on to either road or another barge for delivery to the receptor site, depending on the receptor sites ability to receive material by barge. c. For receptor sites located west, north and south of London, it is assumed that materials would be delivered directly to the receptor site from the drive site by road. d. The road option selected from the tool as most likely to be used by Thames is ‘articulated vehicles <3.5t-33t’ which were 60 per cent laden. e. Emissions from rail transport are calculated from a railhead location at Bow East (postcode E15 1SA). Assumptions relating to tonnage transported are:

Evaluation indicator	2c) Greenhouse gases emitted through transport of material to the receptor sites
	a. The tonnage of each material type that would need transporting is based on the receptor site's capacity as provided by the site operators when interviewed. b. Where capacity is provided by the operator in m^3 the following conversion factors are used to convert this to a tonnage equivalent. i Chalk 1.27t/m^3 ii Sands and gravels 1.24t/m^3 iii Clay 1.18t/m^3 f. Where receptor sites could receive three types of excavated material, but have a total capacity less than the total quantity of material a percentage split of each material type is used to produce a tonnage per material type. g. If only two materials can be received by the receptor site the percentage is split 50:50 between the two material types. Assumptions relating to distance travelled are: a. For receptor sites west, south and north of London distance is calculated directly from each drive site to the receptor site. b. For receptor sites east of London the distance from the drive site to the transhipment point and then the distance from the transhipment point to the receptor site is calculated either by road, rail or by marine transport as appropriate. Assumptions relating to the calculation of kg CO_2 eq per tonne are: a. All kg CO2 eq are calculated as 'all scope' emissions, this includes the embedded production and operational CO2 eq of these vehicle types3. b. The Defra/ DECC tool for 2012 provides the following assumptions for kg CO2 eq per tonne per km: i UK average artic (61 per cent load) 0.107 ii ship, bulk cargo 0-4999dwt (60 per cent load) 0.01664 iii rail freight 0.03634 c. In order to calculate the kg CO_2 eq per tonne per km, the tonnes transported by each mode of transport are multiplied by the distance travelled by that mode and by the kg CO_2 eq per tonne per km from the Defra/ DECC tool for marine transport, road or rail. Where more than one transport mode is used the kg CO_2 eq per tonne for each mode is calculated and then these are added together. d. The road transport emissions within the Defra/DECC tool are calculated on the basis that a lorry would run empty for part of the time in the overall

[3] A sensitivity analysis based on using 'Scope 3' figures (which exclude embedded production and operational CO2 eq) finds that, although overall emissions are lower in the 'Scope 3' model, overall ranking between options does not alter.

Evaluation indicator	2c) Greenhouse gases emitted through transport of material to the receptor sites
	transporting of the freight. Thus the user does not need to double the distance of their freight tonne km for parts of a trip done empty loaded, as this has already been considered in the calculations. However this is not the case for the marine transport or rail. e. In order to provide a fairer comparison between receptor sites with very different capacities, a kg CO_2 eq per tonne is calculated by dividing the total estimated kg CO_2 eq by the capacity of the receptor site.
+++	Through the transport of material less than or equal to 1kg CO_2 eq per tonne of excavated material accepted by the receptor site would be produced
++	Through the transport of material between 1 and less than or equal to 2kg CO_2 eq per tonne of excavated material accepted by the receptor site would be produced
+	Through the transport of material between 2 and less than or equal to 4kg CO_2 eq per tonne of excavated material accepted by the receptor site would be produced
0	Through the transport of material between 4 and less than or equal to 6kg CO_2 eq per tonne of excavated material accepted by the receptor site would be produced
-	Through the transport of material between 6 and less than or equal to 8kg CO_2 eq per tonne of excavated material accepted by the receptor site would be produced
--	Through the transport of material between 8 and less than or equal to 10kg CO_2 eq per tonne of excavated material accepted by the receptor site would be produced
---	Through the transport of material more than 10kg CO_2 eq per tonne of excavated material accepted by the receptor site would be produced

Objective 3: To protect local amenity

Evaluation indicator	3a) Extent of potential effects on local amenity from treatment, handling and use of material at receptor sites
Description	For receptor sites which involve development of green field sites not in a commercial or industrial area, it is assumed that baseline air quality could be regarded as good. It is assumed that delivery of material to these receptor sites would have an adverse impact on air quality, through deliveries and other works occurring at the location. The nature and proximity of sensitive receptors is taken into account when assessing the potential impact of material against this indicator. Deliveries to existing facilities are assumed to have a lower impact on baseline levels as operations already include material delivery and handling. This would be given an amber grade. If the facility is located within an Air Quality Management Area and has an environmental permit the receptor site is still given an amber grade as any impacts would be taken into consideration in the permit conditions.
+++	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would have a major beneficial effect on the local amenity
++	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would have a moderate beneficial effect on the local amenity
+	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would have a minor beneficial effect on the local amenity
0	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would not have an effect on the local amenity or any effect would be negligible.
-	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would have a minor adverse effect on the local amenity
--	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would have a moderate adverse effect on the local amenity

Evaluation indicator	3a) Extent of potential effects on local amenity from treatment, handling and use of material at receptor sites
---	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would have a major adverse effect on the local amenity

Objective 4: To conserve landscapes and townscapes at receiving

Evaluation indicator	4a) Extent of short-term visual and landscape impacts from treatment, handling and use of material at receptor sites
Description	Currently undeveloped sites are given a grade of red as they would create works which are not currently present at that location. It is assumed that those receptor sites which intend to stockpile material prior to distributing it would pile material in to a temporary landform, which could have an adverse impact on local receptors with regard to visual impact. It is assumed that visual impacts would be mitigated and a grade of amber is given. An assessment of site management processes and mitigation measures for this impact are assessed at a later stage. Additionally, it is assumed that those receptor sites which operate as active landfills would use material as a visual screen to the active face of the landfill, which would have a beneficial impact on local visual receptors
+++	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would change the landscape in the short term and would have a major beneficial effect on sensitive receptors
++	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would change the landscape in the short term and would have a moderate beneficial effect on sensitive receptors
+	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would change the landscape in the short term and would have a minor beneficial effect on sensitive receptors
0	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would not have a short term effect on the local visual amenity at the receptor site or any effect would be negligible
-	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would change the landscape in the short term and would have a minor adverse effect on sensitive receptors
--	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would change the landscape in the short term and would have a moderate adverse effect on sensitive receptors

Evaluation indicator	4a) Extent of short-term visual and landscape impacts from treatment, handling and use of material at receptor sites
---	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would change the landscape in the short term and would have a major adverse effect on sensitive receptors

Objective 5: To protect quality of and access to open space

Evaluation indicator	5a) Would material enhance quality of and access to open space in the short term?
Description	Those receptor sites which currently receive material, such as quarries or landfill are assumed to have no current public access. Therefore it is assumed that receipt of material at these receptor sites would not impact public amenity, unless stated. Those receptor sites which comprise new developments and impact on existing public rights of way are awarded a red grade.
+++	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would create a major enhancement to a public rights of way (PRoW) and substantially increase accessibility to public open space
++	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would moderately enhance a PRoW or improve the quality of and access to public open space
+	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would slightly enhance a PRoW or improve the quality of and access to public open space
0	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would have no or a negligible effect on access to and quality of open space and PRoWs
-	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would cause a minor rerouting of a PRoW
--	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would create a major diversion to a PRoW or limit access to a public open space
---	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would remove a PRoW or open space

Objective 6: To protect water quality

Evaluation indicator	6a) Extent of potential effects on fluvial water quality from treatment, handling and use of material at receptor sites
Description	For those receptor sites which are available to receive wet sands and gravels, there is the potential for the liquid effluent contained within this material to enter the rivers through migration. It is assumed that those receptor sites which have the ability to receive this material would undertake reasonable endeavours to limit this from occurring, therefore having no or negligible impact on the local rivers. Therefore it is assumed that the receipt of sand and gravel at a receptor site would have no or negligible impact on fluvial quality. For those receptor sites which are available to receive Chalk slurry, there is the potential for the liquid effluent contained within this material to enter local rivers through migration. It is assumed that those receptor sites which have the ability to receive this material would undertake reasonable endeavours to limit this from occurring, therefore having no or negligible impact on the local rivers. For those receptor sites which involve reclaiming land from estuaries and rivers, it is assumed that the fluvial watercourses would be impacted by the receipt of Thames material, which by its nature cannot be mitigated. These receptor sites are awarded a red grade.
+++	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would have a major beneficial effect on local watercourses.
++	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would have a moderate beneficial effect on local watercourses
+	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would have a minor beneficial effect on local watercourses
0	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would have no or negligible effect on the local watercourses
-	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would have a minor adverse effect on local watercourses

Evaluation indicator	6a) Extent of potential effects on fluvial water quality from treatment, handling and use of material at receptor sites
--	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would have a moderate adverse effect on local watercourses
---	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would have a major adverse effect on the local watercourses

Evaluation indicator	6b) Extent of potential effects on groundwater quality from treatment, handling and use of material at receptor sites
Description	For those receptor sites which are available to receive wet sands and gravels, there is the potential for the liquid effluent contained within this material to enter the groundwater through migration. It is assumed that those receptor sites which have the ability to receive this material would undertake reasonable endeavours to limit this from occurring, therefore having no or negligible impact on the local groundwater. Therefore it is assumed that the receipt of sand and gravel at a receptor site would have no or negligible impact on groundwater quality. For those receptor sites which are available to receive Chalk slurry, there is the potential for the liquid effluent contained within this material to enter the groundwater through migration. It is assumed that those receptor sites which have the ability to receive this material would undertake reasonable endeavours to limit this from occurring, therefore having no or negligible impact on the local groundwater. Therefore it is assumed that the receipt of Chalk at a receptor site would have no or negligible impact on groundwater quality. Those receptor sites which propose using clay for engineering purposes (eg, landfill engineering) to reduce effluent are awarded a green grade as these receptor sites are using the impermeability of the clay to reduce the volume of leachate and prevent egress.
+++	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would have a major beneficial effect on groundwater quality
++	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would have a moderate beneficial effect on groundwater quality

Evaluation indicator	6b) Extent of potential effects on groundwater quality from treatment, handling and use of material at receptor sites
+	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would have a minor beneficial effect on groundwater quality
0	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would have no or negligible effect on groundwater
-	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would have a minor adverse effect on groundwater
--	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would have a moderate adverse effect on groundwater
---	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would have a major adverse effect on groundwater

Objective 7: To protect biodiversity

Evaluation indicator	7a) Extent of potential effects on designated sites from treatment, handling and use of material at receptor sites in the short term
Description	A designated site is assumed to be a Site of Special Scientific Interest, Special Area of Conservation (SAC), Special Protection Area (SPA), Local Nature Reserve (LNR), National Nature Reserve (NNR), Ramsar site, Important Bird Area or woodland. Where a receptor site is more than 1km from a designated site it is assumed that the use of material at the receptor site is likely to have a negligible or no impact on the designated site. Where a permitted receptor site is in close proximity (within 1km from the receptor site boundary) to a designated site it was assumed that the use of material at the receptor site is likely to have a negligible or no impact on the designated site as any impacts should be mitigated under the site's environmental permit. Where an operational but unpermitted receptor site or a development on a green field site is located in close proximity to designated sites it is assumed that the construction of the new receptor sites is likely to disrupt the designated site in the short term and a red grade is awarded.
+++	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would have a major beneficial effect on a designated site and/or creation/improvement of habitats
++	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would have a moderate beneficial effect on a designated site and/or creation/improvement of habitats
+	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would have a minor beneficial effect on a designated site and/or creation/improvement of habitats
0	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would have no or negligible effect on a designated site
-	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would have a minor adverse effect on a designated site

Evaluation indicator	7a) Extent of potential effects on designated sites from treatment, handling and use of material at receptor sites in the short term
--	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would have a moderate adverse effect on a designated site
---	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would have a major adverse effect on a designated site

Evaluation indicator	7b) Extent of potential effects on designated sites from treatment, handling and use of material at receptor sites in the long term.
Description	It is assumed that all receptor sites whose restoration plans are intended to create nature reserves, woodland or farmland would create new habitats which would encourage biodiversity. These are awarded a green grade. Where final restoration plans have not yet been finalised the receptor site is awarded an amber grade. Where receptor sites are likely to be restored to commercial or residential use an amber grade is awarded. At this stage in the assessment insufficient detail is available regarding these schemes to determine their impact on biodiversity. Any proposed restoration plans or planning documents are reviewed during the Detailed Assessment for receptor sites which proceed to the short list.
+++	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would have a major beneficial effect on a designated site and/or creation/improvement of habitats
++	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would have a moderate beneficial effect on a designated site and/or creation/improvement of habitats
+	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would have a minor beneficial effect on a designated site and/or creation/improvement of habitats
0	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would have no or a negligible effect on a designated site

Evaluation indicator	7b) Extent of potential effects on designated sites from treatment, handling and use of material at receptor sites in the long term.
-	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would have a minor adverse effect on a designated site
--	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would have a moderate adverse effect on a designated site
---	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would have a major adverse effect on a designated site

Objective 8: To protect cultural heritage

Evaluation indicator	8a) Extent of potential effects on designated or nominated archaeological sites from treatment, handling and use of material at receptor sites
Description	It is assumed that designated or nominated archaeological sites comprise Scheduled Ancient Monuments (SAMs), registered parks, gardens or battlefields. It is assumed that all receptor sites which are located more than 1km from a SAM, registered park, garden or battlefield are likely to have a negligible impact on these SAMs. These receptor sites are awarded an amber grade. For receptor sites located within 1km of a SAM, registered park, garden or battlefield professional judgement is used to award a grade based on the receptor site's operations, permit status and the nature of the archaeological site.
+++	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would have a major beneficial effect on a designated site
++	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would have a moderate beneficial effect on a designated site
+	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would have a minor beneficial effect on a designated site
0	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would have no or negligible effect on a designated site
-	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would have a minor adverse effect on a designated site
--	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would have a moderate adverse effect on a designated site
---	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would have a major adverse effect on a designated site

Objective: To provide employment opportunities

Evaluation indicator	9a) Extent to which the acceptance of material would affect the number jobs available at the receptor sites in the short term
Description	Operators provide estimates on employment in the short term. Those receptor sites where operators claim jobs would be created are graded green. Those receptor sites which already have staff employed and which state that no new staff would be required are given an amber grade.
+++	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would lead to substantial job gains over the short term of more than 20 jobs
++	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would lead to moderate job gains over the short term of between ten and less than or equal to 20 jobs
+	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would lead to minor job gains over the short term of less than ten jobs
0	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would not lead to job losses or gains in the short term
-	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would lead to minor short-term job loss of less than ten jobs
--	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would lead to moderate short-term job loss of between ten and less than or equal to 20 jobs
---	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would lead to substantial short-term job loss of more than 20 jobs

Evaluation indicator	9b) Extent to which the acceptance of material would affect the number jobs available at the receptor sites in the long term
Description	It is assumed that at those receptor sites which use material for habitat creation and restoration projects would lead to job losses in the long term when the habitat creation or restoration project has been completed. In some cases jobs would be created relating to the new land use (for example at a visitors centre). For the assessment it is assumed that there would be zero net job creation and losses in these instances.
+++	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would lead to substantial job gains over the long term of more than 20 jobs
++	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would lead to moderate job gains over the long term of between ten and less than or equal to 20 jobs
+	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would lead to minor job gains over the long term of less than ten jobs
0	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would not lead to job losses or gains in the long term
-	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would lead to minor long-term job loss of less than ten jobs
--	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would lead to moderate long-term job loss of between ten and less than or equal to 20 jobs
---	Operations at the receptor site, to which the treatment, handling and use of material would contribute, would lead to substantial long-term job loss of more than 20 jobs

Objective 11: To ensure operational suitability of the receptor site

Evaluation indicator	11a) Likelihood of implementation within the required timescale
Description	It is assumed that the project would produce excavated material between 2016 and 2021. Receptor sites are assessed against the date stipulated in the planning consent by which operations at the receptor site are expected to cease.
+++	The receptor site would be available for use for material from 2016 and beyond 2021
++	The receptor site would be available for use for material from 2016 until the end of 2021
+	The receptor site would be available for use for material from 2016 until the end of 2020
0	The receptor site would be available for use for material from 2016 until the end of 2019
-	The receptor site would be available for use for material from 2016 until the end of 2018
--	The receptor site would be available for use for material from 2016 until the end of 2017
---	The receptor site would be available for use for material until the end of 2016

Evaluation indicator	11b) Acceptability of material with material characteristics by the receptor sites
Description	It is assumed that the excavated material arising from the project would comprise Chalk, Lambeth Beds, Thanet Sands, London Clay, made ground/superficial deposits, site strip and construction related waste.
+++	The receptor site could accept for use all of the material types based on their characteristics
++	The receptor site could accept for use four material types based on their characteristics including: London Clay, Lambeth Group and Chalk
+	The receptor site could accept for use the following three material types based on their characteristics: London Clay, Lambeth Group and Chalk
0	The receptor site could accept for use three material types based on their characteristics including at least two of the following: London Clay, Lambeth Group and Chalk
-	The receptor site could accept for use two material types based on their characteristics comprising: London Clay, Lambeth Group or Chalk
--	The receptor site could accept for use two material types based on their characteristics including at least one of the following: London Clay, Lambeth Group or Chalk
---	The receptor site could accept for use any one material type based on their characteristics

Evaluation indicator	11c) Capacity of the receptor site to accept the required volume of material (based on likely tonnage accepted)
Description	In order to make the EMOA process manageable during the application stage, receptor sites with a capacity of less than 200,000t were excluded from the assessment. This was not intended to prevent such receptor sites from forming part of the solution of the management of project excavated material. If a contractor wishes to use a receptor site that has capacity of less than 200,000t, evaluation objective 11c (capacity of the receptor site to accept the required volume of material) can be suspended provided that the contractor can demonstrate that: a. the proposed receptor site(s) has appropriate capacity to accept the identified proportion of excavated material b. the permitted input rates at the proposed receptor site(s) are consistent with the excavated material production schedule c. in relation to other evaluation objectives, the receptor site(s) performs no worse than the receptor sites currently on the PSPL.
+++	The receptor site has capacity to accept more than 100 per cent of material
++	The receptor site has capacity to accept greater than or equal to 85 per cent but less than 100 per cent of material
+	The receptor site has capacity to accept greater than or equal to 60 per cent but less than 85 per cent of material
0	The receptor site has capacity to accept greater than or equal to 40 per cent but less than 60 per cent of material
-	The receptor site has capacity to accept greater than or equal to 30 per cent but less than 45 per cent of material
--	The receptor site has capacity to accept material greater than or equal to 15 per cent but less than 30 per cent of material
---	The receptor site has capacity to accept material greater than or equal to zero per cent but less than 15 per cent of material

Evaluation indicator	11d) Ability of the receptor sites to accept material at the anticipated rate (speed of material generation vs. acceptance rate)
Description	Receptor sites were graded based on the operator's responses with regards to the site's ability to accept material at the anticipated rate.
+++	The receptor site could take greater than or equal to 10,000t per day of material
++	The receptor site could take greater than or equal to 8,200 but less than 10,000t per day of material
+	The receptor site could take greater than or equal to 6,400 but less than 8,200t per day of material
0	The receptor site could take greater than or equal to 4,600 but less than 6,400t per day of material
-	The receptor site could take greater than or equal to 2,800 but less than 4,600t per day of material
--	The receptor site could take greater than or equal to 1,000 but less than 2,800t per day of material
---	The receptor site could take less than 1,000t per day of material

Evaluation indicator	11e) Site operations have appropriate planning/permitting consent
Description	Under the evaluation indicator 11 e), 'site operations have appropriate planning/permitting consents', the assumption is that operational facilities have the permits required to operate at their current capacity. It is assumed that a receptor site that has no current planning consent or EA permit and the receptor site has applied for planning consent is graded red (---). It is assumed that a receptor site that has either planning consent or an EA permit is graded amber (0). It is assumed that a receptor site that has planning consent and an EA permit is graded green (+++)
+++	The receptor site has planning consent and a relevant EA permit
++	NOT USED
+	NOT USED
0	The receptor site has either planning consent or a relevant EA permit
-	NOT USED
--	NOT USED
---	The receptor site has no current planning consent or a relevant EA permit. The receptor site has applied for planning consent

Evaluation indicator	11f) Can accept excavated material from multiple transport modes
Description	It is assumed that a strategic highway is a motorway and/or major trunk road. It is assumed that direct access is an access road to the receptor site that is connected directly to the network. Direct access to the receptor site without double handling refers to the mode of transport connecting directly to the site (no transfer needed at the receptor site end).
+++	The receptor site is on a strategic highway AND the site has good marine transport access and sufficient wharf capacity to receive material AND the site has good rail access and sufficient rail capacity to receive material
++	The receptor site can be accessed by 3 transport modes but there is either no direct road connection to a strategic highway OR transport infrastructure needs upgrading for marine transport or rail
+	The receptor site can be accessed by 3 transport modes but there is no direct connection to a strategic highway AND transport infrastructure needs upgrading for marine transport or rail
0	The receptor site is accessible by two transport modes with no infrastructure upgrades
-	The receptor site can be accessed by 2 transport modes but either there is no direct connection to the strategic highway OR transport infrastructure needs upgrading for marine transport or rail
--	The receptor site is only accessible by one transport mode
---	The receptor site is only accessible by one transport mode and transport infrastructure needs upgrading

Objective 12: To conform to the waste hierarchy

Evaluation indicator	12a) Extent to which the option meets the EM&W strategy
Description	Those receptor sites which would recycle the sands and gravels in to a marketable product are assumed, through the process of recycling this material, to produce some material which is not marketable. It is therefore assumed that this material would be disposed of. However, if the receptor site is also using material for restoration purposes, it is assumed that that material not recycled would instead of being disposed would be included with that material the operator intends to use for restoration. It is assumed that for an activity to be classified as beneficial use for the purposes of the EMOA (and hence for fulfilment of the project EM&W strategy objective to maximise reuse, recovery and beneficial use) it must meet the following tests: a. The activity would lead to a beneficial reuse and bring land back into use or provide ecological benefit. b. In the case of quarries or landfill sites, the activity has a planning requirement to be restored. ~~c. The activity does not attract landfill tax.~~ c. The material is suitable for its intended use and would not harm human health or the environment. d. The minimum amount of material would be used to achieve the restoration required by any planning consent. e. Alternative material (whether waste or not) would be required if material was not to be used.
+++	Performance of receptor site substantially exceeds target
++	Performance of receptor site moderately exceeds target
+	Performance of receptor site slightly exceeds target
0	Performance of receptor site meets target
-	Performance of receptor site is slightly below target
--	Performance of receptor site is moderately below target
---	Performance of receptor site is greatly below target

Objective 13: To conform to proximity principle

Evaluation indicator	13a) Average distance from main tunnel drive sites
Description	All receptor sites are assessed using a straight line distance from the main drive sites. Where receptor sites are able to receive excavated materials from more than one drive site, the average distance is calculated. The receptor site is then assessed according to this average figure. $\frac{\sum \text{Straight line distance from drive sites to receptor site}}{\text{number of drive sites delivering material to receptor site}}$ $=$ A average distance from drive sites to receptor site
+++	The receptor site is less than 10km from source of the material
++	The receptor site is between 20km and 10km from source of the material
+	The receptor site is between 40km and 20km from source of the material
0	The receptor site is between 60km and 40km from source of the material
-	The receptor site is between 80km and 60km from source of the material
--	The receptor site between 100km and 80km from source of the material
---	The receptor site is greater than 100km from source of the material

Objective 14: To conform to sustainable transport policy

Evaluation indicator	14a) Conforms to policy objective to move transport of materials from road to rail or marine transport
Description	It is assumed that those receptor sites which have marine transport and rail access would not require double handling and are directly accessible; therefore they are given a green grade. However, if the receptor site can, and would expect to receive excavated material by road as well rail and/or marine transport, then it is graded amber.
+++	The receptor site can be directly accessed from marine transport or rail and requires no double handling
++	The receptor site has the potential to be directly accessed by marine transport or rail but additional infrastructure is required
+	NOT USED
0	The receptor site has the potential to be accessed by marine transport or rail but may require some double handling or transhipment
-	NOT USED
--	The receptor site can only be accessed by road and there is direct access to a strategic highway
---	The receptor site can only be accessed by road and there is no direct access to a strategic highway

Objective 15: To conform to health and safety good practice

Evaluation indicator	15a) Health and Safety performance conforms to good practice
Description	It is assumed that a receptor site with no health and safety (H&S) system or more than five RIDDOR incidents in the last two years is graded red (-). It is assumed that a receptor site with a H&S system that is not accredited with less than five RIDDOR incidents in the last two years is graded amber (0). It is assumed that a receptor site with an accredited H&S system with less than five RIDDOR incidents in the last two years is graded green (+).
+++	NOT USED
++	NOT USED
+	The receptor sites H&S system is accredited and there have been five or less RIDDOR incidents in three year recorded at the receptor site
0	The receptor sites H&S system is not accredited and there have been five or less RIDDOR incidents in three years recorded at the receptor site
-	There is no H&S system at the receptor site or more than five RIDDOR incidents recorded at the receptor site
--	NOT USED
---	NOT USED

Appendix C – Planning stage preferred list

C.1.1 The project has made the commitment that only receptor sites that meet or exceed the performance of the receptor sites on the PSPL will be used for the receipt and management of the project's material.

C.1.2 The PSPL of receptor sites is based on the outcome of the EMOA detailed assessment and experienced professional judgement as to whether any individual red grade (or combination of grades) made a particular receptor site unsuitable.

C.1.3 This appendix provides details of the 16 receptor sites that are on the PSPL. The name, site identification reference and location of the sites on the PSPL are provided in Table C.1.

C.1.4 Table C.2 provides a summary of the grades that were awarded to the receptor site for each evaluation indicator.

C.1.5 Figure C.1 and Table C.3 details the overall suitability of each receptor site which passed the detailed assessment.

Table C.1 Planning stage preferred list site identification reference and location

Name	Site ID	Location (county)
Bournewood Inert Landfill Site	BOU	Kent
Cliffe Works	BRE.10	Kent
Lydd Quarry	BRE.11	Kent
Borough Green Quarry	CEM.1	Kent
Kingsmead Quarry	CEM.6	Berkshire
Barrington Landfill	CEM.7	Cambridgeshire
Shipton on Cherwell Quarry	HAN.1	Oxfordshire
Tyttenhanger Quarry	LAF.4	Hertfordshire
Little Belhus Landfill	RAR	Essex
Wallasea Island (Wallasea Wetland Creation Project)	RSP	Essex
Denham Quarry	SUM	Buckinghamshire
East Burnham Quarry	SUM.2	Berkshire
Rainham Landfill	VEO.1	Essex
Cliffe Pools	WES	Kent
Calvert Landfill	WRG.3	Buckinghamshire
Sutton Courtenay	WRG.5	Oxfordshire

Table C.2 Detailed assessment results

Evaluation indicator		1. Land and other resources		2. Climate change			3. Air quality and odour	4. Landscapes and townscapes		5. Local amenity		6.Water quality		7.Biodiversity		8. Cultural heritage	9. Employment opportunities		10. Cost	11. To ensure operational suitability						12. Waste hierarchy	13. Proximity principle	14. Sustainable transport policy	15. Conform to Health and Safety
		a)	b)	a)	b)	c)	a)	a)	b)	a)	b)	a)	b)	a)	b)	a)	a)	b)	a)	a)	b)	c)	d)	e)	f)	a)	a)	a)	a)
Operator ID	WES					++			+	-	+++				+++	++	+	+	++	+++			+++	---	--	+++		+++	+
	RSP			-	+++	+		-	+		+++	+			++		++	++			+++	++	+	+++	--	+++	-		n/a
	VEO.1		-			++	+		++		+++								+++		+++	--	-	+++		+++	+	+++	+
	WRG.3			+		-	+		+		++								+	+++	++	+	-	+++	--	+++	-		+
	WRG.5			+		-	+		++		+								+	+++	++	-	-	+++	--	+++	-		+
	HAN.1			-		-			++		++				++		+		--	+++	+++	--	-	+++	--	+++	--	++	
	CEM.1								++		+								-	+++	+++	-	--	+++	--	+++	+	--	
	CEM.7			+					++		+				+		++		+	-	+++	--	-	+++	--	+++	-		n/a
	CEM.6			+		-			++		++						+		--	+++	+++	-	n/a		--	+++	+	---	+
	SUM								++		+++						+			++	++	--	--	+++	--	+++	+	---	
	LAF.4			+					+		+								-	+++	+++		--	+++	--	+++	+	---	
	RAR					+			++		+++						+		+	+	+++	--	--	+++	--	+++	+	---	
	BOU					+			+		+								++	--	+++	---	-	+++	--	+++	+	--	
	SUM.2					-			+										--	++	-	--	--	+++	--	+++	+	---	
	BRE.10			-		+++			+						++				+++		+++	---	+			+++		+++	+
	BRE.11			-	n/a	-			++						++				+	+++		---	-		--	+++	--		n/a

Figure C.1 Comparison of detailed assessment scoring

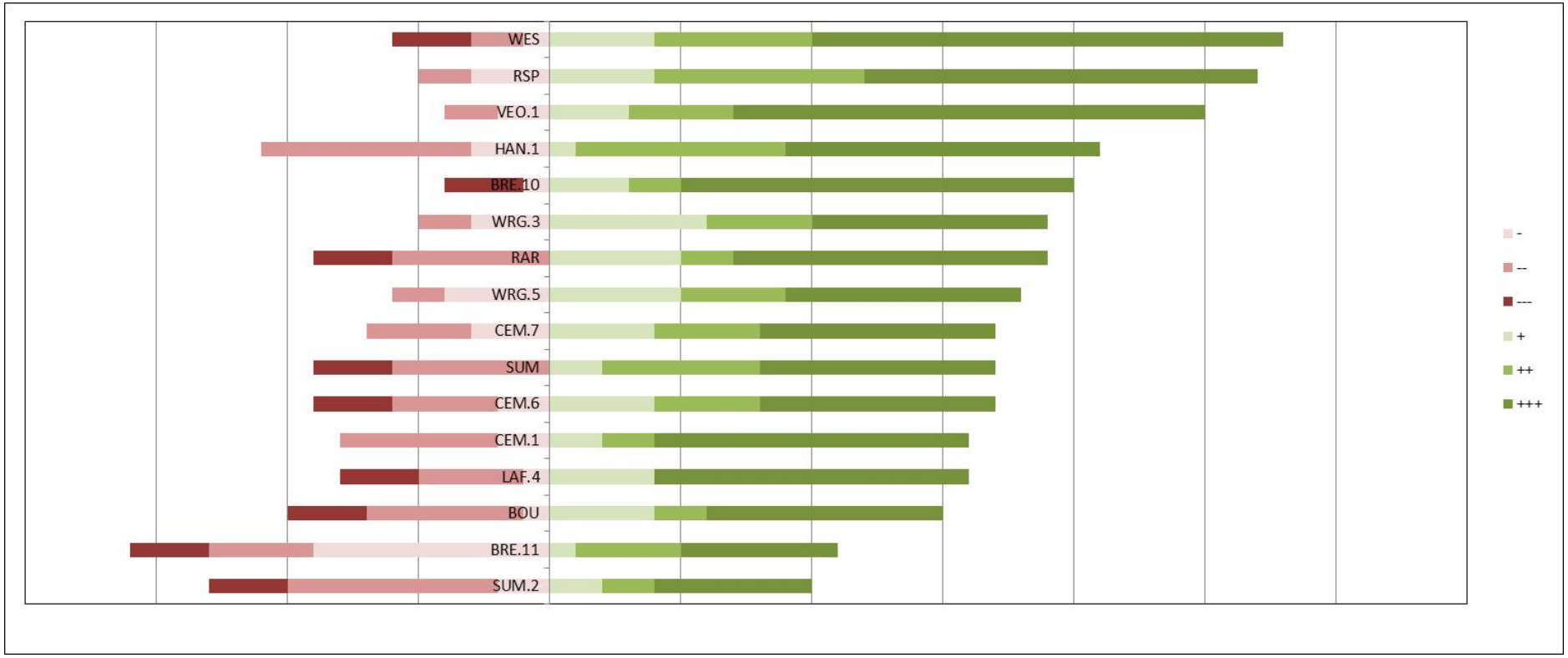

Table C.3 Overall suitability of receptor sites following detailed assessment

Site ID	Name	Overall suitability
BOU	Bournewood Inert Landfill Site	The receptor site has the potential to provide a beneficial use for the excavated material received at the site. It has the ability to receive six per cent of the material up to January 2018. It has a beneficial or neutral grading for all evaluation indicators with the exception of some operational indicators and sustainable transport mode indicator.
BRE.10	Cliffe Works	The receptor site currently has the ability to accept five per cent of the project excavated material up to 2018. It would be able to receive all material types. It can accept a limited tonnage; however, the operator has suggested that there is the potential to extend the receptor site and significantly increase the excavated material requirements. It is 41km from the excavated material locations and can be accessed by marine transport and rail. It has a beneficial or neutral grading for all evaluation indicators with the exception of some operational indicators and sustainable transport mode indicator.
BRE.11	Lydd Quarry	Lydd Quarry has the ability to accept 11 per cent of the project excavated material and would be available beyond the project timescales. It could accept all types of project excavated materials but has expressed a preference not to accept Chalk. It can only accept material by rail. The material would be used to restore the receptor site to create new habitats. The receptor site has a beneficial or neutral grading for the majority of evaluation indicators (with the notable exceptions of proximity principle and some operational indicators, and GhG emissions).
CEM.1	Borough Green Quarry	Borough Green Quarry would be able to accept a maximum of 450,000tpa of material over the entire project timeframe. The receptor site is on average 37km from the main drive sites and can only accept material by road. It would be restored to agricultural land, which would provide a long-term beneficial effect with respect to environmental and policy objectives. It has the ability to receive material for the whole lifetime of the project. The site has a beneficial or neutral grading for all evaluation indicators with the exception of some operational indicators, costs and sustainable transport mode indicator.
CEM.6	Kingsmead Quarry	Kingsmead Quarry would be restored to agricultural land and lakes, which would provide a long-term beneficial effect with respect to environmental and policy objectives. The receptor site has the potential to receive material for the whole lifetime of the project. It does not yet have an environmental permit for restoration activities. It is estimated by the operator that between five and six million tonnes of material is needed to restore the site. It is over 60km by road from the transhipment point.
CEM.7	Barrington Landfill	Barrington Quarry has the ability to receive only 28 per cent of the material up to 2018. The receptor site is on schedule to be completed before the deadline set in the planning consent. It has the potential to accept material beyond 2018 if further restoration is required and appropriate consents are obtained. It has a beneficial or neutral grading for all evaluation indicators with the exception of some operational indicators and the proximity principle indicator.
HAN.1	Shipton on Cherwell Quarry	Shipton-on-Cherwell Quarry has the ability to receive 24 per cent of the material up to 2022. However, the receptor site needs to develop its rail infrastructure. It is assumed that this would occur for the site to receive material. The site has a beneficial or neutral grading for all other

Site ID	Name	Overall suitability
		evaluation indicators with the exception of some of the operational indicators and the proximity principle indicator).
LAF.4	Tyttenhanger Quarry	The receptor site has the potential to provide a beneficial use for the excavated material it receives. It has the ability to receive 45 per cent of the material throughout the lifespan of the project. It has a positive or neutral grading for most evaluation indicators (with the exception of sustainable transport policy, transport mode, throughput and cost).
RAR	Little Belhus Landfill	The receptor site would be restored to a Country Park, which would have a long-term beneficial effect with respect to environmental and policy objectives. Little Belhus has the potential to receive 26 per cent of material between 2016 and 2021. It is located approximately 29km from the drive site; however it is limited with regards to sustainable transport policies as it is only accessible by road. It has a beneficial or neutral grading for all other evaluation indicators except for some of the operational indicators.
RSP	Wallasea Island (Wallasea Wetland Creation Project)	This receptor site would provide a long-term beneficial effect with respect to environmental, socio-economic and policy objectives. It has the potential to provide a beneficial use for the excavated material received at the site. However, it is located over 69km from any drive site.
SUM	Denham Quarry	Denham Quarry has the ability to receive only 15 per cent of the material up to 2021. The receptor site is on schedule to be completed before the deadline set in the planning consent. It has commenced restoration operations and therefore the need for restoration material beyond 2016 is considerably reduced. However, the site could provide some capacity in the early years of the project. It has a beneficial or neutral grading for all other evaluation indicators with the exception of some of the operational indicators and the sustainable transport mode indicator.
SUM.2	East Burnham Quarry	East Burnham Quarry has the ability to receive only 16 per cent of the material up to 2021. The receptor site is not currently operational but would begin receiving material allocated for its restoration prior to 2016, and therefore its capacity to receive project excavated material could be considerably reduced. However, the site could provide some capacity in the early years of the project. It has a neutral grading for the majority of evaluation indicators (with the notable exceptions of sustainable transport mode, operational suitability, costs and GhG emissions).
VEO.1	Rainham Landfill	Rainham Landfill has the ability to receive 28 per cent of the material, and is available up to 2018. The quantity of material required for the restoration is approximately 2.8million tonnes; however, due to the restrictions on the site's throughput and availability, it would only be able to receive 1.3million tonnes of material. It was assumed that all material would be placed for restoration at the receptor site and not for disposal below the engineered landfill cap. Material can be delivered to the receptor site by marine transport and by road. The site has a beneficial or neutral grading for all evaluation indicators with the exception of two of the operational indicators and the effect on landtake indicator.
WES	Cliffe Pools	Cliffe Pools has the ability to receive 50 per cent of the material, and is available beyond 2022. This receptor site would provide a long-term beneficial effect with respect to environmental, social and policy objectives as it is being restored to a nature reserve. It has the potential to provide a beneficial use for the excavated material received at the site. It is located

Site ID	Name	Overall suitability
		45km from the drive sites and is accessible by barge. However, the site is likely to require an amendment to its planning consent and will also require a variation to its environmental permit to receive material.
WRG.3	Calvert Landfill	Calvert Landfill has the ability to receive material for the whole lifetime of the project. It is anticipated that approximately 20million m^3 of material is needed to restore the receptor site. However, the site has a limited throughput based on its permitted capacity of 1million tpa. It is also located approximately 77km (in a straight line distance) from the drive sites but material would be delivered by rail. It has a beneficial or neutral grading for all other evaluation indicators (with the exception of GhG emissions).
WRG.5	Sutton Courtenay	Sutton Courtenay Landfill has the ability to receive material for the whole lifetime of the project. It is anticipated that between one and two million m^3 of material is needed to restore the site. However, the site has a permitted capacity of 600,000tpa of active and inert wastes, and has confirmed that 400,000tpa would be made available for material, which limits its capacity and throughput. It is also located approximately 77km (in a straight line distance) from the drive sites but material would be delivered by rail. It has a beneficial or neutral grading for all other evaluation indicators (with the exception of GhG emissions).