

Thames Tideway Tunnel
Thames Water Utilities Limited



Application for Development Consent

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Transport Strategy

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**Thames
Tideway Tunnel**



Creating a cleaner, healthier River Thames

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Thames Tideway Tunnel

Transport Strategy

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1 Introduction

1.1 Scope

- 1.1.1 Thames Water¹ has carefully considered the options for the transport of construction materials, including excavated material, to and from the proposed work sites. The objective has been to minimise the potential impacts associated with the transportation of construction materials and excavated material on communities and the environment, where practicable and cost effective, and to follow guidance in the *National Policy Statement for Waste Water* (NPS).
- 1.1.2 This document summarises the key elements of the overall approach to the transport of these materials for the Thames Tideway Tunnel project (the project). The approach has been informed by stakeholder consultation, including workshops with the Greater London Authority, Transport for London, the Port of London Authority and the directly affected London Boroughs.
- 1.1.3 A detailed assessment of the potential transport impacts of the project is set out in the *Transport Assessment*.

¹ Thames Water Utilities Ltd (TWUL). The Draft Development Consent Order (DCO) contains an ability for TWUL to transfer powers to an Infrastructure Provider (as defined in article 2(1) of the DCO) and/or, with the consent of the Secretary of State, another body.

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2 Policy background

2.1 Transport

- 2.1.1 The NPS provides the framework for planning decisions on nationally significant waste water infrastructure and is the primary policy basis that will be used to determine the application for development consent.
- 2.1.2 The NPS recognises that the transport of materials, goods and personnel to and from a development during all project phases can have a variety of impacts, including economic, social and environmental effects. A new nationally significant infrastructure project may give rise to substantial impacts on the surrounding transport infrastructure and the decision maker should therefore ensure that the applicant has sought to mitigate these impacts. The consideration and mitigation of transport impacts is an essential part of Government's wider policy objectives for sustainable development (paras. 4.13.1, 4.13.2 and 4.13.6).
- 2.1.3 Where significant environmental effects are anticipated from traffic and transport effects, paragraph 4.13.3 states that a Transport Assessment must be prepared using the NATA/ WebTAG methodology, and that consideration must be given to both construction, operational and decommissioning stages. The NPS requires projects to assess the transport effects and provide mitigation where needed to reduce adverse transport impacts to an acceptable level. Where additional infrastructure is required, paragraph 4.13.5 provides guidance about the potential for co-funding by Government for any third party benefits, and paragraph 4.13.7 states that:
- “Provided that the applicant is willing to enter into planning or transport obligations or requirements can be imposed to mitigate transport impacts identified in the NATA/WebTAG transport assessment, with attribution of costs calculated in accordance with the Department for Transport's guidance, then development consent should not be withheld, and appropriately limited weight should be applied to residual effects on the surrounding transport infrastructure.”*
- 2.1.4 Where cost effective, water-borne or rail transport is preferred in the NPS over road transport at all stages of the project. Where there is substantial HGV traffic, applicants should look to the control of HGV movements in a specified period during its construction and possibly the routing of such movements. Additionally, the provision of HGV parking to avoid prolonged queuing on approach roads and uncontrolled on-street parking during normal operating conditions is also suggested. Satisfactory arrangements for reasonably foreseeable abnormal disruption as a result of substantial HGV traffic should also be made in consultation with network providers and the responsible police force (para. 4.13.10).
- 2.1.5 Paragraph 4.13.11 states that: *“If an applicant suggests that the costs of meeting any obligations or requirements would make the proposal*

economically unviable this should not in itself justify the relaxation by the decision maker of any obligations or requirements needed to secure the mitigation.”

- 2.1.6 The policies of the London Mayor have been prepared in response to, and are consistent with, government transport policy. They emphasise that the River Thames is a unique and valuable asset and seek to encourage use of the river for passenger and freight transport, wherever practicable. The project is supported in principle (Policy 5.14). Local policy maintains the same themes and requires scheme promoters to address these issues through the production of transport assessments and construction logistics plans.

2.2 Waste management

- 2.2.1 The NPS recommends that waste generated during the construction and operation phases of a development should be subject to sustainable waste management. Sustainable waste management is implemented through the waste hierarchy which sets out a sequential preference for prevention, preparing for reuse, recycling, other recovery including energy recovery, and finally disposal (para. 4.14.2).
- 2.2.2 The applicant should set out the arrangements that are proposed for managing any waste produced and prepare a Site Waste Management Plan. The arrangements described and the Management Plan should include information on the proposed waste recovery and disposal system for all waste generated by the development, and an assessment of the impact of the waste arising from development on the capacity of waste management facilities to deal with other waste arising in the area for at least five years of operation (para. 4.14.5).
- 2.2.3 In decision making, consideration should be given to, the extent to which the applicant has proposed an effective system for managing hazardous and non-hazardous waste arising from the construction and operation of the proposed development. The NPS states that the decision maker should be satisfied that waste can be dealt with appropriately and will be properly managed, both on-site and off-site. Waste occurrence should not have an adverse effect on the capacity of existing waste management facilities and adequate steps should be taken to minimise the volume of waste sent for disposal, except where that is the best overall environmental outcome (para. 4.14.6).
- 2.2.4 *Planning Policy Statement 10: Planning for Sustainable Waste Management* (PPS10) also requires some consideration, although its direct relevance to the application proposals is limited by the fact that the NPS itself contains advice on waste management (see above).
- 2.2.5 The overall objective of Government policy on waste is to protect human health and the environment by producing less waste and by using it as a resource wherever possible. By more sustainable waste management, moving the management of waste up the ‘waste hierarchy’ of prevention, preparing for reuse, recycling, other recovery, and disposing only as a last

resort, the Government aims to break the link between economic growth and the environmental impact of waste.

2.2.6 Annex F of PPS10 refers to the 'GOL Circular 1/2000² *Strategic Planning in London*' and highlights advice and guidance on the planning arrangements that apply in London. It states:

“the SDS [Spatial Development Strategy] is expected to reflect the importance of taking a strategic approach to London’s waste management and disposal, such as the need to develop sustainable and practical solutions, the specific duty to promote transportation on the River Thames, and the implications for areas outside the capital.”

²Now superseded by GOL Circular 1/2008: Strategic planning in London (GOL, 2008).

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3 Transport strategy

3.1 Purpose

- 3.1.1 The objectives for the transport strategy have been drawn from the policy framework of national, regional and local policies relating to transport, wastewater and waste. The transport strategy:
- a. Sets out the basis for the provision of the infrastructure, systems and management mechanisms needed to transport construction materials and excavated material associated with the construction of the project.
 - b. Details the parameters within which the transportation of construction materials and excavated material would be carried out, whilst allowing the approach to adapt in response to changing circumstances, subject to there being demonstrable environmental and cost benefit.
 - c. Specifies requirements for the preparation of the contractor's logistic plans including how the materials will be managed and how the requirements of the *Code of Construction Practice (CoCP)* would be incorporated in contracts for delivery of the transport proposals and in day-to-day operations.

3.2 Objectives

- 3.2.1 The transport strategy seeks to:
- a. Minimise the potential impacts associated with the transportation of construction materials and excavated material on communities and the environment by prioritising movement by river, where it is judged to provide positive effects as well as being practicable and cost-effective.
 - b. Minimise the number and length of construction related transport movements which would be associated with the project through demand or operational management, whilst ensuring that these would not have a significant impact on congestion or economic growth.
 - c. Minimise the potential social and environmental impacts arising from construction-related transport associated with the project through commitments, technical specification, training and best construction and logistics practice, wherever practicable and cost effective.

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4 Transport modes

4.1 General

- 4.1.1 The transport strategy has been developed taking into consideration:
- a. the site locations, including practicalities and constraints at each site
 - b. the NPS
 - c. environmental and community impacts
 - d. existing transport modes available at the site and the wider network
 - e. deliverability and reliability of the transport modes
 - f. the project's Excavated material and waste strategy
 - g. the project's *Sustainability Statement*
 - h. input from key stakeholders, including the Greater London Authority, Transport for London, the Port of London Authority and the directly affected London Boroughs as well as the wider response to project consultations.
- 4.1.2 Thames Water has carefully considered the quantities of construction materials which could be moved by river in order to prioritise water-bourne transport wherever cost-effective, in accordance with NPS guidance, and in response to stakeholder comments received during consultation. Thames Water will use all reasonable endeavours to ensure that at least 90% of the following materials will be transported by river except in the circumstances identified in Appendix B:
- a. Main tunnel excavated material from the main tunnel drive sites (Carnwath Road Riverside, Kirtling Street, and Chambers Wharf).
 - b. Shaft excavated material at ten sites in the foreshore, or with direct river access. These are Putney Embankment Foreshore, Carnwath Road Riverside, Cremorne Wharf Depot, Chelsea Embankment Foreshore, Heathwall Pumping Station, Albert Embankment Foreshore, Victoria Embankment Foreshore, Blackfriars Bridge Foreshore, Chambers Wharf and King Edward Memorial Park Foreshore.
 - c. Import of temporary and permanent cofferdam fill material and export of temporary cofferdam fill material at all foreshore sites.
 - d. Excavated material from short connection tunnels, interception chambers and associated structures at eight sites. These are Putney Embankment Foreshore, Cremorne Wharf Depot, Chelsea Embankment Foreshore, Albert Embankment Foreshore, Victoria Embankment Foreshore, Blackfriars Bridge Foreshore, Chambers Wharf and King Edward Memorial Park Foreshore.

- e. Import of sand and aggregates for secondary lining works for the main tunnel sites at Carnwath Road Riverside, Kirtling Street and Chambers Wharf.

4.1.3 The above materials types can be transported by river, but there will be practicality reasons why it is not always possible to use river transport. For the *Transport Assessment* it is assumed that a minimum of 90 per cent of these materials would be transported by river. This is to allow some flexibility for the use of road transport for periods when river transport may be unavailable, and for material that is unsuitable for river transport (such as excessively wet spoil or any contaminated materials), and if major site equipment failures occur. The construction contractors will be incentivised to transport as much of the above material by river as practical, in order to achieve an amount closer to 100 per cent of these materials.

4.1.4 A summary of overall barge and lorry numbers that would be required for each proposed site is contained in Appendix A and details of typical derogations to river transport are included in Appendix B.

4.2 Other transport measures

4.2.1 Thames Water will require within the construction contracts for:

- a. the main tunnel secondary concrete lining to be batched on site
- b. ready-mix suppliers for all sites to source sand and aggregates delivery by river or rail.

4.2.2 Within the *CoCP* the measures to minimise potential impacts associated with the use of road transport including:

- a. best practice measures for road transport, including the adoption of EURO 6 vehicles as a minimum HGV standard
- b. lorry management requirements including timed deliveries and monitoring, to reduce the potential impacts at each site
- c. lorry safety measures including the use of lorries that have 'active' fitted cyclist safety measures and the requirements for lorry driver safety awareness training
- d. membership of the Freight Operators Recognition Scheme, (FORS).
- e. requirements for worker travel plans and measures such as restricted on-site parking, to reduce vehicle movements at each site.

4.2.3 The above measures will help to further reduce the volume and potential impact of road transport use during construction.

4.3 Rail transport

4.3.1 Thames Water has assessed the potential to utilise rail as a main transport mode for key project materials including excavated materials removal, and import of precast concrete tunnel linings and sand and aggregates for tunnel secondary lining. However, no suitable opportunities

were identified. None of the works sites have direct access to the rail network and so rail transport would require road vehicles to move material to and from the nearest rail terminal. This would have negative effects on the local road network. The closest site location to the rail network is at Kirtling Street although there is no current suitable access and the capacity for large numbers of rail movements in this area is limited.

- 4.3.2 The proximity to the river for the main tunnel drive sites leads to a river transport based strategy. Rail transport will be used as a key part of the current supply chain for project materials, in particular cement and sand and aggregate supplies for ready mix concrete.

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5 Need for flexibility

- 5.1.1 The transport strategy will be subject to suitable provisions in agreements with key stakeholders including the Greater London Authority, Transport for London and the Port of London Authority. This is to allow flexibility to use other transport modes, in order to:
- a. re-use or dispose of material locally by road, where this would have less overall impact and/or allow sustainable re-use of materials
 - b. respond to exceptional circumstances such as site equipment failure, or when river transport is unavailable
 - c. transport materials in areas where river usage is not practicable, or use other means of transport in the event that river transport costs escalate prohibitively.

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6 Areas where river usage is not proposed

6.1 Summary

- 6.1.1 Thames Water has evaluated options for the transport of all construction-related materials at sites with access to the river. However, river transport is not planned for:
- main tunnel precast concrete lining segments
 - excavated shaft material from Kirtling Street
 - any materials to/from Greenwich Pumping Station, Beckton Sewage Treatment Works and Abbey Mills Pumping Station
 - materials in addition to these listed for river transport at the central London sites at Victoria Embankment Foreshore and Blackfriars Bridge Foreshore
 - transshipment of materials to/from inland sites
 - excavated materials from diaphragm wall construction, as these tend to be excessively wet and would require significant processing and might not meet the safety criteria for river transport.
- 6.1.2 A major concern regarding the use of river transport for the project is the associated delivery risk of implementing the required infrastructure on the scale currently proposed, particularly in the river section upstream of Tower Bridge. Additional challenges and issues to be managed include the requirement to acquire additional barge and tug capacity and to ensure that additional trained and experienced crew are available. The river transport capacity would be required to accommodate peak tunnelling rates and support continuous tunnelling operations 24 hours a day, seven days a week, over a number of years, simultaneously at multiple sites.
- 6.1.3 River transport would not be used for small volumes of material requiring transportation over a short distance, or those only required intermittently during the project.

6.2 Main tunnel lining segments

- 6.2.1 The transport of precast concrete lining tunnel segments by river to the main tunnel drive sites at Carnwath Road Riverside, Kirtling Street and Chambers Wharf would be a risk to the successful delivery of the main tunnel construction and overall project. Any supply delays or complications associated with the transport of tunnel segments, could have serious impacts on the programme and cost implications. There would also be issues associated with segment manufacturing and handling; if a contractor proposed to use a segment manufacturing site without river access, segments would first need to be transferred to the river by road. Consequently, the segments would be exposed to an

increase in risk of damage by being handled twice. It is essential that handling is kept to a minimum.

- 6.2.2 The transport of tunnel segments by river would require additional river fleet including project specific barges, tugs and trained and experienced crew, as well as those already required for the excavated material. There would also be an increase in barge and tug movements. Furthermore, in order to unload and handle tunnel segments at river sites, significant adjustment of excavated material handling facilities and additional on-land and in-river infrastructure would be required.
- 6.2.3 The benefits of transporting tunnel segments by river in terms of HGV movements would be relatively small (four per cent of all construction materials), and would not achieve significant environmental benefits at the individual site level.

6.3 Materials to/from other sites

- 6.3.1 Deptford Creek has been assessed for the transport of materials to and from Greenwich Pumping Station. As it is a narrow tidal creek, it would only support restricted barge sizes and would require dredging before works could commence. There are also constraints from the A200 Creek Road lifting bridge, and the location of residential properties at the creek mouth would need careful consideration. A further increase in barge and tug fleet and crew would be needed in addition to those already required. In addition, there would be significant issues related to the safety and cost-effectiveness of handling and transporting excavated chalk at this site if transshipment is required.
- 6.3.2 The transport of materials to and from Beckton Sewage Treatment Works would be expensive due to the limited volumes requiring transport and the need to establish conveyors on the existing jetty. At this site, river transport would not provide significant benefits and the potential impacts of road transport would not be significant.
- 6.3.3 At Abbey Mills Pumping Station, Thames Water will not commit to river transport until a full evaluation of the lessons learned from the Lee Tunnel projects use of the river has been undertaken.
- 6.3.4 The river frontage at Kirtling Street is restricted and establishing the necessary river transport facilities for the project is likely to take some time due to the need to take careful account of existing infrastructure and the number of river users. Thames Water is committed to providing river transport for main tunnel excavated materials at the site. This is a main tunnel double drive site and on the critical path for the overall construction programme. Excavation of the shaft itself would commence and progress while the required in- river infrastructure is being constructed and so removal of shaft excavated material removal by river cannot be confirmed at this stage.
- 6.3.5 The proposed works at Victoria Embankment Foreshore and Blackfriars Embankment Foreshore comprise cofferdam constructions in areas with a

6 Areas where river usage is not proposed

large number of existing vessel movements. Increasing the amount of river use over that required for the proposed construction works would not be beneficial due to the escalated strain on river resources, as well as the type of materials to be transported.

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7 Opportunities to do more by river and rail

- 7.1.1 This strategy does not preclude any appointed contractors from increasing the use of river transport, wherever safe, practical and cost-effective. Thames Water will actively identify opportunities for greater river use and consider appropriate incentives for contractors to encourage greater river use.
- 7.1.2 Thames Water will liaise with other infrastructure and development projects to consider potential synergies, including the Northern Line Extension works at Battersea. This includes shared use of river infrastructure to reduce combined effects.
- 7.1.3 As the project progresses and contractors are appointed opportunities may arise to consider use of rail again.

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8 Benefits of the strategy

8.1.1 Thames Water has increased the commitment to river use since earlier phases of the project. The strategy has considerable benefits in terms of minimising total vehicle numbers and the associated impacts of transport, particularly at the river-located CSO shaft sites. The overall benefits of the project's transport strategy is summarised in Table 8.1 below.

Table 8.1 Benefits of the transport strategy

Item	Description
Total tonnes moved to/from Site	7,950,000
Total tonnes moved by river	4,235,000
Percentage of material moved by river: All sites (tonnes)	53 %
Percentage of materials moved by river at river transport sites.(tonnes)	65 %
Reduction in lorry numbers compared to all road	262,000

Note 1: The value for tonnes moved by river are based on 90% of specified material types.

8.1.2 There would be significant local benefits in terms of reduced overall predicted HGV numbers:

Table 8.2 Overall predicted reduction of HGV numbers

Site name	All by road lorry numbers	Transport strategy lorry numbers	Reduction in lorry numbers	Percent by river (tonnage)	Per cent by road (tonnage)
Putney Embankment Foreshore	6,650	3,350	3,300	56%	44%
Carnwath Road Riverside	73,100	25,850	47,250	67%	33%
Cremorne Wharf Depot	4,450	3,350	1,100	30%	70%
Chelsea Embankment Foreshore	15,050	5,600	9,450	71%	29%
Kirtling Street	141,800	51,550	90,250	64%	36%

8 Benefits of the strategy

Site name	All by road lorry numbers	Transport strategy lorry numbers	Reduction in lorry numbers	Percent by river (tonnage)	Per cent by road (tonnage)
Heathwall Pumping Station	6,950	4,250	2,700	45%	55%
Albert Embankment Foreshore	18,100	6,650	11,450	70%	30%
Victoria Embankment Foreshore	12,250	5,800	6,450	65%	35%
Blackfriars Bridge Foreshore	30,000	13,400	16,600	62%	38%
Chambers Wharf	95,300	32,250	63,050	68%	32%
King Edward Memorial Park Foreshore	21,100	10,750	10,350	56%	44%

Note 1: The value for tonnes moved by river are based at 90% of specified material types.

Appendices

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Appendix A: Forecast barge and lorry movements

A.1.1 Table A.1 summarises the forecast barge and lorry numbers for each site. The daily flows are based on a five-day week for lorries and a seven-day week for barges at each site.

Table A.1 Summary of HGV and barge numbers for each site

Site name	HGV lorry numbers				Barge numbers		Assumed Barge sizes	
	Total for duration of project	Average daily HGVs during construction period	Peak monthly average HVG's	Duration of peak average lorry movements	Total	Peak monthly average	Excavated material (tonnes (t))	Imported cofferdam fill (tonnes (t))
Acton Storm Tanks	5,950	7/day	23/day	5 months				
Hammersmith Pumping Station	5,300	8/day	21/day	3 months				
Barn Elms	3,400	6/day	22/day	1 month				
Putney Embankment Foreshore	3,350	5/day	21/day	1 month	170	2/day	350t	350t
Carnwath Road Riverside	25,850	19/day	45/day	17 months	1,070	2/day	800t	
Dormay Street	5,300	8/day	25/day	4 months				
King George's Park	2,050	4/day	8/day	4 months				
Falconbrook Pumping Station	3,750	5/day	18/day	2 months				
Cremorne Wharf Depot	3,350	5/day	12/day	6 months	60	1/day	350t	
Chelsea Embankment Foreshore	5,600	7/day	42/day	1 month	210	3/day	800t	800t
Kirtling Street	51,550	36/day	96/day	14 months	1,620	4/day	1,000t	
Heathwall Pumping Station	4,250	6/day	18/day	1 month	140	2/day	350t	350t
Albert Embankment Foreshore	6,650	8/day	19/day	2 month	590	4/day	350t	350t
Victoria Embankment Foreshore	5,800	5/day	14/day	3 months	150	2/day	800t	800t

Appendices

Site name	HGV lorry numbers				Barge numbers		Assumed Barge sizes	
	Total for duration of project	Average daily HGVs during construction period	Peak monthly average HVG's	Duration of peak average lorry movements	Total	Peak monthly average	Excavated material (tonnes (t))	Imported cofferdam fill (tonnes (t))
Blackfriars Bridge Foreshore	13,400	11/day	46/day	3 months	370	3/day	800t	800t
Chambers Wharf	32,250	20/day	55/day	3 months	840	3/day	1,500t	1,000t
King Edward Memorial Park Foreshore	10,750	12/day	41/day	5 months	210	2/day	1,000t	1,000t
Earl Pumping Station	9,150	9/day	34/day	4 months				
Deptford Church Street	8,700	9/day	32/day	7 months				
Greenwich Pumping Station	32,350	25/day	77/day	12 months				
Abbey Mills Pumping Station	17,350	17/day	70/day	4 months				
Beckton Sewage Treatment Works	8,600	10/day	25/day	5 months				
Shad Thames Pumping Station	1,050	3/day	7/day	1 month				
Bekesbourne Street	350	2/day	5/day	1 month				

Note 1: Lorry and barge numbers within this table constitute one vehicle/barge arriving and subsequently leaving site. For total vehicle movements, the values in this table must be multiplied by two.

Note 2: HGV numbers were calculated on a monthly basis. The 'Peak monthly average' is the average daily HGVs during the peak month. This does not represent the maximum number of vehicles on any single day.

Note 3: HGV lorry movements were assessed based on operating five days per week. HGV lorry movements are permitted on Saturday mornings but the figures have been calculated on a five-day week.

Note 4: Barge movements were assumed to be over five days per week with the exception of the main drive sites (Carnwath Road Riverside, Kirtling Street and Chambers Wharf), where barges operate seven days a week.

Note 5: HGV numbers were based on the following general assumptions:

- excavated material would be removed from site by rigid tipper wagons with a load capacity of 16 tonnes (equivalent to approximately 8m³ of un-bulked excavated material)
- imported bulk fill material would be brought to site by tipper wagons with a load capacity of 16 tonnes (equivalent to approximately 8m³ of compacted fill material)
- ready mix concrete would be brought to site by mixer wagons with a capacity of 15 tonnes of concrete (equivalent to approximately 6m³)
- HGV numbers for steel reinforcement were based on 15 tonnes per delivery
- Other general HGV numbers were based on 20 tonnes per delivery. Additional lorry movements are included for other materials on a specific basis.

Note 6: Barge numbers were based on utilising 90 per cent of barge capacity. The size of barges used was assessed on a site-by-site basis in consultation with the Port of London Authority. The assessed barge sizes at some sites also vary depending on the material transported and location constraints.

Appendix B: Derogations for departure from using river transport

B.1 Introduction

- B.1.1 This appendix details the circumstances and situations where use of river transportation might be unavailable and the use of road transport would be required by the appointed contractors. It is fundamental to the success of the project that continued uninterrupted progress in accordance with the programme is achieved, to minimise the construction duration and the impact on the areas surrounding the proposed sites.

B.2 Trigger events

- B.2.1 Several types of events might impact the use of river transport and are addressed in paragraphs B.2.2 to B.2.9 below.

Planned closures or restrictions on the river

- B.2.2 These are planned events and notice will be given prior to implementation. The PLA will provide detail of these events to Thames Water as soon as it becomes available. Typical events might include:
- a. the Thames barrier maintenance and annual testing
 - b. university boat race or similar sporting events
 - c. festival events (eg, Jubilee pageant and New Years Eve fireworks etc.)
 - d. other construction projects
 - e. river works by other parties, such as bridge inspections, maintenance and protection works.
- B.2.3 The information will be distributed to the contractors by Thames Water. The contractor will then be able to determine the impact and assess any mitigation that might be required including the utilisation of road vehicles for transport.

Unplanned closures and restrictions on the river

- B.2.4 These events would occur with short notice. It is assumed that Thames Water will receive notification of these events from the PLA/GLA/TfL as soon as they become aware. Typical events might include:
- a. river works
 - b. Thames Barrier closures for flood defence
 - c. incidents from river transport (eg, sinking, collisions and bridge strikes etc.)
 - d. weather effecting river transport such as foggy weather that could prevent shipping to final selected disposal site

e. terrorism threats.

B.2.5 The impact of these events will be determined by their duration. Information regarding the event will be distributed to the contractors by Thames Water. The contractor will then assess any immediate impact on construction activity and recommend any short term actions required.

Project-related occurrences

B.2.6 These are events which might occur on one of the project sites and affect the ability of the contractor to use the river. Typical occurrences might include:

- a. mechanical breakdown of river transport vessels
- b. mechanical failure of loading equipment
- c. damage to loading infrastructure
- d. material production and storage area issues
- e. other unforeseen circumstances.

B.2.7 For any such events, an initial notification (early warning) will be issued from the site and escalated to Thames Water who will inform PLA/GLA/TfL and keep them updated.

B.2.8 Mitigation for most of these events would be set out within the contractors River Transport Management Plan and the Construction Environmental Management Plan where appropriate. This shall also include a timetable for the implementation of mitigation measures and reporting milestones.

Management of material unsuitable for river transport

B.2.9 The application assumptions and *Environmental Statement* assessments allow for 10% of materials to be not transported by river. For example, materials from the clay and Thanet sand drives that fail the International Maritime Solid Bulk Cargoes code transportable moisture limit (TML) test and are unsuitable to be transported by barge.

B.3 Management arrangements

B.3.1 The procedures and processes to ensure solid and consistent management of project-related river operations, and to respond to the trigger events outlined above are being discussed with the GLA, TfL and PLA, so that transfer to road transport can be assessed and implemented without unnecessary delay.

B.3.2 The agreed procedures will form the basis of contract requirements and will be referenced within the traffic management plans, river transport management plans and construction environmental management plans. The criteria and procedures for the derogations will also be incorporated within the contractors work information, and agreements with key stakeholders.

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