highways england

Lower Thames Crossing

Outline Traffic Management Plan for Construction

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Lower Thames Crossing

Outline Traffic Management Plan for Construction

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Covering Note

This document is a draft of one of a series of Control Documents that will form part of our planned DCO application. Following this consultation we will carefully consider your feedback as we finalise the documents for our planned submission of the DCO application for the Lower Thames Crossing later this year.

The Outline Traffic Management Plan for Construction (oTMPfC) outlines the approach to carrying out temporary traffic management for the safe construction of the Project. It will also explain management measures available to our Contractor to reduce the impact on the local community (including journey time reliability, access, and safety).

The oTMPfC has been produced following our work with the relevant local authorities. This engagement will continue with those authorities, as well as businesses, statutory bodies and emergency services.

The construction traffic modelling, and subsequently this document, will be updated ahead of submitting the application to reflect more detailed construction data (including the measures outlined below). Technical engagement will continue with highways authorities with the aim of securing SoCG to be included in our DCO application.

As this is a draft control document, there will be references to the upcoming Development Consent Order (DCO). Any documents referenced that will form the DCO will be mentioned with a (REF TBC).

1 Executive summary

1.1 Background

1.1.1 This outline Traffic Management Plan for Construction (oTMPfC) has been produced to provide outline concepts and principles that will be applied for the design and management of construction traffic management and transport logistics for the Lower Thames Crossing Project. This outline document, which has been the subject of engagement with highway authorities, provides an initial framework for how the traffic management in connection with the Project will be controlled (if consent is granted). It will be submitted with the DCO application for the Lower Thames Crossing, subject to changes as a result of feedback received as part of this community impact consultation.

1.1.2 As required by Requirement 10 of Part 1 of Schedule 2 of the Development Consent Order (DCO),the Contractors will be required to produce Traffic Management Plans for construction before commencing works. This will be presented to Highways England and will need to be submitted to and approved by the Secretary of State (SoS) before any part of the authorised development can commence.

1.1.3 The Traffic Management Plans for construction (which will be approved by the Secretary of State if consent is granted for the Project) will include:

a. Strategic road network (SRN) traffic management including lane closures, speed control and temporary road closures and diversions

b. Local road network (LRN), including temporary contraflows (typically a short section of road is closed on one lane and traffic lights are used to allow bi-directional travel along the remaining open lane), road closures, diversions both on-line and off-line, and weekend closures

c. Traffic management within the worksite, such as traffic routes and workforce pedestrian management, strategic and local road networks due to the different highway authorities

2 Introduction

2.1 Purpose and objectives

2.1.1 The purpose of this outline Traffic Management Plan for Construction (oTMPfC) is to provide an overview of the approach that will be followed when undertaking temporary traffic management for the safe construction of the Lower Thames Crossing Project (the Project).

2.1.2 This document will be used to inform the Traffic Management Plan for Construction (TMP), a document which Highways England will have to submit to the Secretary of State for approval before commencing the relevant part of the Project if the Development Consent Order (DCO) (REF TBC) is granted. This oTMPfC has been produced following engagement with the relevant highway authorities, businesses and emergency services.

2.1.3 The TMP, which must substantially accord with this oTMPfC, is legally secured under Requirement 10 in Schedule 2 to the DCO. The TMP which is approved by the Secretary of State must be implemented by Highways England and its Contractors.

2.1.4 The oTMPfC will also outline measures available to the Contractor to reduce the impacts on the community (including journey time reliability, access, severance, and safety).

2.2 Summary description of the Project

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

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

2.2.3 Junctions are proposed at the following locations:

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

b. Modified junction with the A13/A1089 in Thurrock

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

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

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

a. link roads

b. stretches of the carriageway through junctions

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

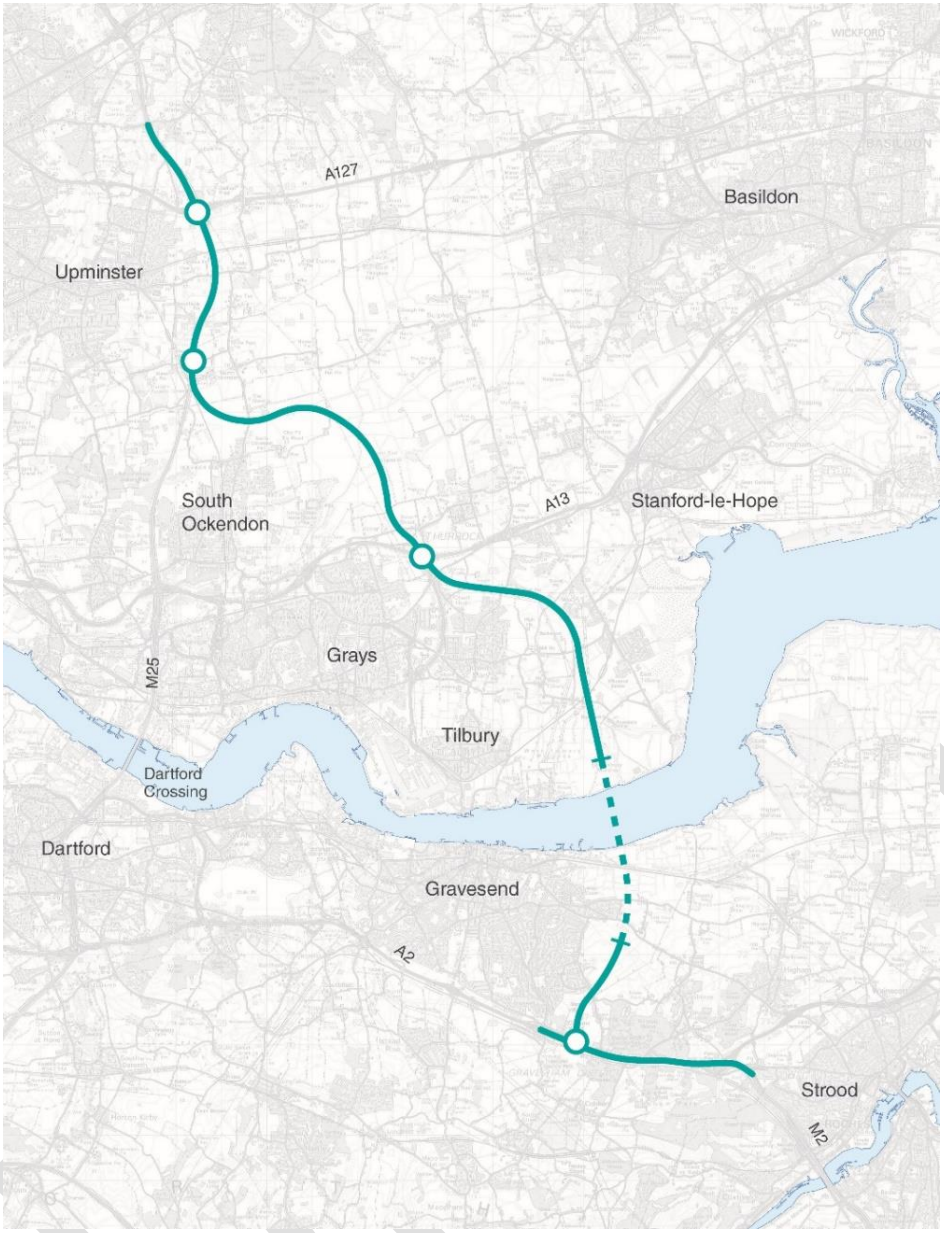
2.2.6 In common with other A-roads, the A122 would operate with no hard shoulder but would feature a 1m hard strip on either side of the carriageway. It would also feature technology including stopped vehicle and incident detection, lane control, variable speed limits and electronic signage and signalling. Our A122 road design outside of the tunnel includes emergency areas spaced at intervals between 800 metres and 1.6km (less than one mile). The tunnel would include a range of enhanced systems and response measures instead of emergency areas.

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

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

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

Plate 2.1 Lower Thames Crossing route



Related Project documents

2.2.10 Control documents that should be read alongside this oTMPfC:

a. The Code of Construction Practice (CoCP) and the Register of Environmental Commitments (REAC) which detail specific environmental management commitments.

b. Outline Site Waste Management Plan (oSWMP)

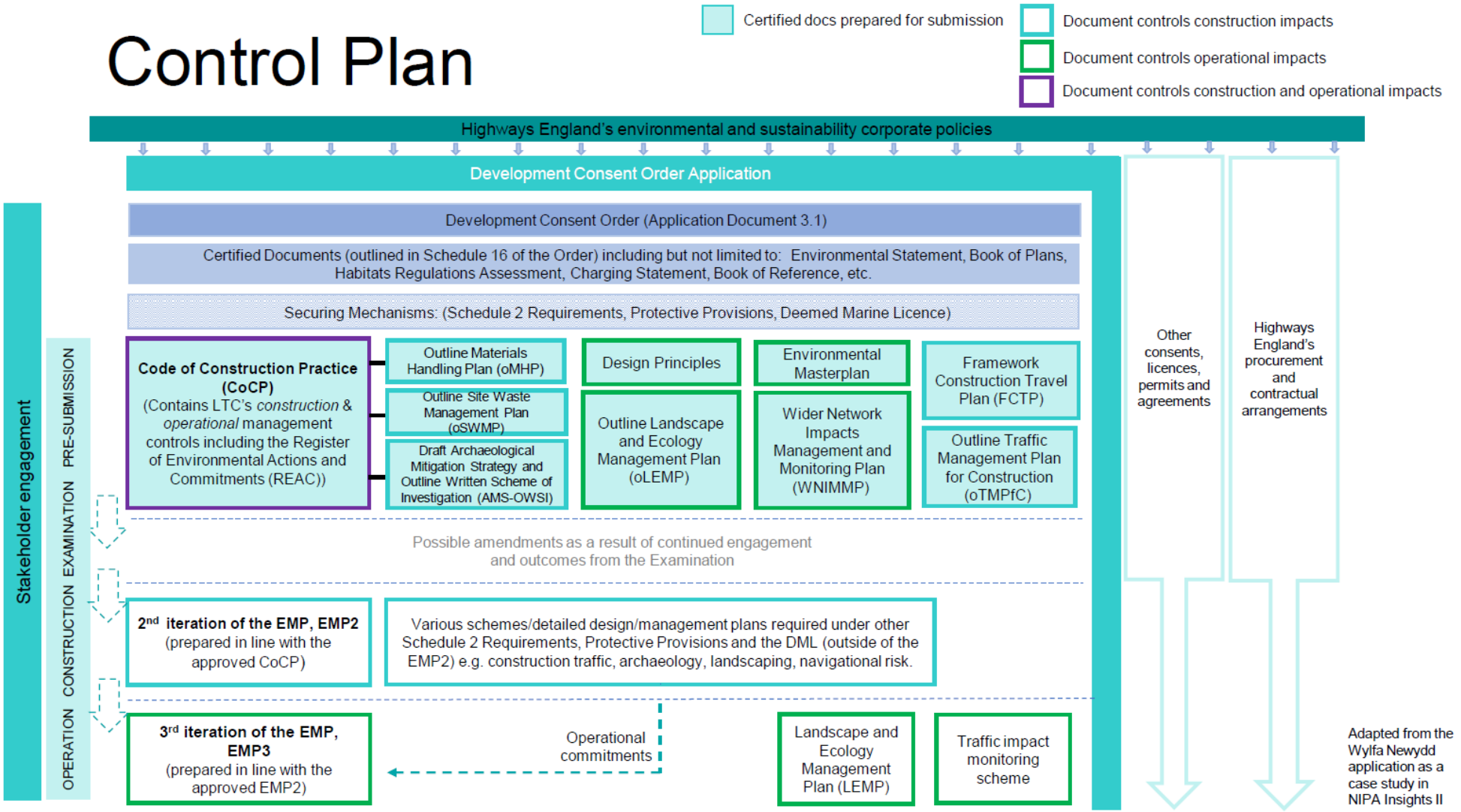
c. Outline Materials Handling Plan (oMHP)

d. Framework Construction Travel Plan (FCTP)

2.3 Interaction with the Development Consent Order

2.3.1 This oTMPfC is the document which the TMP must substantially accord with under the draft Development Consent Order (DCO) (REF TBC). In particular, Requirement 10 requires plans for the management of traffic (i.e. the TMP) to be submitted and approved by the Secretary of State prior to commencing construction. A TMP may relate to part of the Project so, for example, there may be separate TMPs for different stages or areas of the Project. Plate 2.2 provides an extract from the Project Control Plan, which illustrates the securing mechanisms.

Plate 2.2 Extract from the Project Control Plan



2.3.2 The TMP which is approved by the Secretary of State must be implemented by Highways England, its Contractors and agents.

2.3.3 The Contractor must consult with the relevant authorities in Table 2.1 and in accordance with this oTMPfC, and must give due consideration to any representations made in response to that consultation regarding the TMP for construction.

2.3.4 The Contractor must include copies of any representations made and a written account of how any such representations have been taken into account, with the TMP submitted to the Secretary of State for approval.

Table 2.1 TMP consultees

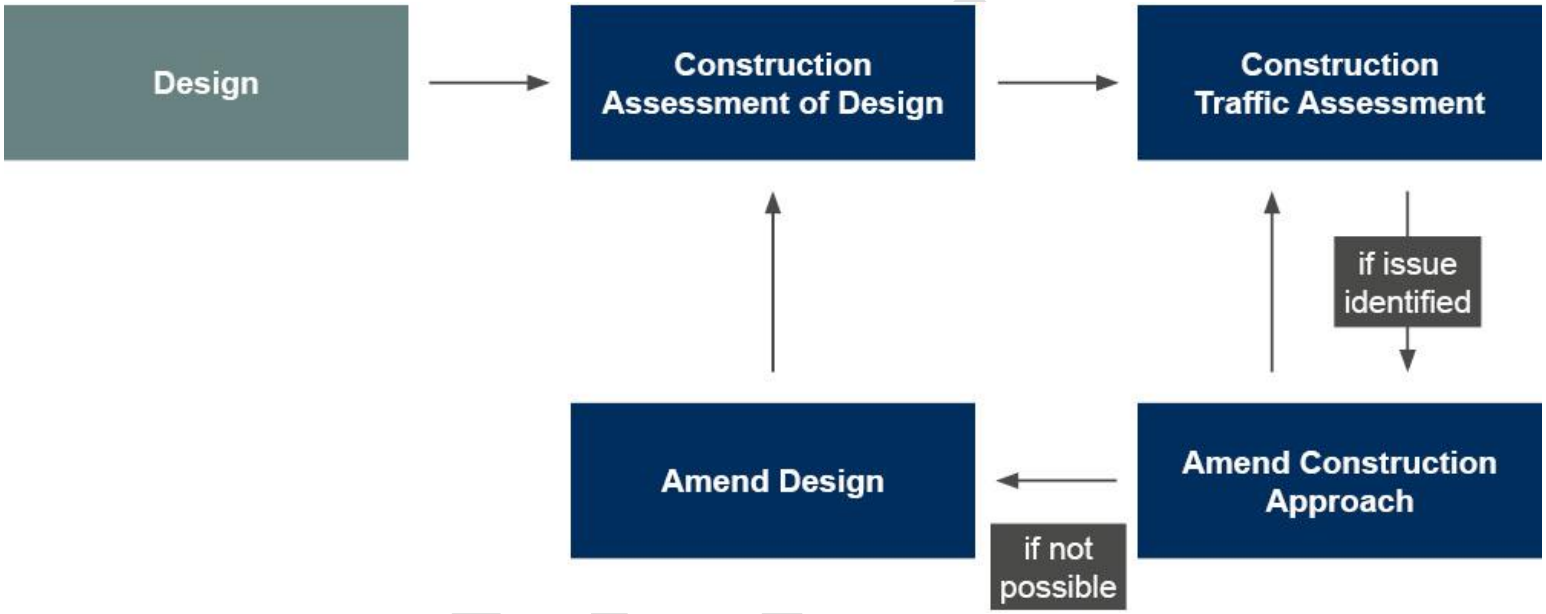
	Local planning authority	Local highway authority	Other
Essex County Council		X	
Brentwood Borough Council	X		
Transport for London		X	
London Borough of Havering	X	X	
Thurrock Council	X	X	
Kent County Council		X	
Gravesham Borough Council	X		
Medway Council	X	X	
Royal Mail			X
Port of Tilbury			X
London Gateway			X
Purfleet Terminal			X

2.4 Challenges and considerations

2.4.1 The Project is complex, with many different elements. A significant number of construction vehicle movements and associated traffic management measures would be required throughout the construction period. While many of the Project elements can be constructed offline, away from the public, there are also main works and utility works which would interface with public areas and the public road network.

2.4.2 During the design development phase, issues were identified, assessed and resolved on an iterative basis as indicated in Plate 2.3. That plate also illustrates the cycle of work required to optimise the design and minimise the construction traffic impacts.

Plate 2.3 Iterative Process



2.4.3 Early engagement with relevant stakeholders, including local authorities and emergency services, will continue through the design development phase. Much of the feedback and discussion has led to refinements being included in the current proposals and design. As a direct result of engagement thus far, several significant design changes and construction approaches have been made which would materially reduce the envisaged construction impacts.

2.4.4 It should be noted that while early collaboration has notably helped refine the design and construction proposals to date, this engagement and refinement will be an ongoing workstream; we are consulting on the contents of this document which will be updated for the resubmitted application.

2.4.5 Through early engagement with key stakeholders we have identified themes and localities that we have taken into consideration when developing the oTMPfC. Engagement with other key stakeholders including local businesses, landowners, public services and members of the public, will continue to take place. Table 2.2 highlights some of the key themes identified through engagement.

Table 2.2 Key themes from technical engagement

Location	Issue	Outcome
All local road networks	Concerns were raised regarding the local authorities' ability to contribute to the development of three TMPs. Additionally how would the Project be able to coordinate its traffic management and how the local authorities would be party to that coordination.	The Project will appoint a Traffic Manager whose role it will be to coordinate management and act as an interface with the local authorities. In addition, following the successful determination of the DCO, Highways England will establish a Traffic Management Forum chaired by the Traffic Manager. Members of the forum will be from the main Contractors and associated utility companies, as well as representatives of local communities and businesses, emergency services and local authorities.
Gravesend town centre and country lanes	Not allowing HGV movements	The Project will apply construction HGV bans on Brewers Road, Thong Lane, and The Street
A226	Minimise construction traffic impacts	The Project will introduce a right-turn-only movement for construction HGVs when exiting CA3 compound.
Local road network	Consider mitigation measures Rat-running	The Project will introduce a construction HGV ban on Lower Higham Road and provide a primary access to CA3a from the A226 Gravesend Road. The Project will introduce additional temporary overnight closure on local roads to minimise rat-running associated with overnight closures of the A2.

Location	Issue	Outcome
A1013 & local roads	Minimise long-term closures Avoid Orsett village for access routes	Design changes to the Rectory Road / A1013 and A1089 / A1013 interfaces to remove the need for long-term closures. The Project will introduce construction HGV bans on Rectory Road, School Lane, High Road and Prince Charles Avenue in Orsett.
Accessing routeing from Port of Tilbury	Minimise impact on West Tilbury	Secondary access route for compounds CA5 & CA5a will avoid Gunn Hill and Rectory Road in West Tilbury.
A13 North Stifford Interchange	Impacts on traffic movements because of Veolia track usage	Depending on the outcome of the latest construction traffic forecasts, requirement of mitigation measures will be considered.
A127 / Warley Street	Project needs to consider traffic movement impacts, junction already identified for improvements	Depending on the outcome of the latest construction traffic forecasts, requirement of mitigation measures will be considered.
Ockendon Road and St Marys Lane	Impacts on long-term closures due to existing HGV and bus movements. Suitability of alternative routes due to weight restrictions	The Project will liaise with impacted businesses and premises (e.g. South Essex Crematorium, and The Coopers' Company and Coborn School).

2.4.6 It is acknowledged that the impacts on communities from measures required to ensure the safe delivery of the Project should be to be kept to a minimum as much as is reasonably practicable.

2.4.7 The specific restrictions required to mitigate or otherwise minimise the impacts would be developed in discussions undertaken with the relevant authorities, and would be set out in the TMP. Table 2.3 below has been produced to set out the overarching considerations which would be considered.

2.4.8 In particular, Table 2.3 identifies different classes of stakeholders that must be considered when designing the traffic management measures and transportation plans, and suggests how the TMP would take their concerns into consideration.

2.4.9 The Contractor will provide a monitoring system, the purpose of which is to capture real-time data that provides confirmation that traffic and vehicle control measures are effective and vehicle arrival and departure times from compounds are controlled. The outputs of this will be a Monitoring Report which will be provided to the Traffic Management Forum (TMF). This reports based on traffic monitoring measures, such as ANPR, traffic flow monitors and possibly web based camera systems. Actual monitoring to be implemented will be selected as part of the TMP on a case by case basis by road / section.

2.4.10 The Contractor will support interventions and/or changes to traffic management measures required to ensure that disruption is kept to a minimum, at the time of planning, and will identify where continuous improvements need to be implemented.

2.4.11 Where requests for traffic measures to be modified arise during feedback from the Traffic Management Forum, Highways England would give due consideration to any such request. The Contractors would consider revising the approved TMP where Highways England considers it is necessary.

Table 2.3 Stakeholder considerations

Who is affected by the Project?	What are their requirements?	How would the TMP take these into account?
Van drivers, car drivers and motorcyclists	• Journey time reliability • Safety during journey through traffic management • Advance warning • Breakdown recovery	• Reduce the number of traffic management changes • Reduce narrow lane arrangement • Reduce closures and use of diversion routes • Enforce speed reduction through cameras • Pre-warning signage in line with best practice guidance • Provision of portable variable message signs to display informative messages • Provide (and clearly sign) free vehicle recovery where applicable
Disabled car drivers	• Breakdown recovery • Advance communication	• Provide (and clearly sign) free vehicle recovery where applicable • Method of recovery is suitable for people with reduced mobility • Ensure means of communication is accessible

Who is affected by the Project?	What are their requirements?	How would the TMP take these into account?
Heavy Goods Vehicles (HGV) drivers	• Journey time reliability • Advance warning of closures and/or diversions • Appropriate diversion routes • Maximised lane widths where possible • Breakdown recovery	• Sufficient notification of closures • Diversion routes which avoid narrow roads and low bridges • Narrow lane arrangements to maximise slow lane width for HGVs. • Provide (and clearly sign) free vehicle recovery where applicable
Walkers, cyclists and horse riders	• Access to pedestrian routes • Access to cycling routes • Access to equestrian routes • Appropriate and safe surfaces for all users • Clearly signed and segregated diversion and access routes	• Seek views of highway authorities when designing diversion routes • Ensure temporarily diverted routes are designed with users in mind and that consideration is given to visual, hearing and physically impaired users • Ensure diverted and existing routes are clearly signed and segregated from construction sites. • Provide temporary signalised crossings to ensure safe crossing points where required
Public transport users and operators	• Modes of public transport including rail and bus services and operations	• Maintain existing routes (as far as reasonably practicable) • Provide temporary diversions, temporary bus stops when and where required • Seek view of authorities when designing diversion routes and temporary bus stops • Reduce impact to the rail network and schedule • Engage with rail companies on proposed works and programme to reduce impacts
Highways England	• Safety during works • Reduced road closures	• Ensure safety standards are met throughout • Develop efficient programme of works to reduce disruptive traffic management

Who is affected by the Project?	What are their requirements?	How would the TMP take these into account?
	• Reduced narrow-lane traffic management arrangement • Reduced delays • Prevention of damage to roads	• Propose *in situ* road assessment (which would be carried out by the principal Contractor) to determine road condition and plan of action during works • Collaborate with Highways England to optimise use of traffic management information about planned closures • Provide diversion routes to Highways England Customer Contact Centre to enable accurate information to be supplied to customers • Consult with Highways England National Traffic Operation Centre regarding infrastructure and technology assets and the potential impact on journey time data, enabling pre-event and 'on the night' messages to road users via Variable Message System
Exhibition centres, church halls, community centres, sports clubs, places of worship, cemeteries and crematoriums	• Public and staff access • Access for deliveries • Waste collection • Emergency service access • Postal deliveries	• Access and egress to be maintained throughout the construction period with the exception of night-time and weekend closures when required for specific planned works • Advance warning and particular sensitivity around significant events, particularly evenings and weekends • Consultation prior to proposed night closures of the LRN and SRN.
Major superstores	• Public and staff access • Access for deliveries • Waste collection • Emergency service access • Postal deliveries	• Access and egress to be maintained throughout the construction period with the exception of night-time and weekend closures when required for specific planned works • Advance warning and particular sensitivity around significant events, particularly evenings and weekends

Who is affected by the Project?	What are their requirements?	How would the TMP take these into account?
		Consultation prior to proposed night closures of the LRN and SRN • Include temporary advance warning signs on approaches at appropriate locations to inform road users to use appropriate diversions put in place
Logistics centres (e.g. ports)	• Closures/diversions that may impact on journey-time reliability to and from the facility • Appropriate diversion routes for distribution centre traffic	• Access and egress to be maintained throughout the construction period with the exception of night-time and weekend closures when required for specific planned works • Advance warning, with particular sensitivity around peak times • Diversion routes that can accommodate stacking and/or tacho breaks • Consultation prior to proposed night closures of the SRN
Local businesses and residents	• Public and staff access • Access for deliveries • Waste collection • Emergency service access • Postal deliveries (including Royal Mail collection) • Appropriate diversion routes	• Ensure access is maintained throughout works • Regular communication to inform changes and scheme progress • Include temporary advance warning signs on approaches at appropriate locations to inform road users to use appropriate diversions put in place
Relevant authorities and local stakeholders	• Closures/diversions that may impact on journey-time reliability to and from the facility • Public and staff access • Emergency service access • Appropriate diversion routes • Safety during works	• Engage with the local authorities on Traffic Management. • Include temporary advance warning signs on approaches at appropriate locations to inform road users to use appropriate diversions put in place. • Ensure existing routes are maintained where possible.

Who is affected by the Project?	What are their requirements?	How would the TMP take these into account?
	• Reduced road closures • Reduced delays • Prevention of damage to roads	• Ensure safe crossing is provided where temporary pedestrian crossings are placed. • Ensure diversion routes and existing routes are segregated from construction sites. • Make sure access is maintained throughout works. • Regular communication which may include web-based applications and letter drops, describing changes and scheme progress.
Distribution centres	• Closures/diversion that may impact on journey time reliability to and from the facility • Appropriate diversion routes for distribution centre traffic	• Access and egress to be maintained throughout the construction period with the exception of night-time and weekend closures when required for specific planned works • Advance warning, with particular sensitivity around peak times • Diversion routes that can accommodate stacking and/or tacho breaks • Consultation prior to proposed night closures of the SRN
Emergency services	• Access through haul road during emergencies • Suitable diversion routes • Advance warning of closures and/or diversions	• Process and procedure for allowing emergency services through the works/haul road • Diversion routes avoid narrow roads and low bridges • Sufficient notification of closures • Early engagement with Emergency Services to ensure clarity
Nearby events	• Minimum disruption due to works, to and from the venue	• Closures/diversions to avoid such events and/or simultaneous activities as far as possible

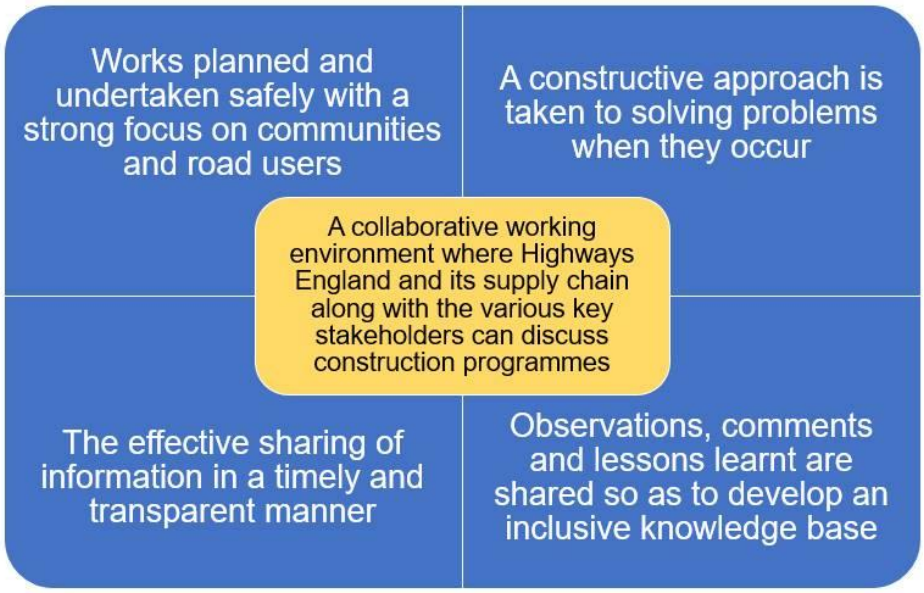
Who is affected by the Project?	What are their requirements?	How would the TMP take these into account?
Healthcare facilities, local surgeries and hospitals	• Access/egress for staff and patients • Emergency service access • Postal deliveries • Waste collection	• Access and egress to be maintained throughout the construction period with the exception of night-time and weekend closures when required for specific planned works • Communications to update the facility regarding any closures and diversion routes
Local schools	• Access/egress for staff and students • Unhindered walking routes • Emergency service access • Waste collection	• Access and egress to be maintained throughout the construction period with the exception of night-time and weekend closures when required for specific planned works • Advance warning with particular sensitivity around significant events, particularly evenings and weekends that are likely to affect late evening and weekend school • HGV movements will not be allowed to pass school entrances during drop off/pick up
Local care homes	• Access/egress for staff and patients • Unhindered walking routes • Emergency service access • Waste collection	• Ensure safe crossing and pedestrian lights are provided • Access and egress to be maintained throughout the construction period with the exception of night-time and weekend closures when required for specific planned works

3 General principles

3.1 Collaborative working and permit schemes

3.1.1 Key to the successful delivery of the Project is the need to establish a collaborative working environment where Highways England along with its suppliers and stakeholders can discuss construction programmes to ensure works are planned and undertaken safely.

Plate 3.1 Overview of collaborative working environment



3.1.2 The Project will coordinate road space requirements across three primary areas:

a. Roads in Kent

b. Tunnels

c. Roads north of the Thames

3.1.3 Each primary area will request road space through the following relevant highway authority booking or permitting systems (see also 3.1.4, Modification to application of permit schemes) to:

a. Highways England – Network Occupancy Management System (NOMS)

b. Local highway authorities – Permits for Road & Street Works – Street Manager:

i. Kent County Council

ii. Thurrock Council

iii. Essex County Council

iv. London Borough of Havering

v. Transport for London

Timescales for road booking

a. Highways England

i. Provisional booking – 24 months

ii. Firm booking – six months

b. Local highway authority

i. Provisional advanced booking – three months minimum

ii. Permit application – 10 days

Modification to application of permit schemes

3.1.4 As is common with Nationally Significant Infrastructure Projects, the Project DCO will propose to disapply provisions of the New Roads and Street Works Act 1991 (NRSWA). The intent is to ensure that the street authority cannot impose moratoria on works, or give direction on location, timing or the nature of reinstatement, which would impact the project delivery.

3.1.5 This is considered appropriate given the scale of works proposed under the DCO, the specific authorisation given for those works by the Order (if granted) and the provisions in the DCO (including the requirements, and the need for a TMP) which would regulate, and provide appropriate safeguards in connection with, the carrying out of the Order works.

3.1.6 The Project intends to utilise the existing road booking system operated by the respective local highway authority, to aid management and integration of other schemes. In addition the appointment of a Traffic Manager (see paragraph 3.3.10) and the establishment of a Traffic Management Forum (see paragraph 3.3.11) will enable timely discussions to be held regarding the detailed location, extent and type of traffic management to be used prior to SoS approval of the TMP.

3.2 Local operating parameters during construction

3.2.1 Highway authorities would continue to carry their statutory obligations with regard to managing their networks.

3.2.2 Where the Project has an interface with either the strategic or local road network, the Contractor delivering the works would seek to reach agreement with the relevant highway authority, on the extent of the operational boundaries by way of a Detailed Local Operating Agreement (DLOA) or a Local Operating Agreement (LOA). The agreements set out the roles and responsibilities for the following themes:

a. Communications and customer care

b. Operational areas

c. Asset handover

d. Routine maintenance and repair

e. Winter maintenance and extreme weather

f. Incidents

g. Traffic management

3.2.3 In the event that no agreement can be reached, the Contractor delivering the works will set out the arrangements covering these themes in its Traffic Management Plan (where relevant to the construction of the Project) for the approval of the Secretary of State.

3.2.4 The management of PRoWs, with respect to their short-term closure and/or diversion, will be done following engagement with the relevant local authority in accordance with the terms of the DCO. Depending on footfall/likely usage, and length and suitability of an alternative route, it will be determined whether a temporary diversion is required and what route it will follow. The DCO will include a requirement that for temporary closures, restrictions, and alterations of streets, there must be reasonable access for pedestrians going to or from premises abutting a street, or private means of access if there would otherwise be no such access.

3.3 Communication and community engagement

3.3.1 The communication relating to the TMP should be seen in the context of the communications plans set out in the Code of Construction Practice (CoCP). In particular, Section 5 of the CoCP details how the Project and Contractors will engage and communicate with the stakeholders and communities impacted by the works.

3.3.2 Section 5.1.1 of the CoCP establishes that Highways England will develop a Communications and Engagement Strategy (CES) that outlines the objectives and processes for engagement and communications with stakeholders.

3.3.3 Furthermore Section 5.1.1 of the CoCP requires each Contractor to develop a Communications and Engagement Plan (CEP) in support of the CES, to ensure stakeholders are informed of the works activities and to maintain good relationships with others.

3.3.4 The CEPs will be submitted for acceptance by Highway England, following consultation with the local planning authorities and before the development commences.

3.3.5 The Contractor will engage with the local community, particularly focusing on those who may be impacted by the construction, including local residents, businesses and landowners.

3.3.6 The CEPs will provide a programme of community engagement such as, but not limited to, community drop-in sessions, one-on-one meetings, newsletters and leaflet drops (explaining forthcoming works).

3.3.7 Before works commence, the Project will establish Community Liaison Groups (CLGs). The frequency of meetings will be developed with the participants in advance of construction commencing. Attendance will be publicised using traditional and digital media.

3.3.8 At least two weeks before works are carried out, Contractors will distribute information sheets detailing expected disruptions and measures being taken to avoid or minimise adverse impacts of the works.

3.3.9 The Highways England Customer Contact Centre will be used to deal with enquires and complaints from the public. This consists of a phone line, email and website facility. The information line is staffed by Highways England 24 hours a day, seven days a week. The response time for enquiries is 10 working days. The contact number, email and website addresses for the Customer Contact Centre will be displayed on signs adjacent to the construction areas that are clearly visible to pedestrians and the travelling public.

Highways England's responsibilities

3.3.10 Highways England would appoint a Traffic Manager whose role would be to:

a. Ensure that any traffic management required by the Project is planned, delivered, and managed collaboratively, and that the commitments of the TMP are adhered to, with a specific focus on:

   i. Planning and delivery

   ii. Network occupancy

   iii. Delivering safely

   iv. Operations

b. Ensure that standards and best practices are applied in the planning and delivery of Traffic Management

c. Establish and chair the Traffic Management Forums ensuring that all affected stakeholders are invited to attend

d. Attend other third-party established traffic management meetings where there is an interface with the Project (e.g. Kent Corridor Coordination Group)

e. Review feedback from local highway authorities in terms of planned traffic management as well as the performance of key traffic management phases

f. Receive data from the main works Contractors as to the performance of traffic management in terms of the impact on the strategic road network and local authority roads

g. Represent the Traffic Management Forum (see paragraph 3.3.11 below) at the Joint Operations Forum (JOF) which is a forum, at executive level,

made up of Highways England and its Contractors. The Traffic Manager will report to the JOF on traffic management performance and to escalate issues of concern raised by stakeholders. More information on the JOF is available in the Code of Construction Practice

h. Review the performance of incident management that occurs within the designated “Works Zone” as set out in a TMP and any relevant DLOAs

i. Act as the interface with the Community Liaison Group.

j. Generally, oversee the performance of the wider Project construction network in terms of the coordination, planning and delivery of traffic management on the SRN and LRN

Traffic Management Forum

3.3.11 The Traffic Management Forum would consist of the main works Contractors, utility companies, local authorities, statutory bodies as named in Table 2.1, local highway authorities, public transport operators, emergency services, Highways England maintenance providers and any other affected stakeholders depending on the planned construction phases (see Plate 3.2 for proposed structure).

3.3.12 Two TMFs would be established (roads in Kent and roads north of the Thames) both chaired by the Traffic Manager and would have attendees from the roads and tunnels contractors in each respective area.

3.3.13 The TMF would be established following the granting of the DCO and would be held monthly.

3.3.14 The TMF would review planned traffic management arrangements and receive comments as to their appropriateness.

3.3.15 The TMF would review the performance of implemented traffic management with a focus on:

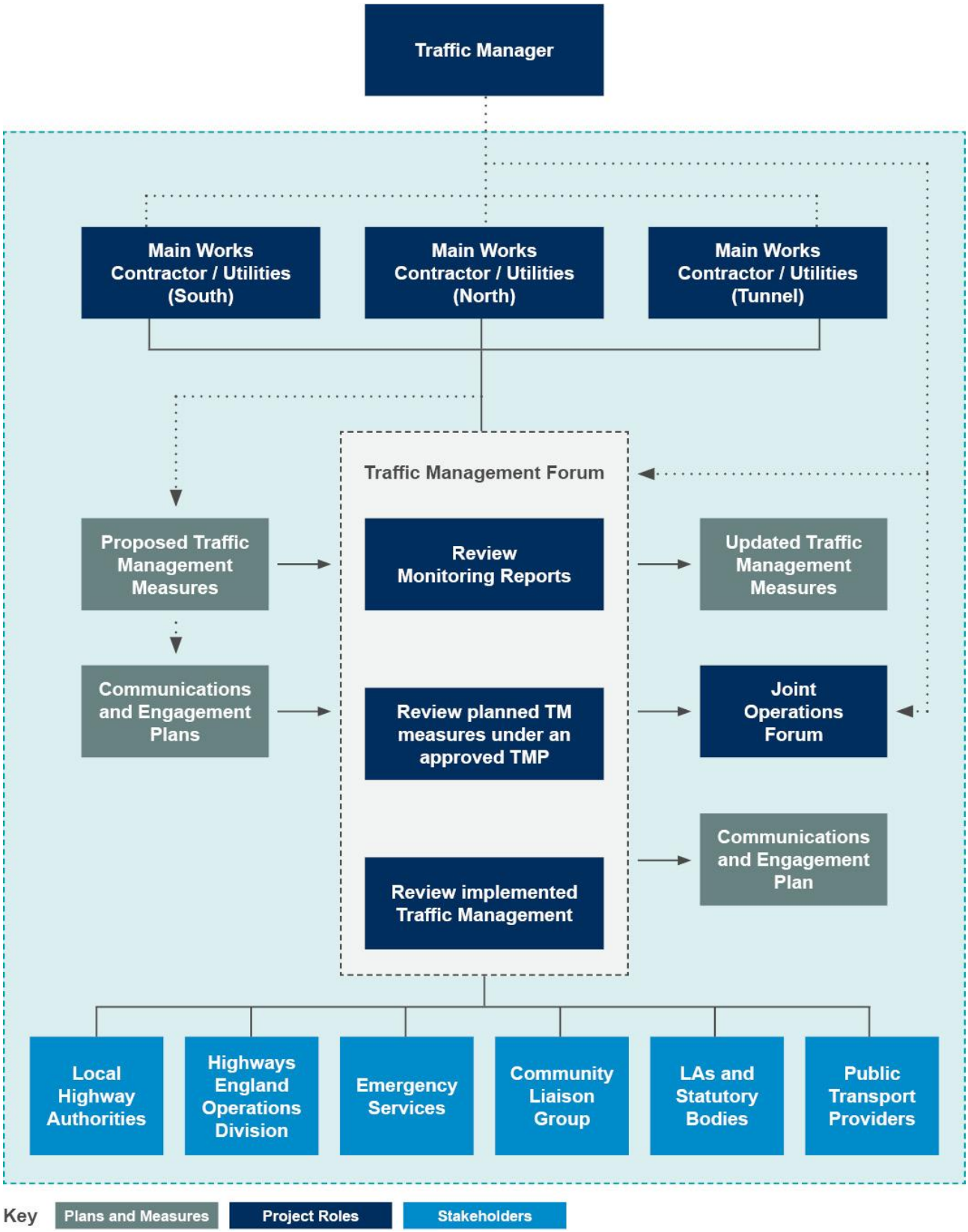
a. Direct impacts to the travelling public (including WCH)

b. Indirect impacts on the wider network as a result of the implemented traffic management

c. Impacts on local businesses and communities

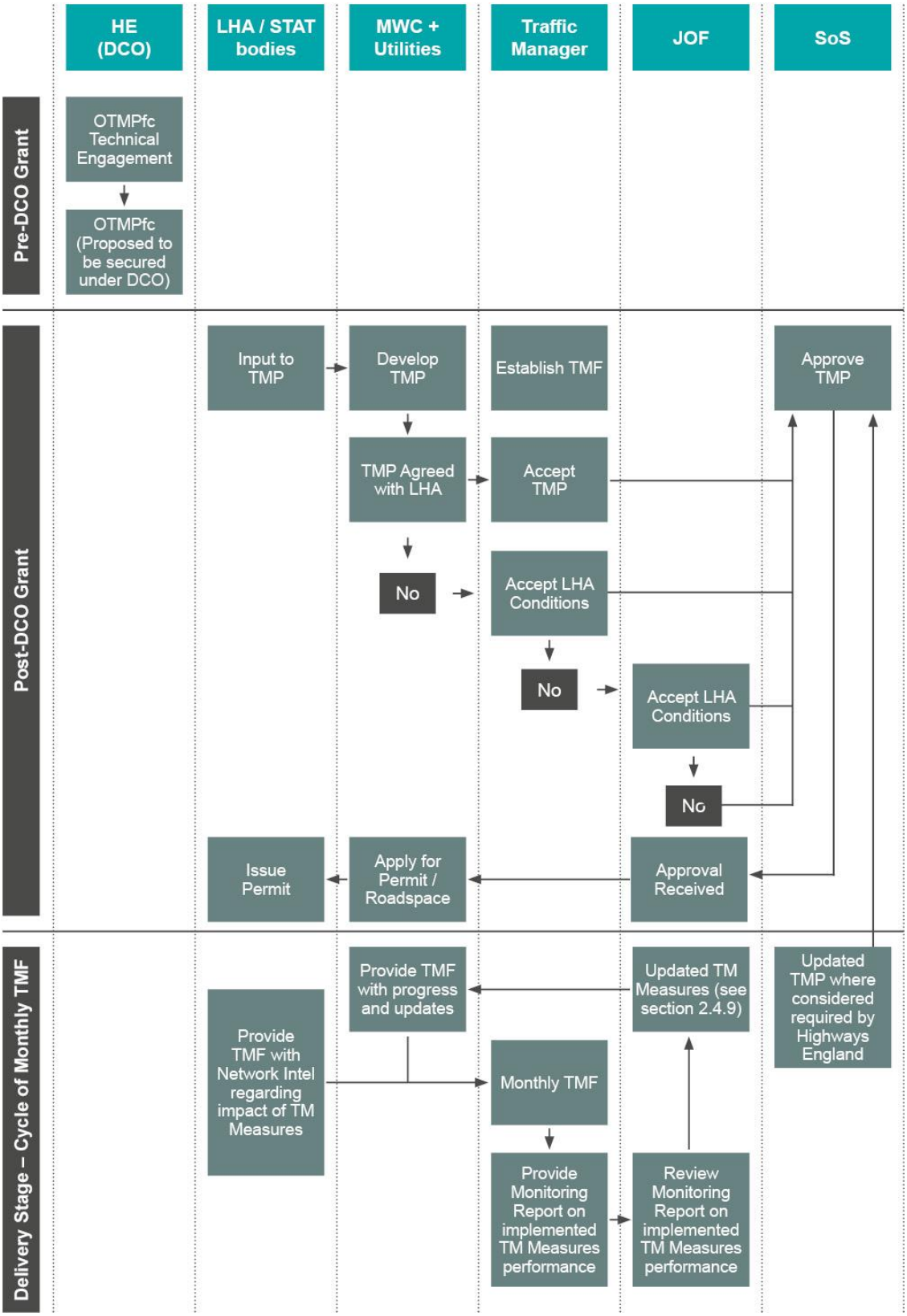
d. Reviewing specific traffic management operations such as weekend closures for demolition

Plate 3.2 Traffic Management Forum



3.3.16 The implementation of traffic management measures on the LRN and SRN would require engagement in the Traffic Management Forum and would be subject to discussion with the relevant local highway authority. Plate 3.3 shows the possible traffic management planning/escalation process.

Plate 3.3 Traffic management planning



3.4 Working hours

3.4.1 The Code of Construction Practice (CoCP) details the working hours that have been assessed as part of the ongoing environmental assessments.

3.4.2 Abnormal traffic movements may occur outside standard working hours. These movements will be discussed with the relevant authority as required and carried out in a way such that will reduce the impact on the local area. Abnormal load routes between the SRN and delivery destination would be assessed prior to use to ensure their suitability. In some cases, temporary modification of the existing road or road assets may be required to accommodate the abnormal load. These temporary modification works would be discussed with the relevant authority as required.

4 Proposed measures

4.1 Safety measures

4.1.1 The traffic management will be designed in accordance with the requirements of the Department for Transport Traffic Signs Manual and Highways England's 'Roadworks – A Customer View' which outlines the customer principles that Highways England expects to be applied to roadworks.

4.1.2 To protect the health, safety and security of road users and the workforce, traffic management would need to ensure that safety measures have been thoroughly considered.

4.1.3 Traffic management will be designed and implemented to be effective in all lighting conditions, weather conditions and under all envisaged circumstances. The Contractors would demonstrate that their traffic management proposals had been developed to consider alternative options, minimal traffic management measures, safety and space assessments to reduce delays, disruptions and diversions to traffic. Further details of proposed measures are contained below.

4.1.4 In the event a road has to be closed for construction purposes which require traffic to be diverted, meetings would be held with the appropriate highway authority as part of the Traffic Management Forum to ensure minimal disruption to road users and communities affected by the diversion.

4.1.5 For the purposes of protecting the workforce and the public while maintaining traffic, the TMP will secure appropriate traffic management measures, including narrow lanes, lane closures, closures with diversions, etc. These measures would introduce safe working zones (through use of cones and/or safety barriers as appropriate) adjacent to the carriageway as required by Chapter 8 of the Traffic Signs Manual.

4.1.6 A risk-based approach would be taken when choosing and implementing traffic management measures. This would be dependent on several factors including but not limited to traffic counts, types of traffic, WCH interface, nearby points of interests (e.g. schools) and will include engagement with relevant authorities.

4.1.7 Where traffic signals or similar are required to facilitate construction movements such as access to compounds and construction vehicle crossing points, they will be locally controlled to ensure that the LRN has priority in terms of traffic movements additionally when not required operationally the traffic signals will be turned off.

4.1.8 Traffic signal-controlled pedestrian crossing points or similar would be provided where appropriate (i.e. based on road usage, safety considerations, pedestrian usage etc.).

4.2 Access routes

4.2.1 Establishing access routes to the works has been an iterative process, involving stakeholders and changes to design. The key principle during development was to avoid or reduce as far as reasonably practicable the use of the LRN for construction traffic.

4.2.2 The main works routes have been revised and refined on the basis of reasons including the following:

a. Numerous site visits have allowed the determination of suitable roads for short-term or long-term use and the safety implications of using such routes.

b. Stakeholder meetings and public consultations have highlighted issues which have been fed back into the Project development.

c. Discussions with internal and external stakeholders have highlighted sensitive areas and roads.

d. Traffic assessments, using the Project's transport model, have helped predict the impact of the Project's construction on the road network.

4.2.3 The use of the LRN has been reduced by the following proposals:

a. Early construction of temporary offline haul routes directly off the SRN where possible

b. Maximum use of internal haul routes to gain access to worksites

c. Engagement with local businesses to establish access via private roads

4.2.4 Haul routes have been proposed within the Order Limits to connect the SRN directly to the work sites where possible. While these are constructed early in the programme, traffic would need to utilise the local road network.

4.2.5 Plate 4.1 to Plate 4.4 show indicative HGV routes which would facilitate main works. Note these figures are indicative and a snapshot in time during the works. Plate 4.1 below shows main works compounds:

a. CA1 – near Gravesend East junction

b. CA2 – near the A2 and Thong Lane

c. CA3 – north of the dashed line (part of CA3)

4.2.6

4.2.7 There are various types of access routes associated with main works activities. These are:

a. 'Short-term – Online - Main' routes shown would be used for initial access, primarily for site setup works. Once the appropriate offline accesses are created, the short-term routes would not be used for HGV construction traffic other than for very specific works (e.g. any remaining utility works). The temporary offline access routes are programmed to be constructed early in the programme to minimise the use of the local road access where possible. It is envisaged offline access routes would be available within several months, but all are scheduled to be completed no later than two years after start of construction.

b. ‘Long-term – Online – Main’ routes are primarily part of the SRN and would be used by HGV construction traffic throughout the construction period.

c. ‘Construction Routes - Offline - Main’, also known as haul routes, are offline routes constructed temporarily to facilitate the construction works and in most cases allow access to the worksite directly from the SRN thereby reducing the need to use the LRN. Note, the offline access routes shown are indicative and represent a snapshot in time; they would evolve in line with the surrounding construction works.

d. ‘Secondary’ routes would be used by HGV construction traffic throughout construction, but would be used far less frequently than the other routes.

e. ‘Emergency’ routes would be used in the case of an emergency. They would not be used in any other instance by HGV construction traffic (i.e. including during wider network issues). It is therefore possible the route would not be used at all during the construction period.

f. ‘Crossing’ locations shown are indicative locations where the haul route bisects the local road network, thereby creating a need for a construction crossing point. Crossing points would be in place with traffic signals or similar for a period of time during the works to allow construction traffic to cross the local road network. Once new local road overbridges are completed (proposed as part of the permanent works) and an access under the bridge is created, these crossing point traffic management measures would no longer be required and would therefore be removed.

g. ‘Main Works Construction Compound’ illustrates the proposed temporary construction compound area which would generally encompass hardstanding for construction offices, welfare facilities, plant and material storage among others, to facilitate construction. In most compounds, the area would also contain provision for holding construction traffic (thereby reducing risk of queuing on the road network) as well as earthworks stockpile.

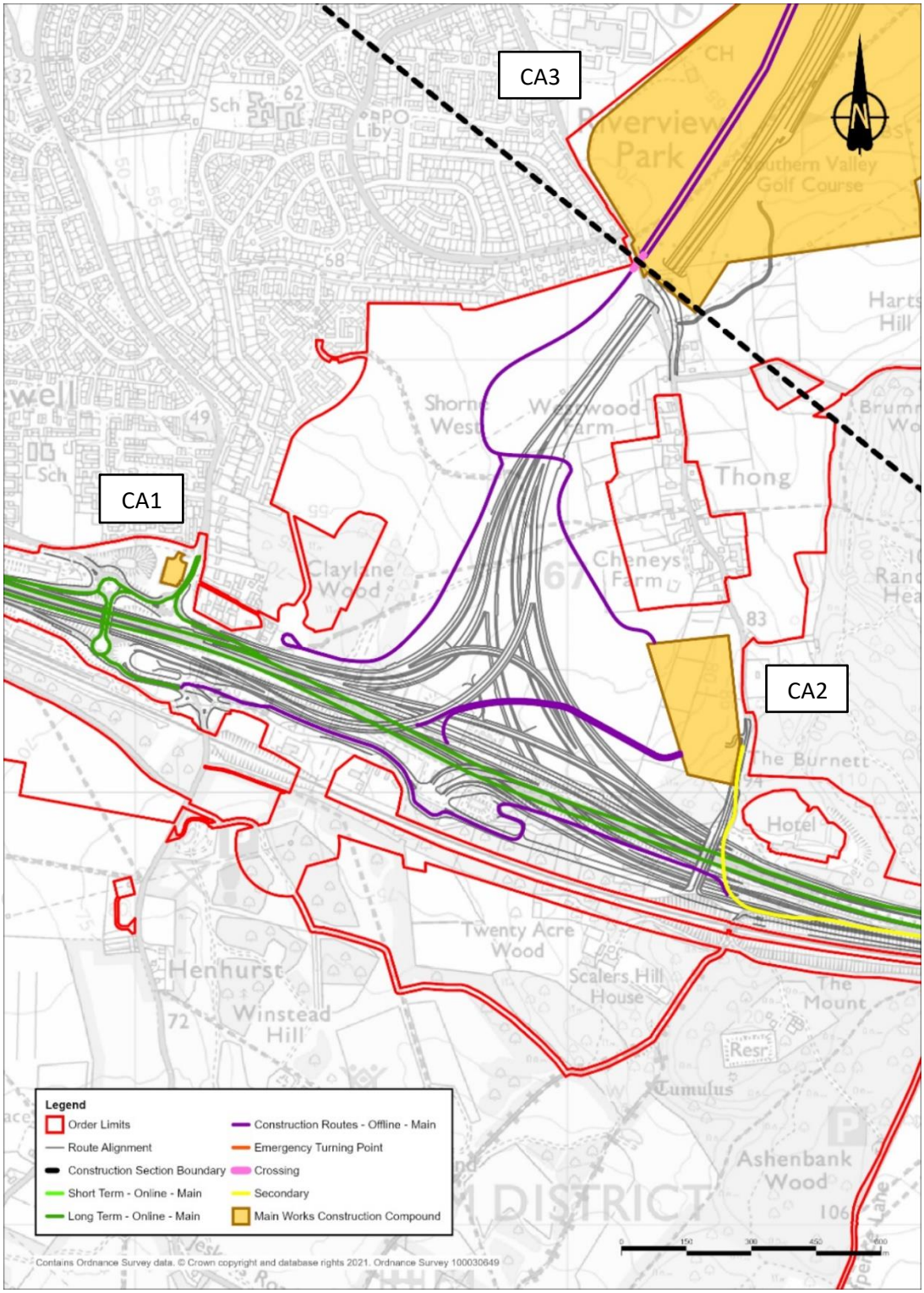
4.2.8 Plate 4.1 below shows main works compounds:

h. CA1 – near Gravesend East junction

i. CA2 – near the A2 and Thong Lane

j. CA3 – north of the dashed line (part of CA3)

Plate 4.1 Compounds and HGV construction traffic routes (A2 to Thong Lane over LTC)



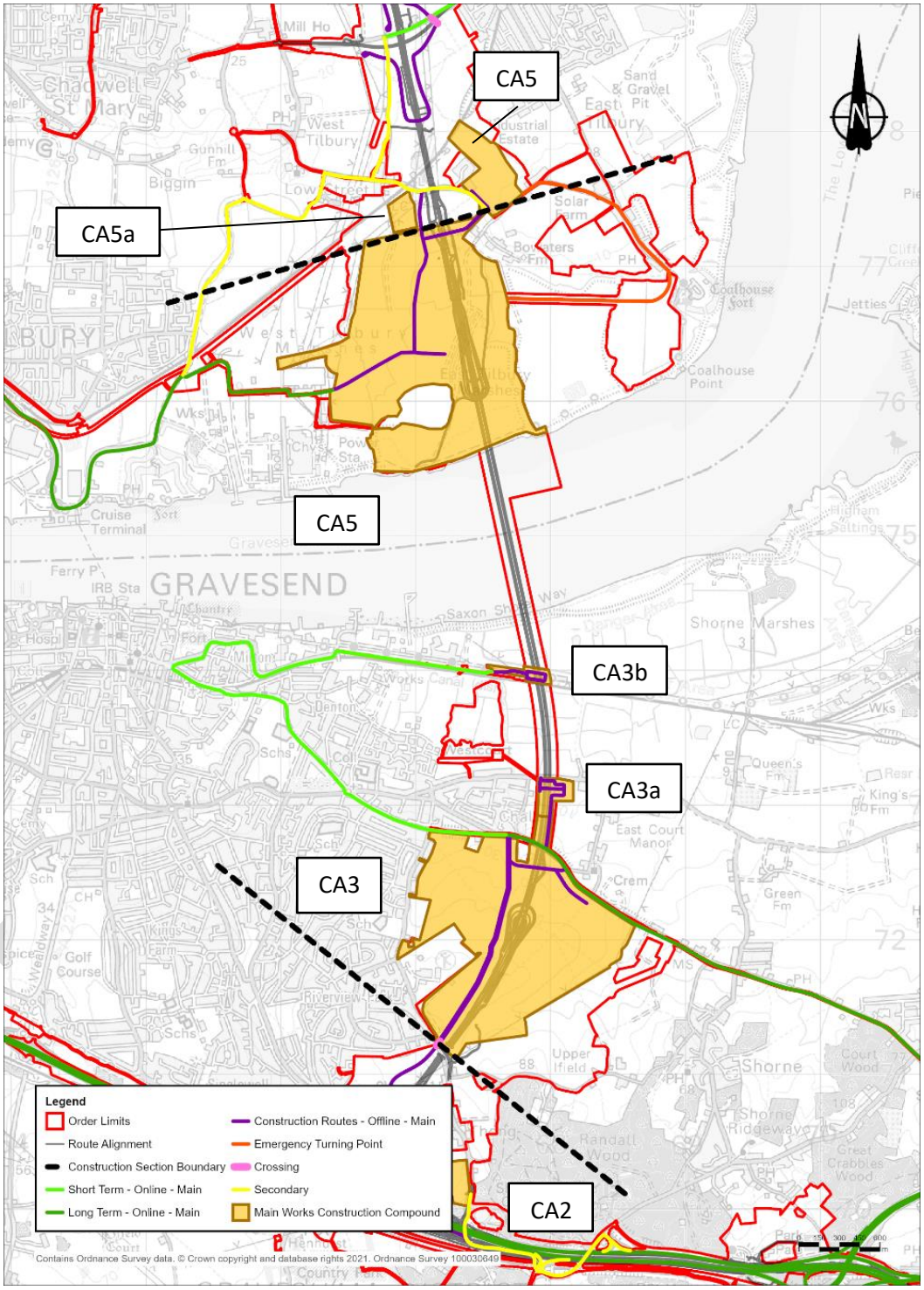
4.2.9 Plate 4.2 below shows main works compounds:

a. CA3 – around proposed southern tunnel portal

b. CA5 – around proposed northern tunnel portal (including the section between the dashes line and tilbury loop line, east of the Project alignment)

c. CA5a – between dashed line and tilbury loop line (west of the Project alignment)

Plate 4.2 Compounds and HGV construction traffic routes (South Portal to North Portal)



4.2.10 Plate 4.3 below shows main works compounds:

a. CA5 – around proposed northern tunnel portal (including the section between the dashes line and tilbury loop line, east of the Project alignment)

b. CA5a – between dashed line and tilbury loop line (west of the Project alignment)

c. CA6 – south of the A13 and east of the A1089 near Brentwood Road

d. CA7 – south of the A13 and east of the A1089 near the A1013

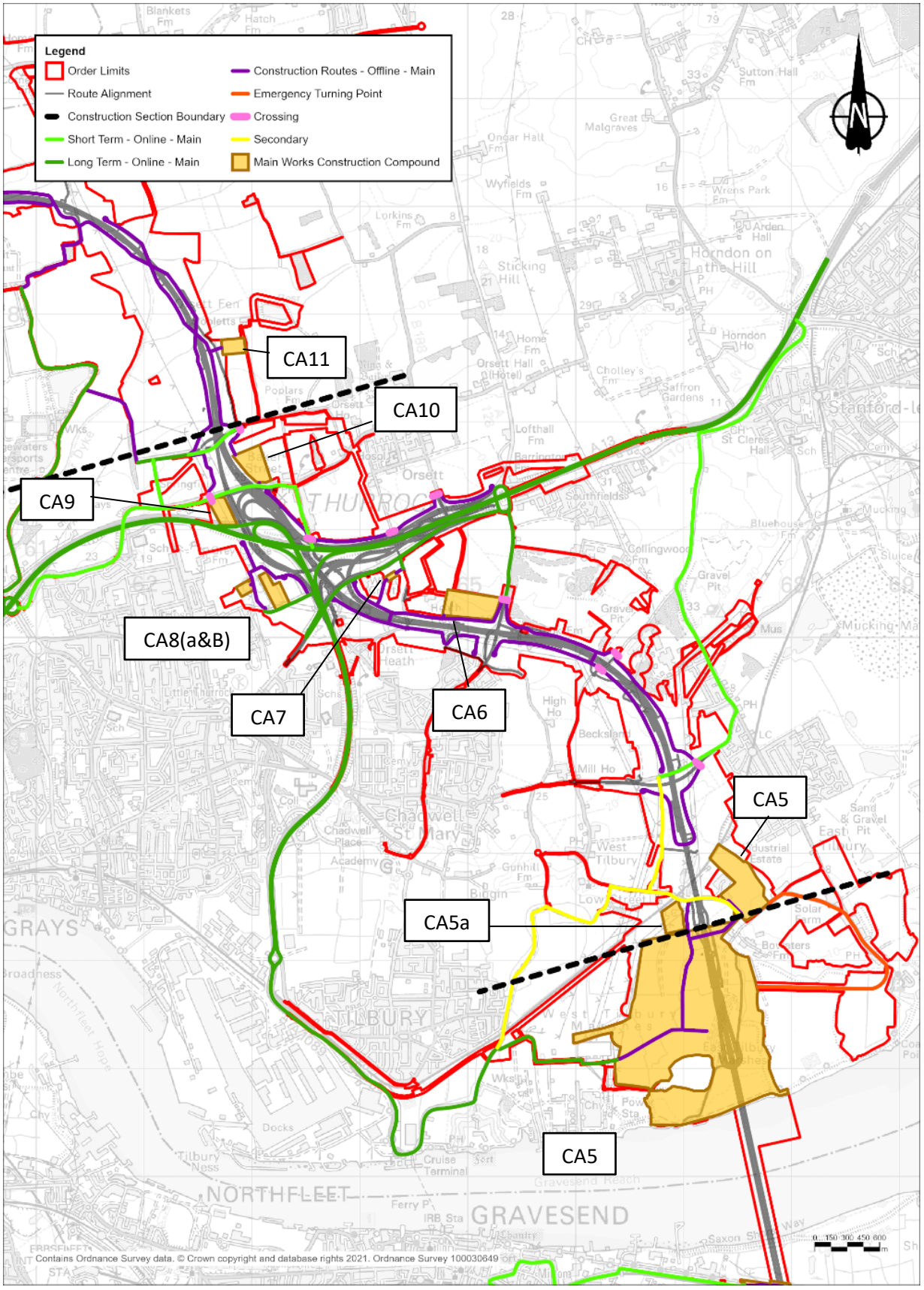
e. CA8(a&b) - south of the A13 and west of the A1089

f. CA9 – north of the A13 and west of the Project alignment

g. CA10 – north of the A13 and east of the Project alignment

h. CA11 – north of the A13, east of the Project alignment near Fen Lane

Plate 4.3 Compounds and HGV construction traffic routes (North Portal to A13)



4.2.11 Plate 4.4 below shows main works compounds:

a. CA9 – north of the A13 and west of the Project alignment

b. CA10 – north of the A13 and east of the Project alignment

c. CA11 – north of the A13, east of the Project alignment near Fen Lane

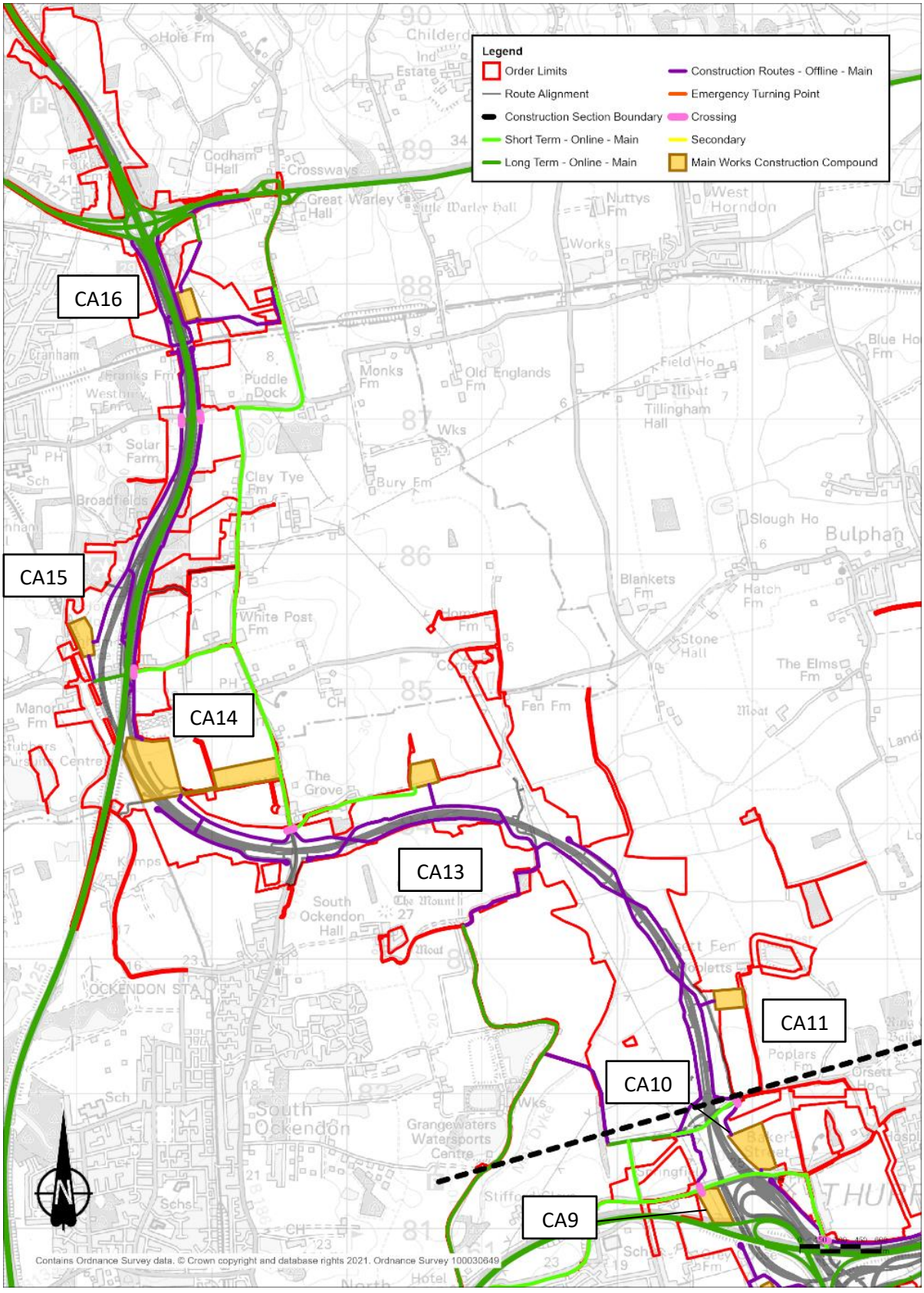
d. CA13 – north of the Project alignment in an open field

e. CA14 – just east of the M25 and near Ockendon Road

f. CA15 – just west of the M25 and near Ockendon Road

g. CA16 – just east of the M25 and near the A127

Plate 4.4 Compounds and HGV construction traffic routes (A13 to M25)



4.3 Proposed Utility Access Routes

4.3.1 Plate 4.5 to Plate 4.8 show the additional access routes associated with utility works (in addition to the main works access routes) and the proposed utility logistic hubs (ULH) locations.

4.3.2 There are two types of utility access route identified:

a. ‘Utilities Online Access’ – These are access routes using the existing road network. The routes would access specific utility works areas.

b. ‘Utilities Offline Access’ – These are access routes off the road network. In several cases these are ‘spurs’ off the main works offline haul routes. The routes would be used to access utility logistic hubs and/or specific utility works areas.

c. ‘Utilities Logistic Hub’ - illustrates proposed utility logistic hub areas which would generally receive, store, and distribute the plant machinery and materials for specific utility works. They may include offices, welfare facilities, refuelling stations, security hubs, vehicle/wheel washing sites and parking areas similar in size to the main works satellite compounds

4.3.3 Note that usage of the Statutory Undertaker access routes shown, is envisaged to be very low and infrequent compared with the other routes.

Plate 4.5 Compounds, ULH and HGV construction traffic routes including Utilities (A2 to Thong Lane over LTC)

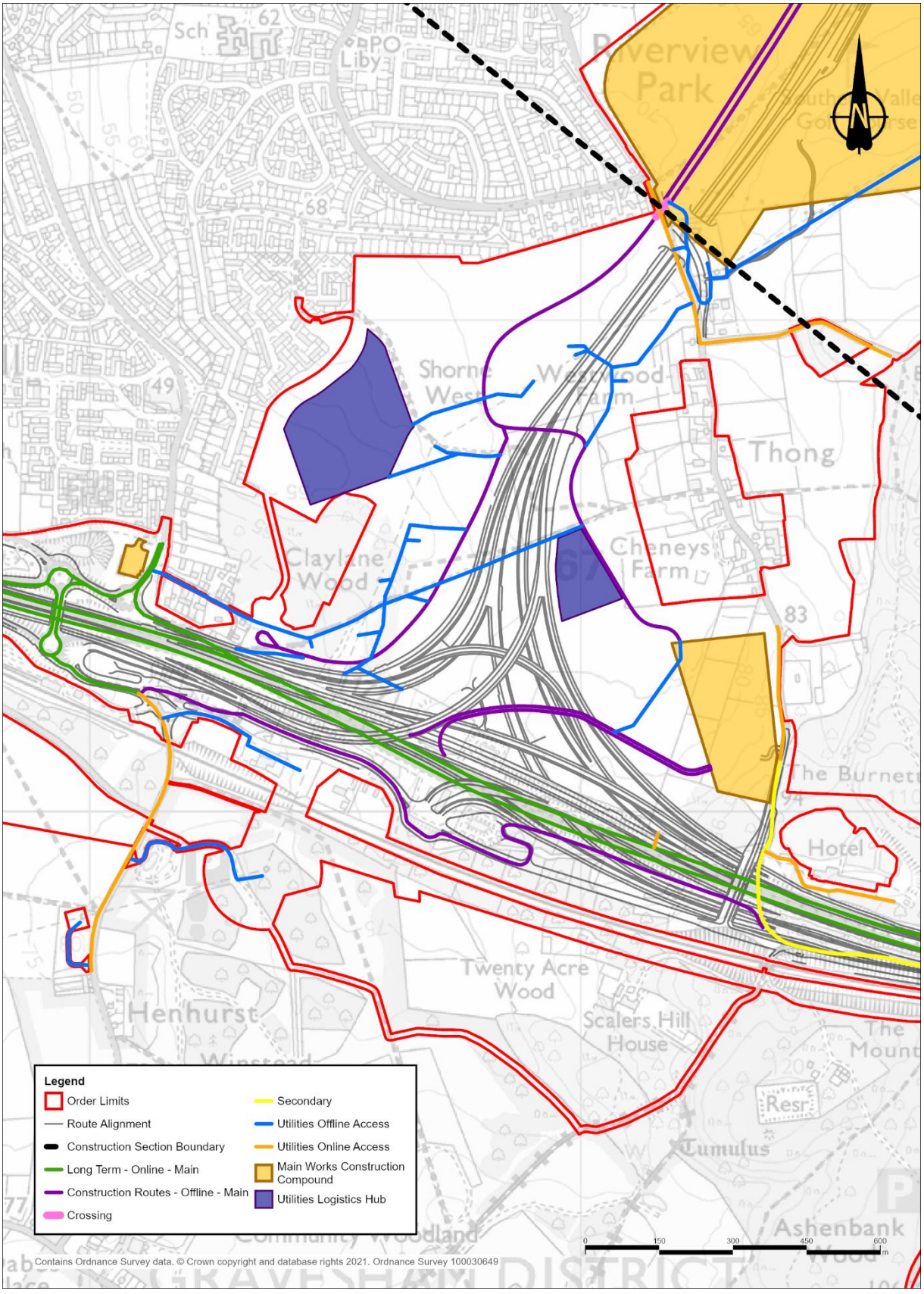


Plate 4.6 Compounds, ULH and HGV construction traffic routes including Utilities (South Portal to North Portal)

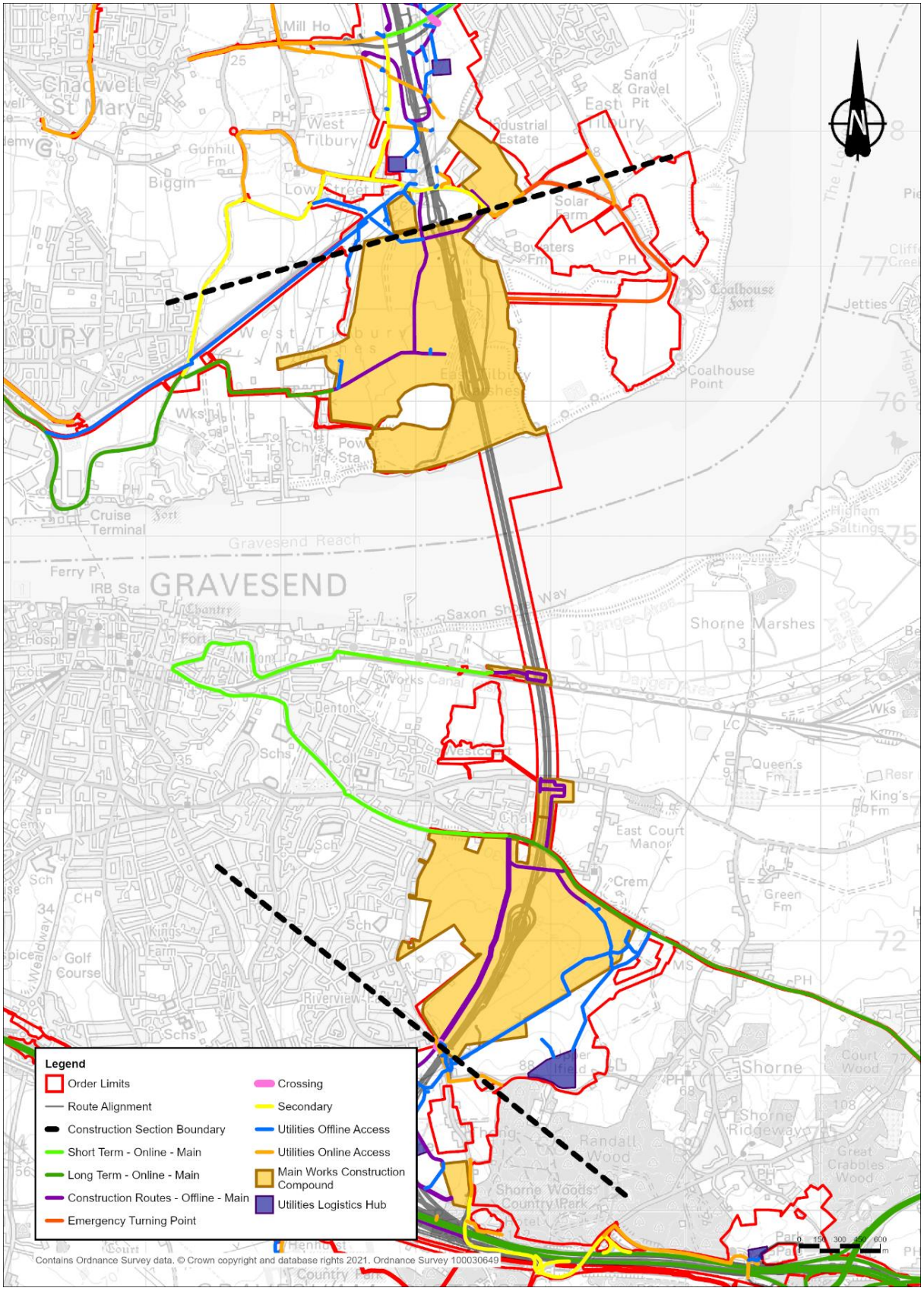


Plate 4.7 Compounds, ULH and HGV construction traffic routes including Utilities (North Portal to A13)

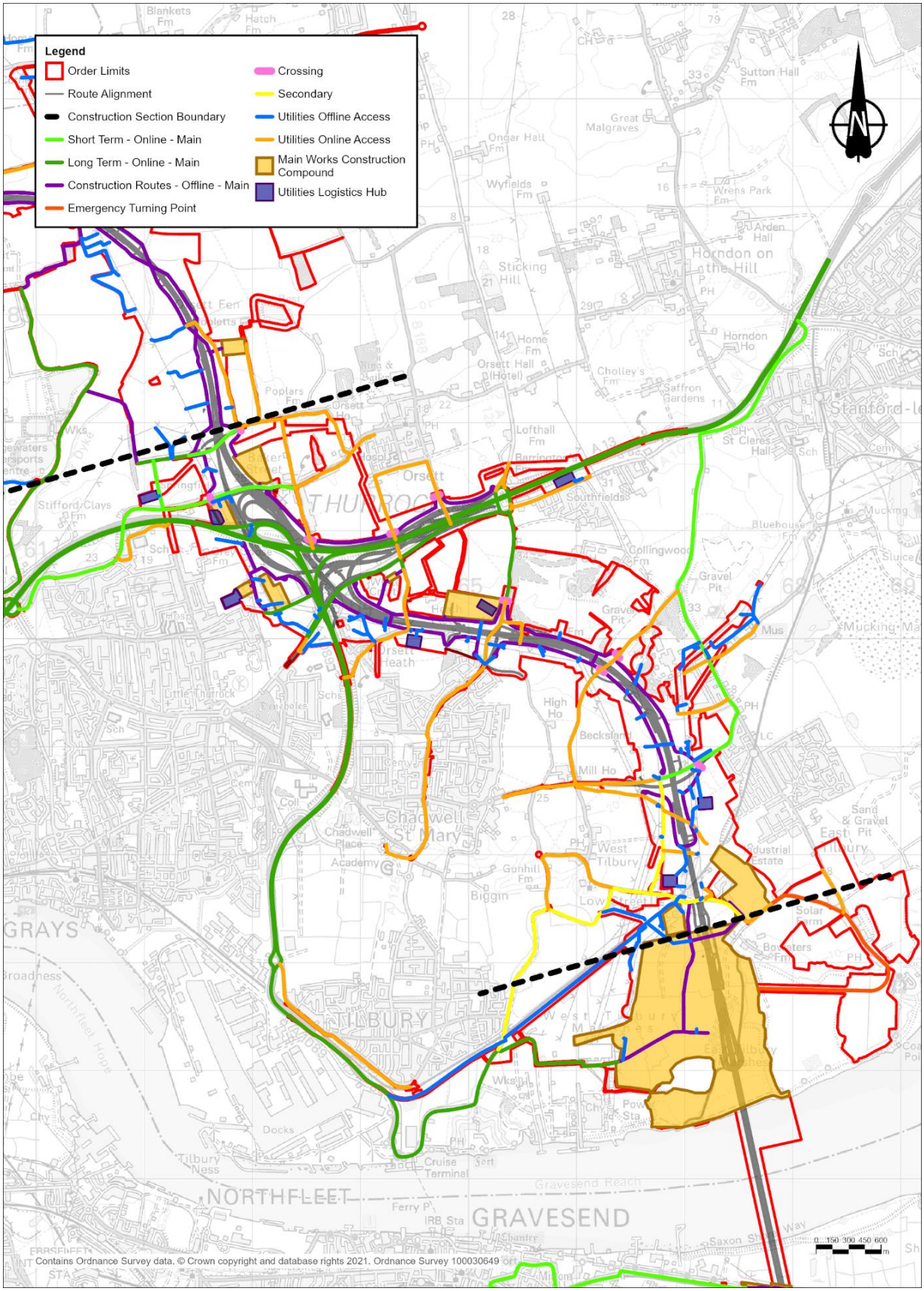
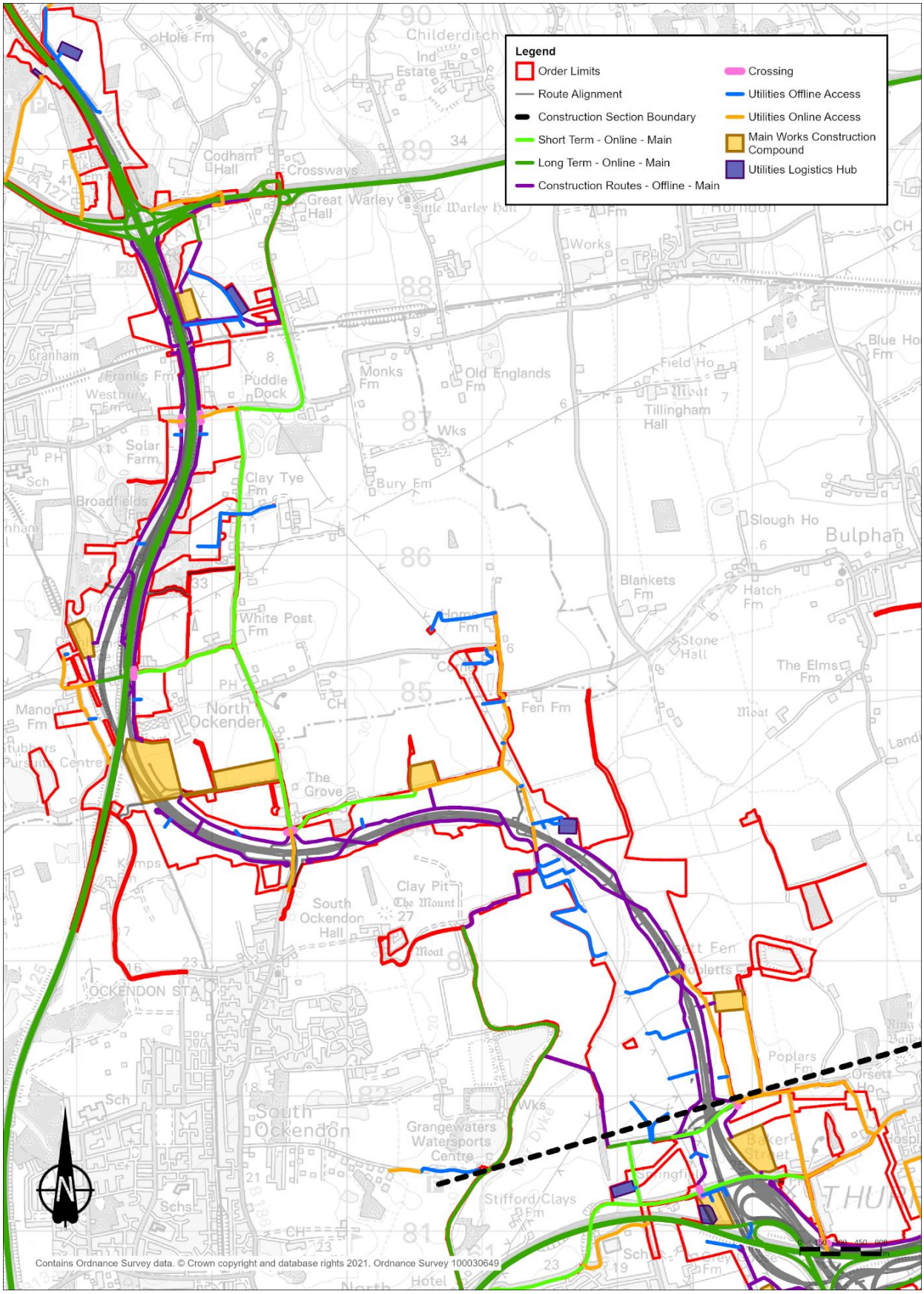


Plate 4.8 Compounds, ULH and HGV construction traffic routes including Utilities (A13 to M25)



4.3.4 Table 4.1 gives information about the proposed access routes (illustrated on Plate 4.1 to Plate 4.4 to each of the compounds. Primary access routes in some instances would have two phases, an initial access route (generally prior to construction of offline routes) and a following primary access route arrangement (post construction of the associated offline route).

4.3.5 Initial access (short-term) would be in place up to two years as mentioned previously, however Table 4.1 outlines an indicative period the offline route is likely to become available for each compound (in several instances the local road network may only be required for less than a year). It should be noted the durations are indicative approximations. Once the Contractor is appointed, detailed design would confirm the durations.

4.3.6 Compounds would be used to facilitate specific geographical works. The scopes of these works differ, therefore the operational period of each compound would also differ. The duration outlined in Table 4.1 is for the operational period of the compound (including mobilisation and demobilisation). Main compounds would generally be required for the full construction period (CA2, CA3, CA5, CA10 and CA14). Secondary routes are also shown for those compounds which would have them.

Table 4.1 Illustrative construction compound access routes (HGV Traffic)

Compound	Primary route	Primary duration	Secondary route
CA1 (Marling Cross compound)	Watling Street (A2) – Hever Court Road – Valley Drive	Full period compound is operational	
CA2 (A2 compound)	Watling Street (A2EB) (via Gravesend East junction northern roundabout)	Full period compound is operational	Brewers Road and Thong Lane (south of Thong village) via A2 slip roads
CA3 (Southern tunnel entrance compound)	A2 – A289 – Gravesend Road (A226)	Full period compound is operational	
CA3a (A226 Gravesend Road compound)	A226	Full period compound is operational	
CA3b (Milton compound)	A226 – Milton Road – Ordnance Road – Canal Road – Norfolk Road – Thames and Medway Canal	Full period compound is operational	

Compound	Primary route	Primary duration	Secondary route
CA5 (Northern tunnel entrance compound) & CA5a (Station road compound	A13 – A1089 – Fort Road – offline access route (new Port of Tilbury2 access road also to be used)	Full period compound is operational	Fort Road – Coopers Shaw Road – Church Road – Station Road. And/or A1013, Buckingham Hill Road, Muckingford Road, Low Street Lane, Station Road (only short-term, initial 9-12 months)
CA6 (Brentwood Road compound)	A13 – Brentwood Road	Full period compound is operational	
CA7 (Stanford Road compound)	A1013 – Hornsby Lane and A13 – Brentwood Road – offline route	Full period compound is operational	
CA8(A&B) (Long Lane compound (A&B))	A13 – A1013 – Gammonfields Way	Full period compound is operational	
CA9 (Stifford Clays Road compound West)	A13 – Stifford Clays Road (initial) A13 – private road – offline route – Green Lane – offline route and via temp M25 offline access routes (once available)	Initial – first 6-12 months Remaining period compound is operational	
CA10 (Stifford Clays Road compound East)	A13 – Stifford Clays Road (initial) A13 – private road – offline route – Green Lane – offline route and via temp M25 offline access routes (once available)	Initial – first 6-12 months Remaining period compound is operational	
CA11 (Mardyke compound)	Stifford Clays Road – Green Lane (initial) A13 – private road – offline route – Green Lane – offline route and via temp M25 offline access routes (once available)	Initial – first 6-12 months Remaining period compound is operational	

Compound	Primary route	Primary duration	Secondary route
CA13 (Medebridge compound)	A127 – Warley Street (B186) – St Marys Lane (B187) – Clay Tye Road (B186) – North Road (B186) – track (initial) A13 – private road – offline route and via temporary M25 offline access routes (once available)	Initial – first 9-12 months Remaining period compound is operational	
CA14 (M25 compound)	A127 – Warley Street (B186) – St Marys Lane (B187) – Clay Tye Road (B186) – North Road (B186) (initial) M25 temporary access – offline route	Initial – first 12-24 months Remaining period compound is operational	
CA15 (Ockendon Road compound)	A127 – Warley Street (B186) – St Marys Lane (B187) – Clay Tye Road (B186) – North Road (B186) – Ockendon Road (initial) M25 temporary access – offline route	Initial – first 12-24 months Remaining period compound is operational	
CA16 (Warley street compound)	A127 junction – Warley Street (B186) – offline route and M25 junction 29 – offline route	Full period compound is operational	

4.3.7 The routes to site mentioned in this section would be adhered to as far as reasonably practicable. It is understood through discussion with local authorities that in some specific instances where heavy disruption and/or incidents occur on the network, vehicles may need to choose an alternative route. This would mainly be the case for specific, time-critical work activities (e.g. delivery of wet concrete).

4.3.8 Alternative routes would be contained in the TMP submitted to the SoS following consultation with the local authorities.

4.4 Speed limits (SRN and LRN)

4.4.1 Traditionally, narrow lanes within roadworks on the SRN have been accompanied by a maximum speed reduced to 50mph. The Project would seek to retain 60mph where appropriate and where it is safe to do so.

4.4.2 LRN speed limits will be retained subject to the outcomes of discussions with local highway authorities.

4.5 Lengths of traffic management measures (in distance and duration)

4.5.1 To reduce the impact on local road users, the length of traffic management measures installed would be kept to a minimum and left *in situ* for the shortest duration as far as is reasonably practicable.

4.5.2 Where it is intended for roadworks to be left in place for defined periods without any construction works being undertaken, e.g. a weekend, the Contractors shall assess whether it is reasonably practicable and safe to remove the traffic management equipment during this period.

4.5.3 A full preliminary list of indicative traffic management measures (excluding hard shoulder closures and associated localised traffic management for highway gantries) that may be required to construct the Project can be found in Appendix A. It includes approximate extents of the traffic management to be installed, estimated duration of measure and which construction modelling phase they would be undertaken in.

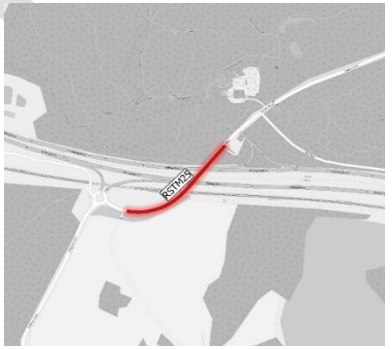
4.5.4 Locations where traffic management measures (as shown in Appendix A) that are generally to be in place for greater than three months, are shown in Table 4.2 and Table 4.3. Table 4.2 sets out the indicative traffic management measures for the main works and Table 4.3 sets out the indicative traffic management measures associated with the utility works. Wherever practicably possible, traffic management would be shared by main works and utilities works so as to minimise disruption to the travelling public and local communities.

4.5.5 Where there is a need to install extended lengths of traffic management such as longitudinal trenches, the default length would be 300m sections. The exact length would be determined in the TMP taking into consideration local accessibility, traffic volumes, pedestrian movements and local safety considerations.

4.5.6 The power to impose the traffic management measures listed below will be included within the schedule of the draft DCO (REF TBC) which sets out temporary restrictions, closures, alterations and other regulations of streets. It should be noted that the DCO will also include a general power to temporarily close, alter, divert or restrict the use of any street but this will be subject to street authority approval.

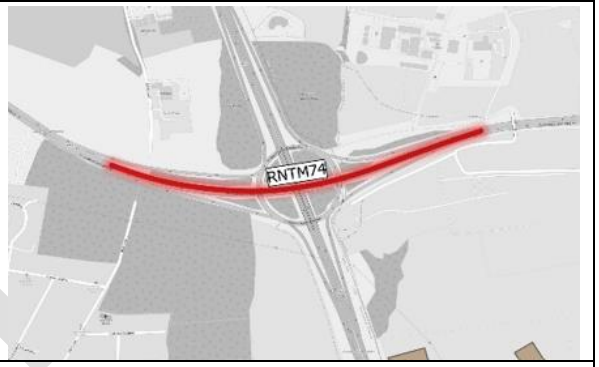
Table 4.2 Indicative traffic management measures (main works)

Road	Traffic Measure envisaged	Diversion route	Envisaged length of TM	Description	Indicative location of TM
Gravesend East junction	Narrow lanes, lane closures and short-term closures	N/A	Includes Gravesend East junction extents	To facilitate the works on and around Gravesend East junction, lane restrictions on the gyratories would be imposed for approximately 9-14 months. The works around Gravesend East junction (particularly north of the A2) are scheduled to be conducted early in the programme. The southern roundabout is envisaged to start early in the programme and be completed late in the programme (due to ensuring existing connections are maintained). As a result there is likely to be a period of time where little or no activity would take place. During this time, traffic management restrictions would be lifted, however a temporary alignment would be in place which would facilitate existing movements.	 

Road	Traffic Measure envisaged	Diversion route	Envisaged length of TM	Description	Indicative location of TM
A2	Narrow lanes, hard shoulder closure, reduced speed limit to 50mph	N/A	Circa 4.5km on each carriageway (9km total for westbound (WB) and eastbound (EB)	To facilitate the construction of the new junction and widening works. Traffic management on the A2 would be required for approximately two years during the construction period. Note, hard shoulder closure would also be required outside this two-year period.	
Brewers Road Bridge	Closure (bridge only)	Via Three Crutches roundabout and Gravesend East junction	Circa 300m	The proposed closure of Brewers Road would be required as the alignment of the new bridge is the same as for the existing bridge meaning there is no alternative but to close the road. Although access to Cobham Hall School and Nook Pet Hotel would not be directly affected, there would be an increase in journey times due to the diversion route. The closure is envisaged to be 19 months.	
A13	Narrow lanes, reduced speed limit to 60mph	N/A	Circa 1.2km	Narrow lanes may be required for tie-in and widening works. It is envisaged the EB and WB carriageways would be constructed at different times in the programme. The duration would be approximately three months for each carriageway.	

Road	Traffic Measure envisaged	Diversion route	Envisaged length of TM	Description	Indicative location of TM
Baker Street	Closure	Via Rectory Road	Circa 450m	Baker Street closure is proposed to allow the safe construction of scheme elements around the A13. The section between the A13 and A1013 would be closed for approximately 16 months. During this time, Rectory Road would remain open. Access from Stifford Clays Road to Baker Street would be available.	
Rectory Road	Closure	Via Baker Street	Circa 70m	The proposed closure of Rectory Road would be required as the alignment of the new bridge is the same as for the existing bridge, meaning there is no alternative but to close the road. The bridge section of Rectory Road would be closed for approximately seven months. During this time Baker Street would be open and access from High Road and School Lane would be available.	

Road	Traffic Measure envisaged	Diversion route	Envisaged length of TM	Description	Indicative location of TM
Ockendon Road	Closure	Via B186, West Road, Dennis Road, Dennises Lane and Stubbers Lane	Circa 150m	The section of Ockendon Road approximately between the rail bridge and the existing properties would be required for around 19 months. It would be required to allow construction of scheme elements as well as to ensure safe management of significant earthworks in the area to reduce interface between construction and the public.	
M25	Narrow lanes, hard shoulder closure, reduced speed limit to 50/60mph	N/A	Circa 5.1km northbound (NB) and circa 5.8km southbound (SB)	To facilitate works on the M25, traffic management would be required throughout the construction period on the M25NB (left image) and M25SB (right image).	

Road	Traffic Measure envisaged	Diversion route	Envisaged length of TM	Description	Indicative location of TM
A127	Narrow lanes, reduced speed limit to 50/60mph	N/A	Circa 400m each carriageway (800m total EB and WB)	To facilitate works around the M25 J29. Traffic management would be required throughout the construction period.	
A2, A127, A1089, A1013, A13, M25	Multiple night closures, several weekend or similar closures	N/A	See Appendix A	Multiple night and possibly weekend closures required throughout the programme for specific works including bridge works, tie-in works, utilities etc	See Appendix A
Local roads intersecting the Project mainline	Traffic lights, night closures and weekend closures	N/A	See Appendix A	Construction offline access (haul route) would generally follow the Project mainline trace and in some instances would cross the local road network. In such instances, traffic lights or similar would be used to allow construction vehicles to cross. For the local roads, once the new overbridge for the local road is constructed, it is possible in many instances to then remove these traffic control measures by allowing construction vehicles to cross under the overbridge. Overbridge construction programme for local roads would	See Appendix A

Road	Traffic Measure envisaged	Diversion route	Envisaged length of TM	Description	Indicative location of TM
				be prioritised based on traffic counts where possible. Infrequent night/weekend closures of local roads would be required to carry out specific works (e.g. bridge works, tie-in works, utility works).	

Table 4.3 Indicative traffic management measures (utilities-specific)

Road	Traffic Measure envisaged	Diversion route	Envisaged length of TM	Description	Indicative location of TM
Park Pale & Brewers Road junction	Lane closure and traffic lights. Potential short-term closure	N/A	Brewers Road A2 Bridge to Park Pale Overbridge (1.3km of affected road (in 300m sections))	The works are to divert a gas main. Reduced highway capacity in sections due to traffic management measures. Park Pale would not be closed for longer than a night/weekend. Closures would be minimal and infrequent. The works are scheduled to be conducted early in the programme and take approximately six months to complete.	

Road	Traffic Measure envisaged	Diversion route	Envisaged length of TM	Description	Indicative location of TM
Halfpence Lane	Lane closure and traffic lights. Potential short-term closure	N/A	1.1km from Brewers Road Roundabout South (1.1km of affected road (in 300m sections))	The works are to divert a foul water main. Reduced highway capacity in sections due to traffic management measures. Halfpence Lane would not be closed for longer than a night/weekend. Closures would be minimal and infrequent. The works are scheduled to be conducted early in the programme and take approximately six months to complete. Once the works are completed, all traffic management restrictions would be lifted and no further visits would be required for these works.	
A226 Gravesend Road	Lane closure and traffic lights	N/A	1.3km of affected road (in 300m sections)100m	The works are to establish compound connections for compounds CA3 & CA3a from those assets located within the A226 boundary and to divert existing assets to enable compound access to be constructed.	

Road	Traffic Measure envisaged	Diversion route	Envisaged length of TM	Description	Indicative location of TM
				Reduced highway capacity in sections due to traffic management measures. The works are scheduled to be conducted early in the programme and take approximately nine months to complete.	
Dock Road & Hume Avenue	Lane closure and traffic lights	N/A	1.4km of affected road (in 300m sections)	The works are to install a water main to add resilience to the existing water network. Reduced highway capacity in sections due to traffic management measures. The works are scheduled to be conducted early in the programme and take approximately nine months to complete. Once the works are completed all traffic management restrictions would be lifted and no further visits required for these works.	

Road	Traffic Measure envisaged	Diversion route	Envisaged length of TM	Description	Indicative location of TM
Coopers Shaw Road	Lane closure and traffic lights. Potential short-term full closure.	N/A	580m of affected road (in 300m sections)	The works are to install the permanent water supply for the North Portal building. Reduced highway capacity in sections due to traffic management measures. The works are scheduled to be conducted early in the programme and take approximately four months to complete. Once the works are completed all traffic management restrictions would be lifted and no further visits would be required for these works.	
Rectory Road, Church Road, Station Road	Lane closure and traffic lights	N/A	1.4km of affected road (in 300m sections)	The works are to install temporary compound supplies. Reduced highway capacity in sections due to traffic management measures. The works are scheduled to be conducted early in the programme and take approximately nine months to complete. Once the works are completed all traffic	

Road	Traffic Measure envisaged	Diversion route	Envisaged length of TM	Description	Indicative location of TM
				management restrictions would be lifted. Potentially further visits required to remove these works near project completion.	
Marshfoot Road, Chadwell Hill, Brentwood Road	Lane closure and traffic lights	N/A	2.4km through Chadwell St Mary. (2.4km affected road (in 300m sections))	The works are to install power supplies for the Project compounds located around the A13 junction (CA6-CA11). Reduced highway capacity in sections due to traffic management measures. The works are scheduled to be conducted first in the programme and take approximately 12 months to complete. Once the works are completed all traffic management restrictions would be lifted. Potentially further visits required to remove these works near project completion.	

Road	Traffic Measure envisaged	Diversion route	Envisaged length of TM	Description	Indicative location of TM
Muckingford Road	Lane closure and traffic lights	N/A	2km of affected road (in 300m sections)	The works are to divert utility assets affected by the Project that currently run adjacent to the highway and also carry out widening works for WCH. Reduced highway capacity in sections due to traffic management measures. The works are scheduled to be undertaken in Year 2 of the programme and take approximately six months.	
Brentwood Road	Lane closure and traffic lights	N/A	800m south from Orsett Cock Roundabout. (800m of affected road (in 300m sections))	The works are to install temporary supplies for Project compound CA6. Reduced highway capacity in sections due to traffic management measures. The works are scheduled to be conducted early in the programme and take approximately six months to complete. Potentially further visits required to remove these works near project completion.	

Road	Traffic Measure envisaged	Diversion route	Envisaged length of TM	Description	Indicative location of TM
A1013	Lane closure and traffic lights	N/A	2.5km of affected road (in 300m sections)	The works are to install utility assets and carry out works to the A1013 as part of the Project. In some cases, lane closure may not be required where the road width permits. The works are scheduled to take approximately eight months to complete.	
Baker Street	Lane closure and traffic lights	N/A	550m of affected road (in 300m sections)	The works are to install a telecommunications network for the full length and an electrical network for the southern 150m. Reduced highway capacity in sections due to traffic management measures. The works are scheduled to take approximately five months to complete.	
B188, Stifford Clays Road	Lane closure and traffic lights	N/A	900m of affected road (in 300m sections)	The works are to install a permanent telecommunications network and provide a network supply for Project compounds. Reduced highway capacity in sections due to traffic management measures.	

Road	Traffic Measure envisaged	Diversion route	Envisaged length of TM	Description	Indicative location of TM
				The works are scheduled to be conducted first in the programme and take approximately six months to complete. Once the works are completed all traffic management restrictions would be lifted.	
Stifford Clays Road	Lane closure and traffic lights	N/A	450m of affected road (in 300m sections)	Works are to install discharge connections to the foul water network. Reduced highway capacity in sections due to traffic management measures. The works are scheduled to be conducted first in the programme and take approximately four months to complete. Potentially further visits required to remove these works near project completion.	

Road	Traffic Measure envisaged	Diversion route	Envisaged length of TM	Description	Indicative location of TM
Fen Lane & Green Lane	Temporary full closure (in sections)	N/A	1.8km of affected road (in 300m sections)	Works are to install compound supplies and discharge connections to the foul water network. Highways closures in approximate 300m sections due to traffic management measures. The works are scheduled to be conducted first in the programme and take approximately nine months to complete. Potentially further visits required to remove these works near project completion.	
B186 North Road	Lane closure and traffic lights	N/A	2km of affected road (in 300m sections)	Works are to install compound and foul water discharge connections. Reduced highway capacity in sections due to traffic management measures. The works are scheduled to be conducted first in the programme and take approximately 12 months to complete. Potentially further visits required to remove these	

Road	Traffic Measure envisaged	Diversion route	Envisaged length of TM	Description	Indicative location of TM
				works near project completion.	
St Marys Lane	Lane closure and traffic lights	N/A	2km of affected road (in 300m sections)	The works are to divert utility assets affected by the Project currently located adjacent to, and within the carriageway. Reduced highway capacity in sections due to traffic management measures. The works are scheduled to be undertaken in Year 1 and 2 of the programme and take approximately nine months to complete.	

4.6 Local road network

4.6.1 To facilitate construction of the Project, sections of the local road network would need to be used for construction activities. While this would be minimised as far as practicable, there is a requirement to use the LRN for a number of reasons, including:

a. Closures (e.g. to carry out tie-in works for new overbridge)

b. Traffic lights (e.g. to carry out utility works on one side of the road)

c. Construction access route (e.g. to access compounds prior to construction of temporary haul routes)

4.6.2 In response to stakeholder requests and to help inform local authorities and other stakeholders, the tables in Appendix B briefly describe the proposed works around the LRN during construction as mentioned in Section 4 and in Appendix A.

4.6.3 Working with the relevant local authorities and stakeholders, it has been proposed to introduce restrictions for HGV vehicles which would be associated with construction of the Project.

4.6.4 Table 4.4 shows the local roads and the proposed restrictions for HGV vehicles associated with construction of the Project. The routes below have been highlighted through discussions with local authorities, with particular focus on roads which may be used as rat-run routes.

Table 4.4 Proposed restrictions for HGVs

Road	Road section	Type of restriction
Thong Lane	Between CA02 access off Thong lane and A226	HGV ban for deliveries and earthworks associated with main works
Brewers Road	Between Park Pale and A226 (including The Ridgeway and Peartree Lane)	HGV ban for all works
Castle Lane	Entire road	HGV ban for all works
The Street	Entire road	HGV ban for all works
Lower Higham Road	Entire road	HGV ban for deliveries and earthworks associated with main works
Rectory Road	From School Lane to Prince Charles Avenue	HGV ban for all works
School Lane	From Mill Lane to Rectory Road	HGV ban for all works
B188 High Road	From Mill Lane to Rectory Road	HGV ban for all works
Prince Charles Avenue	From Rectory Road to A128 Brentwood Road	HGV ban for all works

4.6.5 Further possible restrictions continue to be explored and discussed with stakeholders, including:

a. Stifford Clays Road – Once the relevant offline haul routes are constructed, construction HGV traffic would use the offline haul route thereby reducing or avoiding the need to use Stifford Clays Road.

b. Section of the B186 – Following construction of the temporary access routes off the M25, HGVs would use these to access the worksites directly thereby reducing or avoiding the need to use sections of the B186.

4.7 Selection of diversion routes

4.7.1 The provision of traffic management may require diversion routes to be provided as required. The exact diversion route would be subject to engagement with the relevant authorities during the development of the TMP, working to mitigate the potential for the vehicles to use unofficial diversion routes.

4.7.2 Plate 4.9 to Plate 4.13 are illustrative diversion routes during the proposed longer-term closures outlined in Table 4.2. The red extents on the Plates show the approximate extent of the closure the yellow shows the possible diversion route during the closure.

4.7.3 The diversion route would be determined through discussions with the local authority closer to the time as other factors may need to be taken into account to make the decision (e.g. other works in the nearby area which may be external from the Project works).

Plate 4.9 Brewers Road closure possible diversion route (north to south)

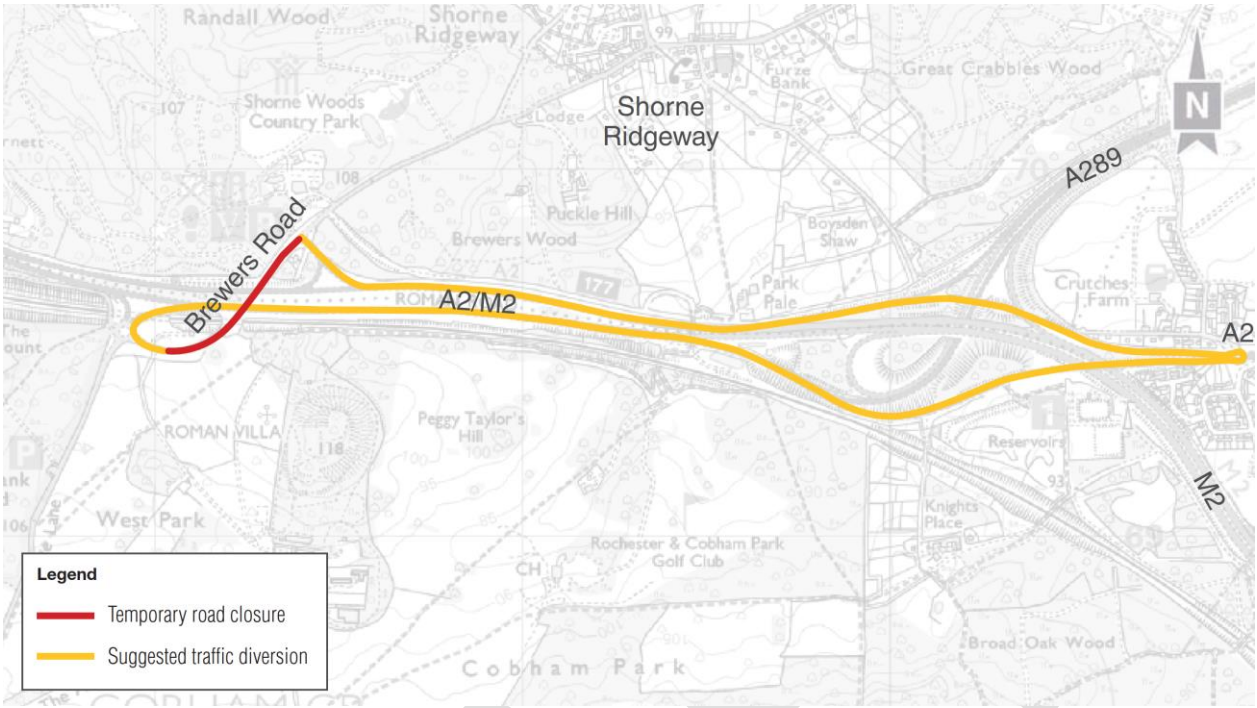


Plate 4.10 Brewers Road closure possible diversion route (south to north)

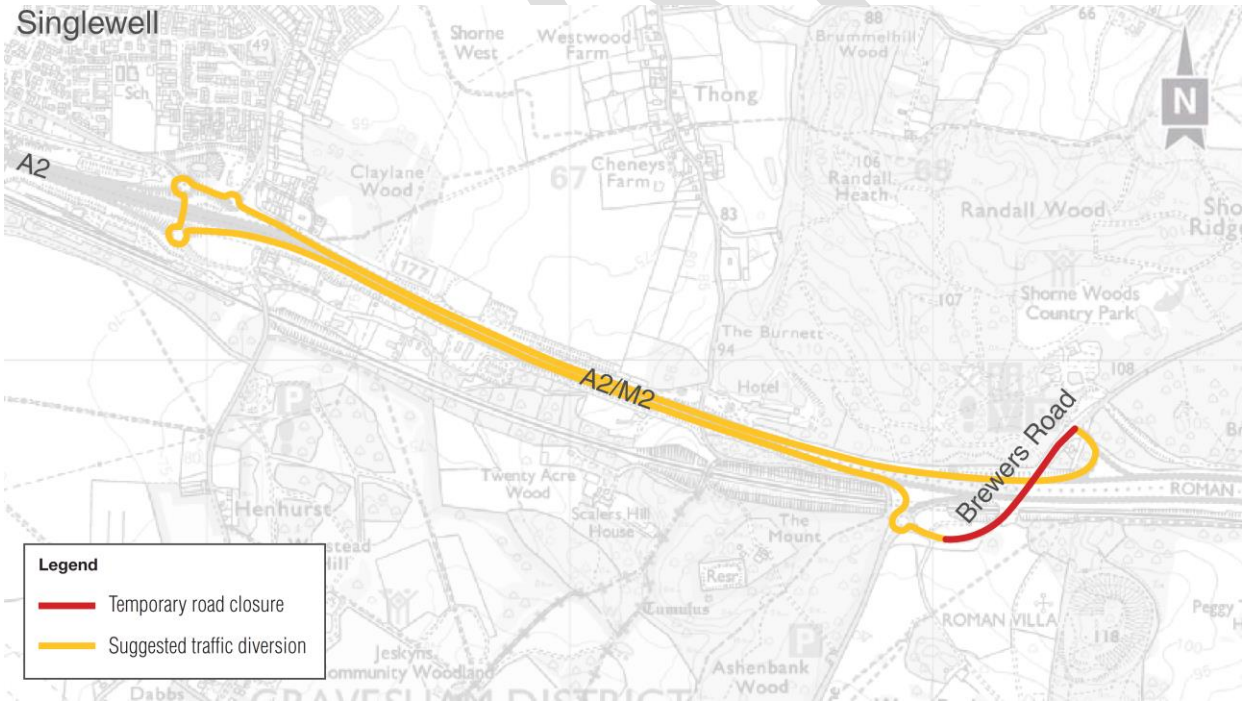


Plate 4.11 Baker Street possible diversion route

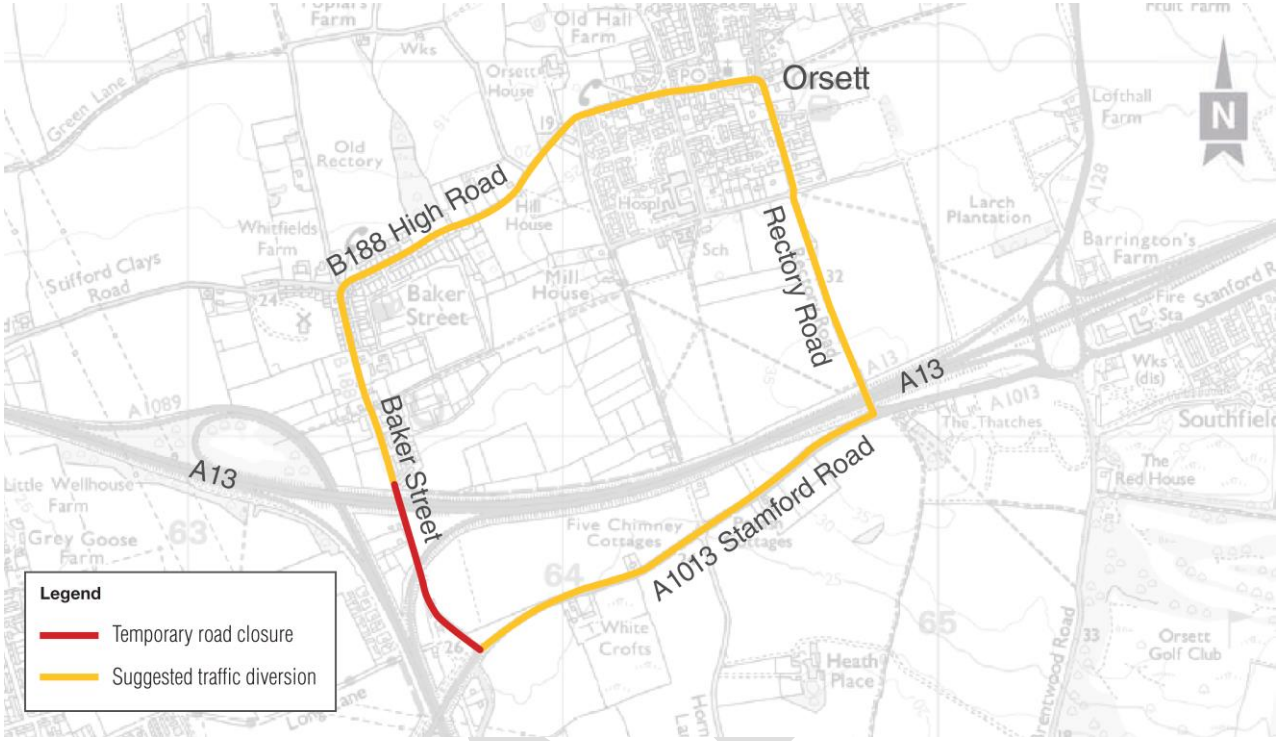


Plate 4.12 Rectory Road possible diversion route

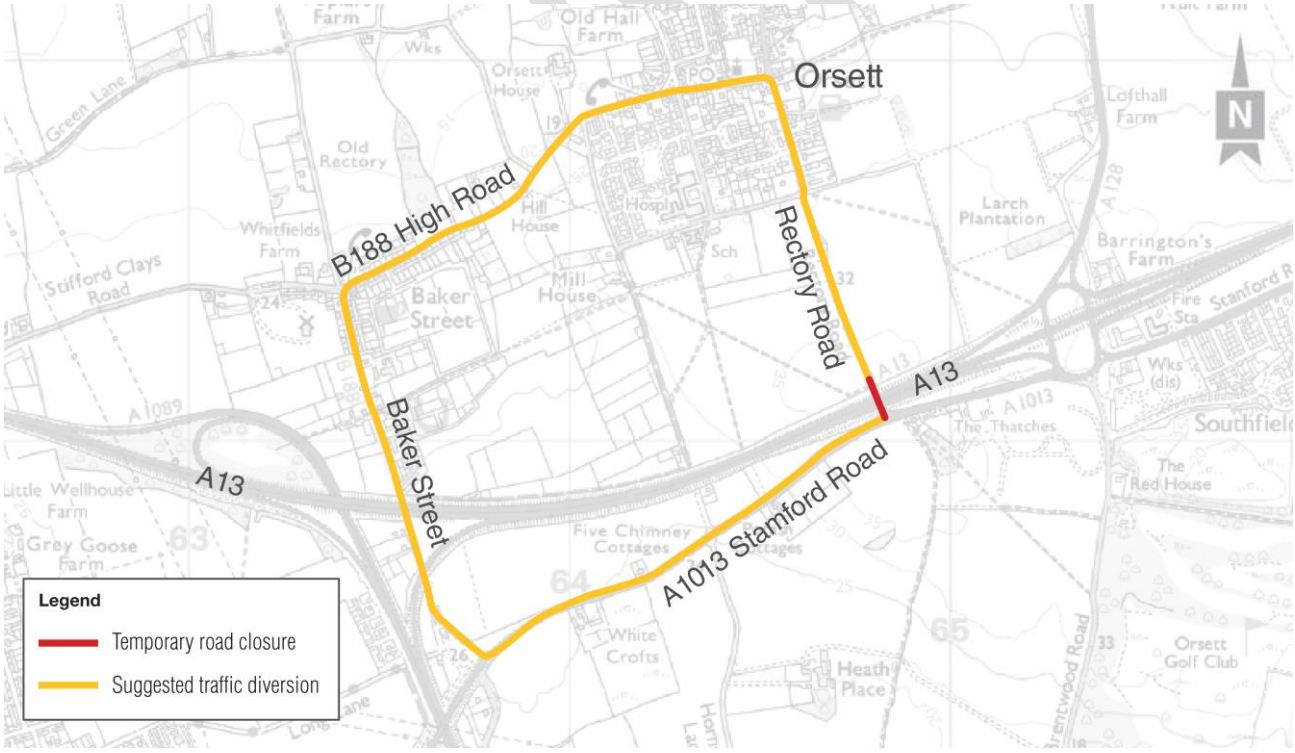
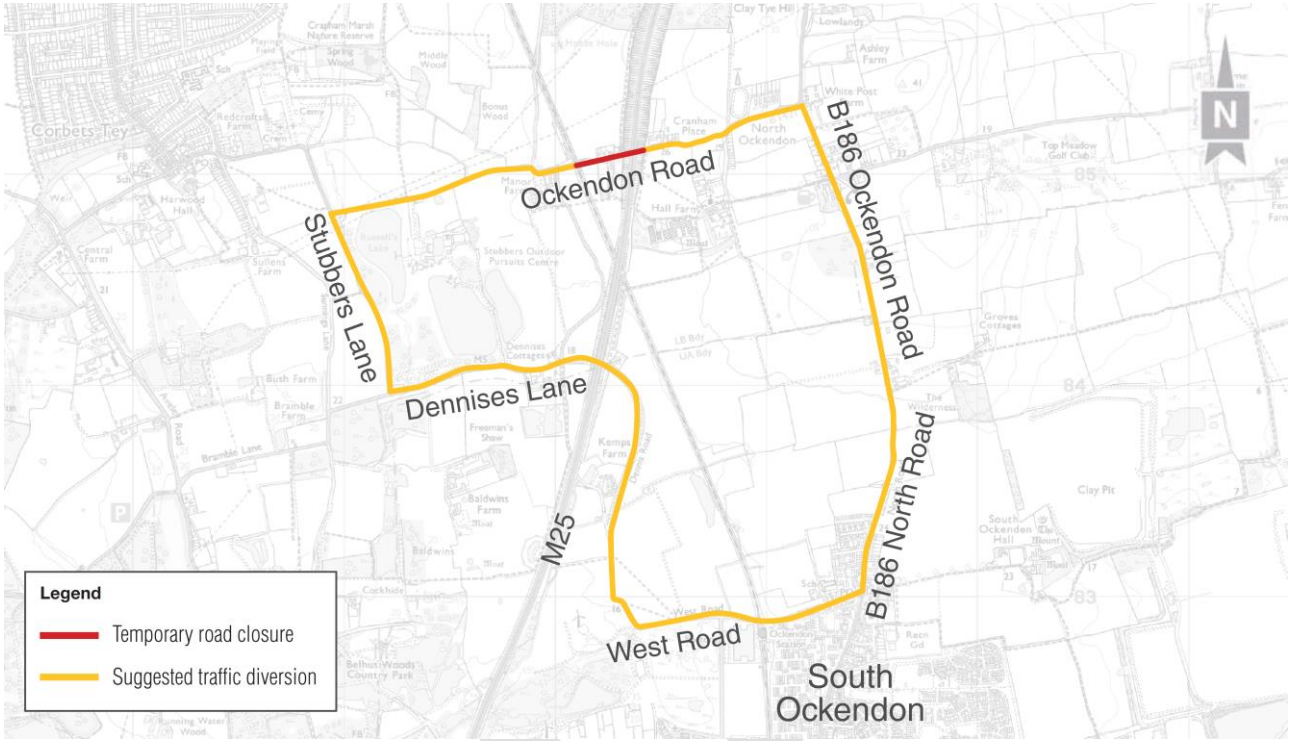


Plate 4.13 Ockendon Road possible diversion route



5 Other considerations

5.1 Public Rights of Way management plan

5.1.1 Article 12, and Schedules 3 and 4 of the draft DCO (REF TBC) will list which PRoWs need to be provided with an alternative diversion route prior to the closure for construction purposes. In some cases, an alternative has been identified. In other cases, the DCO contains a provision which requires Highways England to provide reasonable access for pedestrians going to or from premises abutting a street or private means of access affected by the temporary closure, alteration, diversion or restriction of a street or private means of access under this article if there would otherwise be no such access.

5.1.2 Temporary diversion routes, where required, will be subject to engagement with the relevant authority to ensure the measures put in place are fully informed.

5.2 Adjacent roadworks and other traffic management

5.2.1 Table 5.1 highlights a number of significant projects that may have an interface with the construction of the Project.

Table 5.1 Adjacent projects

Road	Project	Interface
M25	M25 junction 28 Highways England junction improvement scheme	Overlapping traffic management installations Overnight closures and diversion route signing
M25 junction 29 / A127	Brentwood Enterprise Park	Localised junction improvements Overlapping traffic management installation Shared logistic/access routes
A1089 and Station road	Thurrock Flexible Generation Plant	Shared logistic/access routes
A2 / A1089	London Resort	Shared logistic/access routes with visitors Overlapping traffic management installations

5.2.2 The Traffic Management Forum is the forum by which the Project would share its proposals to enable integration with the projects highlighted in Table 5.1.

5.3 Significant events and seasonal traffic

5.3.1 As part of engagement, relevant authorities may highlight seasonal peaks and events that they consider require the removal of the traffic management.

5.4 Incident management

5.4.1 The Contractor delivering the works will have to comply with the Design Manual for Roads and Bridges GG 182 Major schemes: Enabling handover into operation and maintenance (Highways England), as well as operation throughout construction.

5.4.2 Part of the GG 182 requirements is the production of a DLOA that includes establishing the roles and responsibilities for incident management, looking at incident identification, response, and recovery.

5.4.3 Incident management for the SRN would be managed under the DLOA whereby should an incident occur, the division of responsibilities with respect to the management and mitigation of the incident is clearly stated.

5.4.4 Incident management for the LRN would be primarily managed by the local highway authority. However, through the development of any local operating agreements, the provision of mutual aid will be considered.

References

Highways England (2020). Design Manual for Roads and Bridges, GG 182 Major schemes: Enabling handover into operation and maintenance. Revision 1. Accessed May 2021. https://www.standardsforhighways.co.uk/dmrb/search/8027744b-971d-4ca7-ba6d-cf8fd03201af

Department for Transport and Highways Agency (2009). Traffic Signs Manual Chapter 8 – Traffic Safety Measures and Signs for Road Works and Temporary Situations. Accessed May 2021. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/203669/traffic-signs-manual-chapter-08-part-01.pdf

Glossary

Term	Explanation
M25	Orbital motorway, 17.8 miles (28.6 km) east south east of London's centre.
CRM	Customer relationship management
CA	Construction area or compound area
DCO	Development Consent Order
HGV	Heavy Goods Vehicle
LGV	Light Goods Vehicle
PRoW	Public Right of Way: A right possessed by the public, to pass along routes over land at all times. Although the land may be owned by a private individual, the public may still gain access across that land along a specific route. The mode of transport allowed differs according to the types of Public Right of Way, which consist of footpaths, bridleways and open and restricted byways.
TM	Traffic Management
TMP	Traffic Management Plan
oTMPfC	Outline Traffic Management Plan for Construction
NPSNN	National Policy Statement for National Networks
SoS	Secretary of State
CoCP	Code of Construction Practice
LRN	Local road network
SRN	Strategic road network
HS1	High Speed 1
NOMS	Network Occupancy Management System
NRSWA	New Roads and Street Works Act 1991
DLOA	Detailed Local Operating Agreement
DMRB	Design Manual for Roads and Bridges
TMF	Traffic Management Forum
MWC	Main works Contractors
LHA	Local highway authority
STAT	Statutory Bodies

Appendix A

A.1 Proposed traffic management measures

A.1.1 This section lists the proposed traffic management measures across the Project (excluding hard-shoulder closures for access and localised highway gantry works on the SRN).

A.1.2 Each traffic management measure is shown indicatively on a drawing. The drawings show the approximate location and extent of the measure as well as the ID.

A.1.3 The corresponding tables in this section have six columns:

a. TM ID – reference for each traffic measure (aligned to respective drawing)

b. Name – name of road or road section

c. Type – type of traffic management measures which include:

   i. Closure – full carriageway closure of road

   ii. Contraflow – typically traffic lights closing one half of the road

   iii. Crossing point – where the haul routes bisect the local road network thereby requiring a crossing point to maintain flow for construction vehicles and public traffic (typically traffic lights)

   iv. Lane closure – single lane closure on given road

   v. Narrow lanes – maintaining same number of lanes (unless coupled with another measure) but with narrower lanes (generally on the SRN network with associated reduced speed limits)

   vi. Switchover – where the alignment of the road is temporarily or permanently moved from one road alignment to another road alignment. The switchovers to temporary alignments are not envisaged to add more than a couple of minutes to the journey time (e.g. the road may need to be realigned to go around the overbridge works thereby increasing the length of the road by a few hundred meters). The switchovers to permanent alignments denote switching over to the proposed permanent alignment.

   vii. Lane restrictions – exact traffic management measure is not yet known but it is likely that traffic flow would be maintained (i.e. the road would not be closed) however some restriction may be in place.

d. Description – very brief description of measure and works

e. Estimated duration – the estimated duration the measure is in place for

f. Phase – this has been provided to give an indication of when the measure would take place within the construction period. It should be noted that this information has been derived from the Project's transport model. This analysis simplified the construction programme into 11 phases. As a result, not all of the proposed traffic management measures align directly with a phase (e.g. a measure may be proposed for five months, but may be most closely aligned to a phase that lasts seven months, or vice versa)

A.1.4 Table A.1 shows the construction traffic phases created to model the proposed traffic management measures

Table A.1 Traffic model phases

Traffic Model Phases			
	From	To	Months
Phase 1	Jan-24	Aug-24	8
Phase 2	Sep-24	Feb-25	6
Phase 3	Mar-25	May-25	3
Phase 4	Jun-25	Oct-25	5
Phase 5	Nov-25	Mar-26	5
Phase 6	Apr-26	Aug-26	5
Phase 7	Sep-26	Mar-27	7
Phase 8	Apr-27	Nov-27	8
Phase 9	Dec-27	Mar-28	4
Phase 10	Apr-28	Jul-28	4
Phase 11	Aug-28	Dec-29	17

A.1.5 Plate A.1 to Plate A.2 (2 images) depict the approximate location and extents of the traffic management measures that are envisaged to be required on the road network for roads elements south of the river. Each traffic management measure has an associated ID, shown on the plates. Table A.2 (1 images) gives information for each of the traffic management measures relating to the roads south elements including the ID, name of the road/element, the type of traffic management measure, a brief description, the approximate duration of the measure and the traffic model phase when the works may be carried out.

Plate A.1 Roads South traffic management measures location plan (1 of 2)

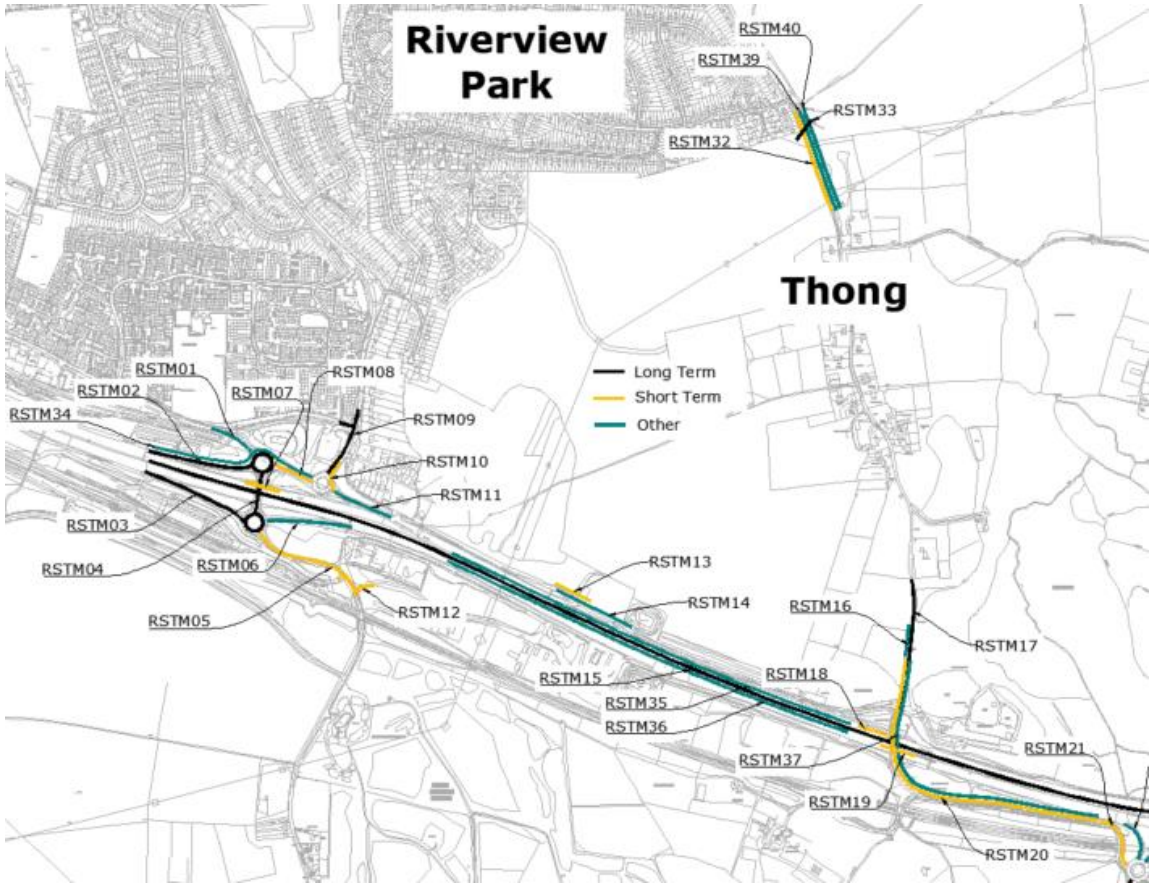


Plate A.2 Roads South traffic management measures location plan (2 of 2)

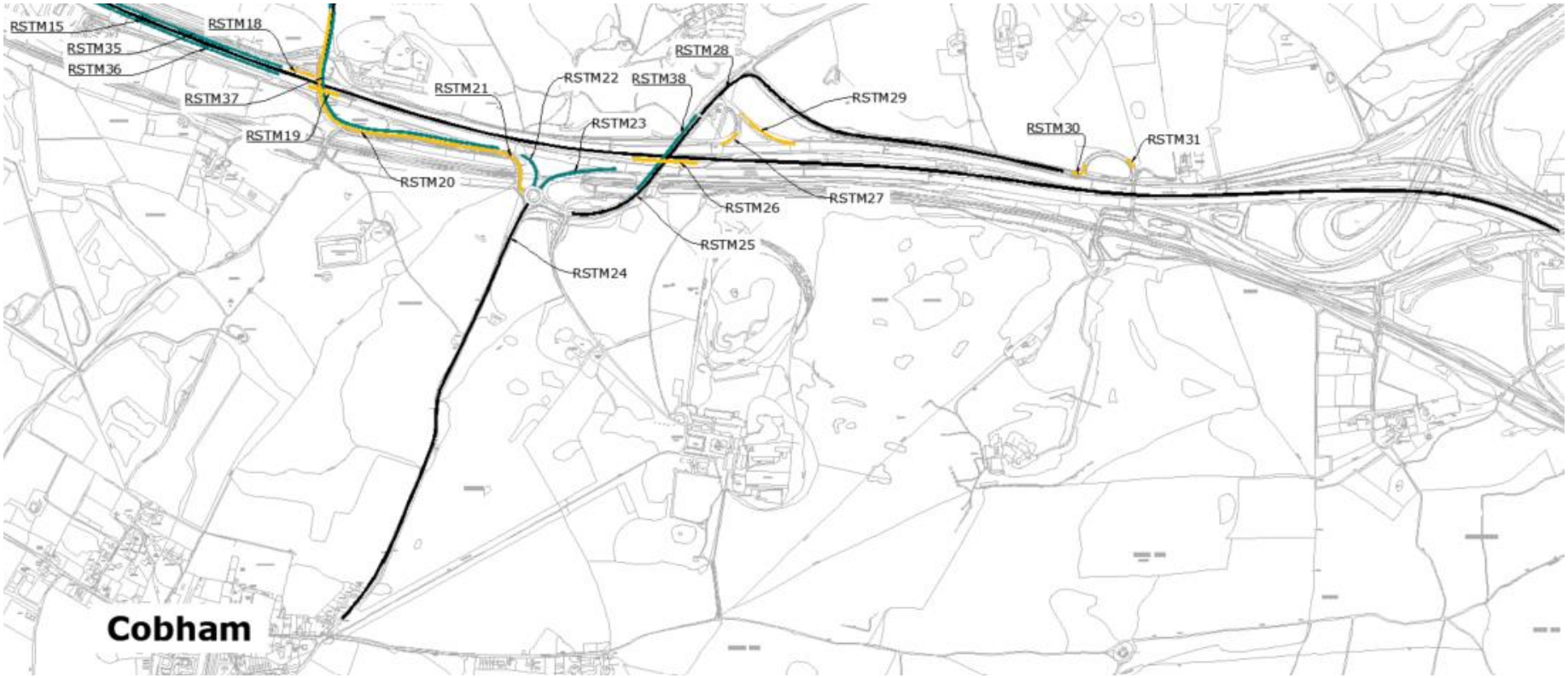


Table A.2 Roads South traffic management measures

TM ID	Name	Type	Description	Estimated Duration	Phase
RSTM01	Hever Ct Rd	Closures & lane restrictions	Carry out nearby works & modifications to local utility networks	2 Weeks	1
RSTM02	Gravesend East Junction (North)	Lane restrictions	Carry out nearby works & modifications to local utility networks	9 Months	1
RSTM03	Gravesend East Junction (South)	Lane restrictions	Carry out nearby works	14 Months	1,2
RSTM04	Gravesend East Junction (Bridge)	Lane restrictions	Carry out bridge widening & modifications to local utility networks	4	1
RSTM05	Henhurst Rd	Closures & lane restrictions	Carry out nearby works & modifications to local utility networks	Nights/Weekends	TBC
RSTM06	A2WB Off-Slip	Closure	Perm closure to new alignment	Nights/Weekends	TBC
RSTM07	A2	Closure	Bridge widening works	Nights/Weekends	TBC
RSTM08	Hever Ct Rd	Closure	Carry out nearby works & modifications to local utility networks	Nights/Weekends	TBC
RSTM09	Valley Drive	Contraflow	Modifications to local utility networks	6 Months	1
RSTM10	Valley Drive	Lane closure	Carry out nearby works & modifications to local utility networks	Nights/Weekends	TBC
RSTM11	A2EB On-Slip	Closure	Perm closure to new alignment & modifications to local utility networks	Nights/Weekends	TBC
RSTM12	Access	Closure	Carry out nearby works & modifications to local utility networks	Nights/Weekends	TBC
RSTM13	A2	Closure	New bridge works & modifications to local utility networks	Nights/Weekends	TBC
RSTM14	A2EB	HS closure	Construction access works & modifications to local utility networks	2 Weeks	1
RSTM15	A2	Narrow lanes, 50mph	Carry out nearby works & modifications to local utility networks	24 Months	6,7,8,9,10
RSTM16	Thong Lane	Contraflow	Construction access works & modifications to local utility networks & installation of temporary compound CA02 connections	1 Week	1
RSTM17	Thong Lane	Contraflow	Modifications to local utility networks	1 Month	1
RSTM18	A2	Closure	New bridge works & modifications to local utility networks	Nights/Weekends	TBC
RSTM19	A2	Closure	Bridge demolition works & modifications to local utility networks	Nights/Weekends	TBC
RSTM20	Thong Lane	Closure	Carry out nearby works & modifications to local utility networks	Nights/Weekends	TBC
RSTM21	Thong Lane	Closure	Carry out nearby works & modifications to local utility networks	Nights/Weekends	TBC
RSTM22	A2WB On-Slip	Perm Closure	Perm closure to new alignment & modifications to local utility networks	N/A	TBC
RSTM23	A2WB Off-Slip	Perm Closure	Perm closure to new alignment & modifications to local utility networks	N/A	TBC
RSTM24	HalfPence Lane	Contraflow (300m sections)	Modifications to local utility networks	6 Months	1
RSTM25	Brewers Rd	Closure	Bridge works & modifications to local utility networks	19 Months	6,7,8
RSTM26	A2	Closure	Bridge demolition works	Nights/Weekends	TBC
RSTM27	A2EB Off-Slip	Closure	Carry out nearby works	Nights/Weekends	TBC
RSTM28	Brewers Rd & Park Pale	Contraflow	Modifications to local utility networks	6 Months	2,3
RSTM29	A2EB On-Slip	Closure	Carry out nearby works	Nights/Weekends	TBC
RSTM30	Park Pale	Closure	Carry out nearby works & modifications to local utility networks	Nights/Weekends	TBC
RSTM31	Park Pale	Contraflow	Carry out nearby works & modifications to local utility networks	Nights/Weekends	TBC
RSTM32	Thong Lane	Closure	Bridge works & modifications to local utility networks	Nights/Weekends	TBC
RSTM33	Thong Lane	Crossing Point	Allow construction vehicles to cross	Until access under overbridge	1,2,3,4,5,6,7
RSTM34	Gravesend East Junction (Northern Section)	Switchover	Switch to permenant alignment	Weekend	1
RSTM35	A2EB	Switchover	Switch to permenant alignment (maintaining No. of lanes)	Weekend	6
RSTM36	A2WB	Switchover	Switch to permenant alignment (maintaining No. of lanes)	Weekend	8
RSTM37	Thong Lane (Over A2)	Switchover	Switch to permenant alignment	Weekend	9
RSTM38	Brewers Road	Switchover	Switch to permenant alignment	Weekend	8
RSTM39	Thong Lane (Over LTC)	Switchover	Switch to permenant temp alignment	Weekend	4
RSTM40	Thong Lane (Over LTC)	Switchover	Switch to permenant alignment	Weekend	7

A.1.6 Plate A.3 and Plate A.4 depict the approximate location and extents of the traffic management measures that are envisaged to be required on the road network for tunnel elements. Each traffic management measure has an associated ID, also shown on the plates. Table A.3 (1 images) gives information for each of the traffic management measures relating to the tunnel elements including the ID, name of the road/element, the type of traffic management measure, a brief description, the approximate duration of the measure and the traffic model phase when the works may be carried out.

Plate A.3 Tunnel traffic management measures location plan (1 of 2)

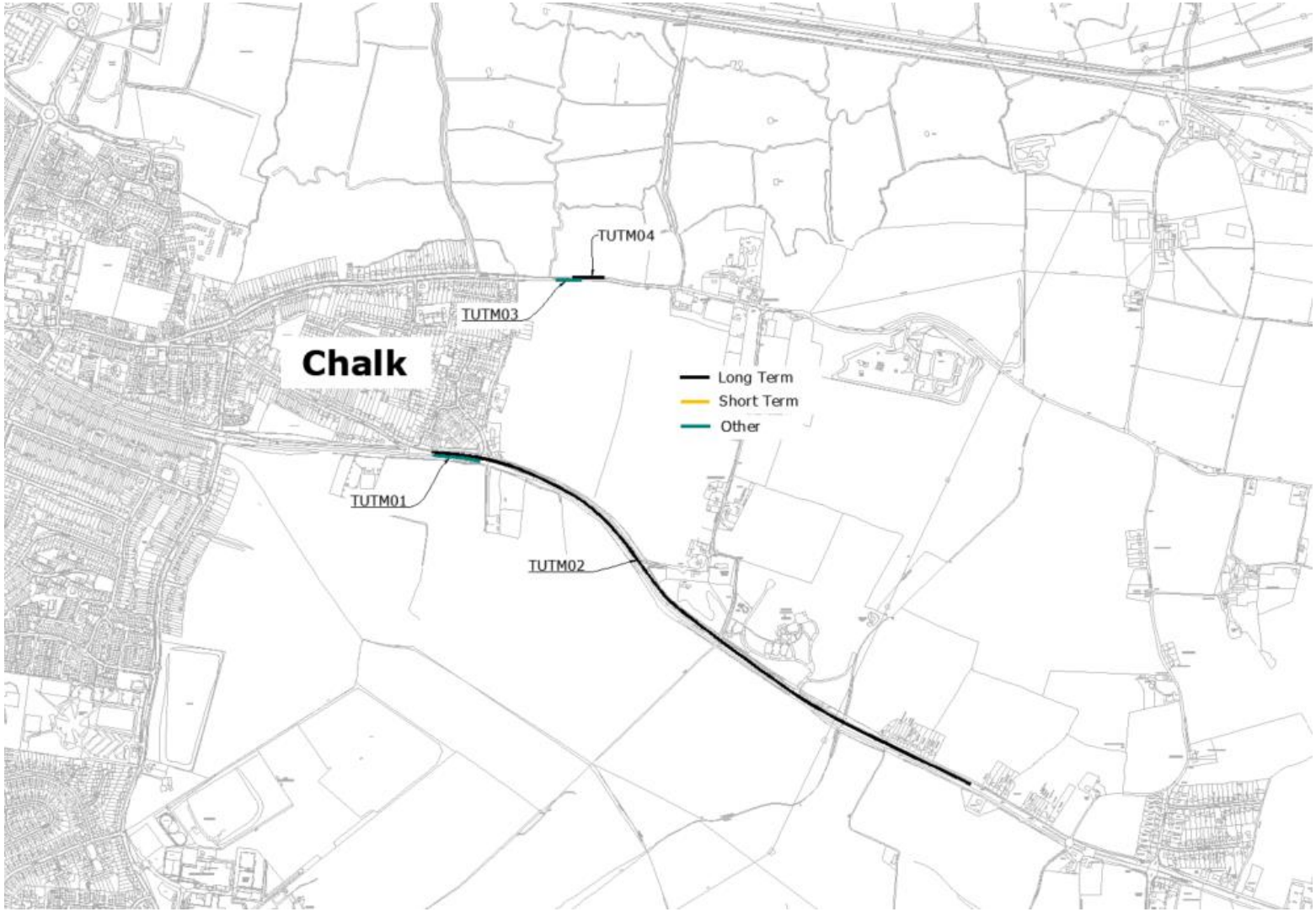


Plate A.4 Tunnel traffic management measures location plan (2 of 2)

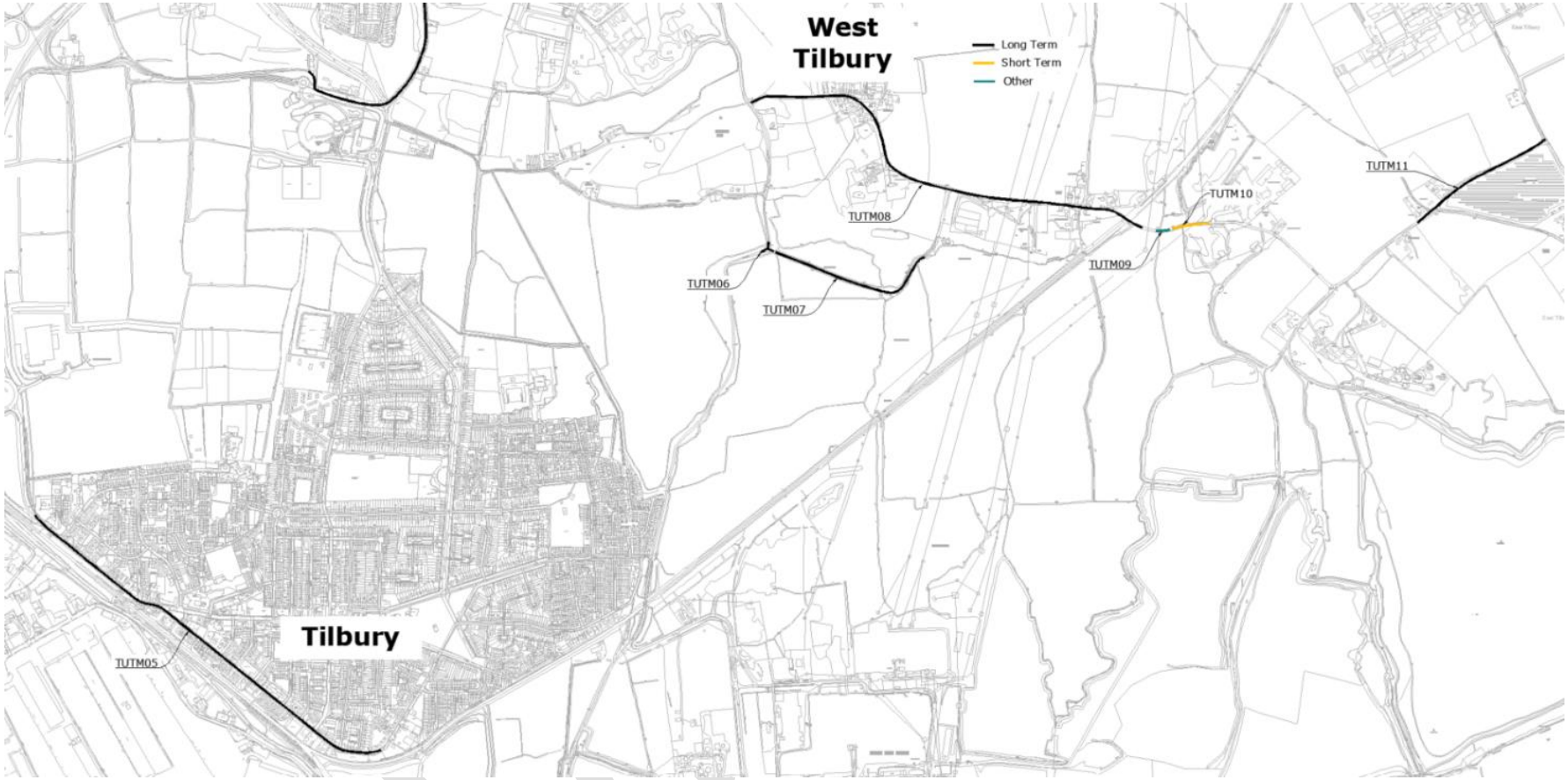


Table A.3 Tunnel traffic management measures

TM ID	Name	Type	Description	Estimated Duration	Phase
TUTM01	A226	Contraflow	Construction access works & modifications to local utility networks & installation of temporary compound CA03 & CA03a connections	4 Weeks	1
TUTM02	A226	Contraflow (300m sections)	Modifications to local utility networks	9 Months	2,3
TUTM03	Lower Higham Rd	Contraflow	Construction access works & modifications to local utility networks	2 Weeks	1
TUTM04	Lower Higham Rd	Contraflow	Modifications to local utility networks	2 Weeks	1
TUTM05	Dock Road	Contraflow (300m sections)	Installation of temporary compound CA05 connections	9 Months	1,2
TUTM06	Cooper Shaw Rd/Gun Hill/Fort Rd	3-Way lights	Modifications to local utility networks	2 Weeks	2
TUTM07	Cooper Shaw Road	Contraflow (300m sections)	Modifications to local utility networks	4 Months	2
TUTM08	Rectory Rd/Church Rd/Station Rd	Contraflow (300m sections)	Modifications to local utility networks & installation of temporary compound CA05 connections	9 Months	3,4
TUTM09	Station Rd	Contraflow	Construction access works & modifications to local utility networks & installation of temporary compound CA05 connections	4 Weeks	1
TUTM10	Station Rd	Contraflow	Carry out nearby works & removal of OHL equipment	Nights/Weekends	TBC
TUTM11	Love Lane/Princess Margaret Rd/Station Rd	Contraflow (300m sections)	Installation of temporary compound CA05 connections	2 Months	3

A.1.7 Plate A.5 to Plate A.11 (seven images) depict the approximate location and extents of the traffic management measures that are envisaged to be required on the road network for roads elements north of the river. Each traffic management measure has an associated ID, also shown on the plates. Table A.4 Table A.6 (three images) give information for each of the traffic management measures relating to the roads north elements including the ID, name of the road/element, the type of traffic management measure, a brief description, the approximate duration of the measure and the traffic model phase when the works may be carried out.

Plate A.5 Roads North traffic management measures location plan (1 of 7)

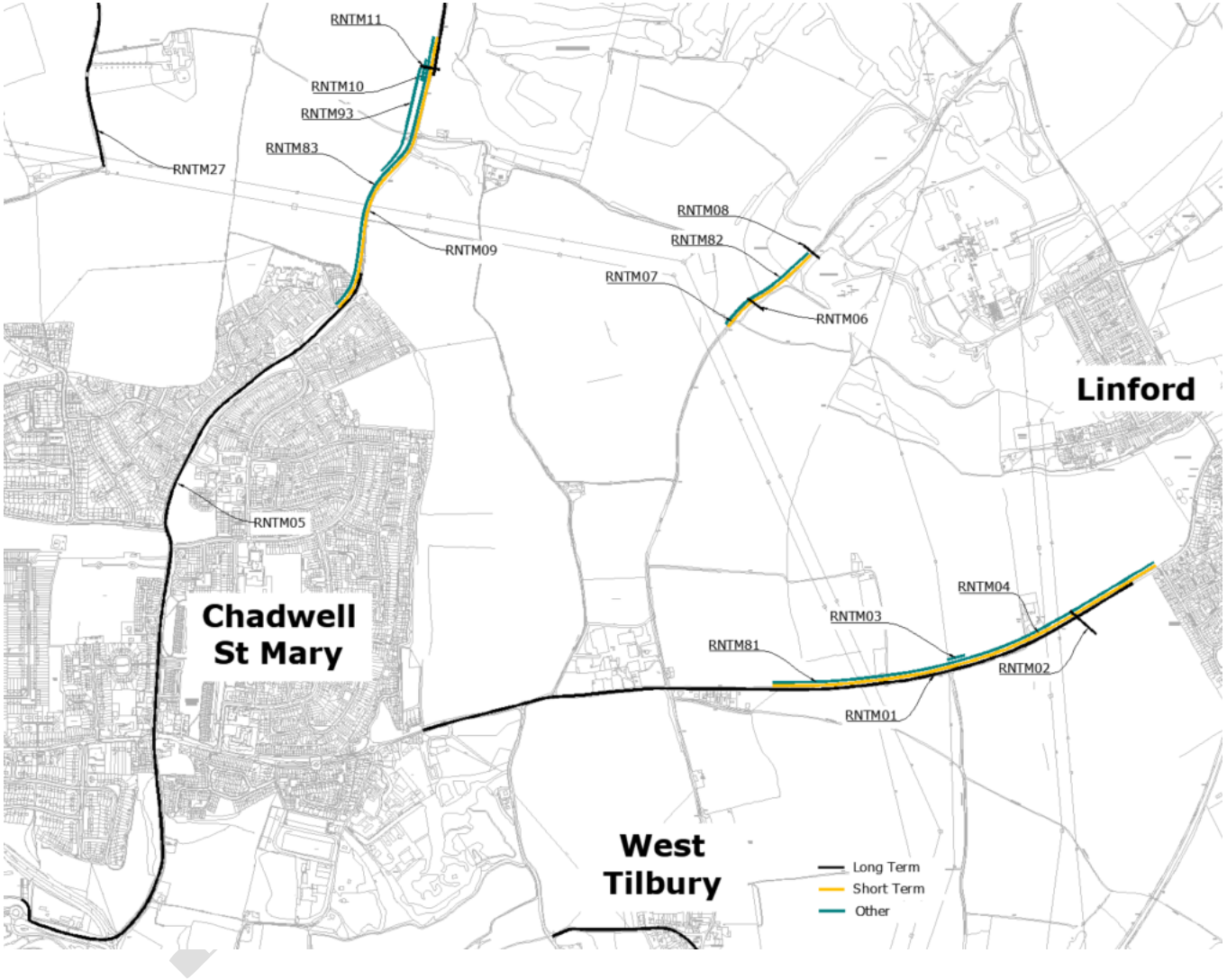


Plate A.6 Roads North traffic management measures location plan (2 of 7)

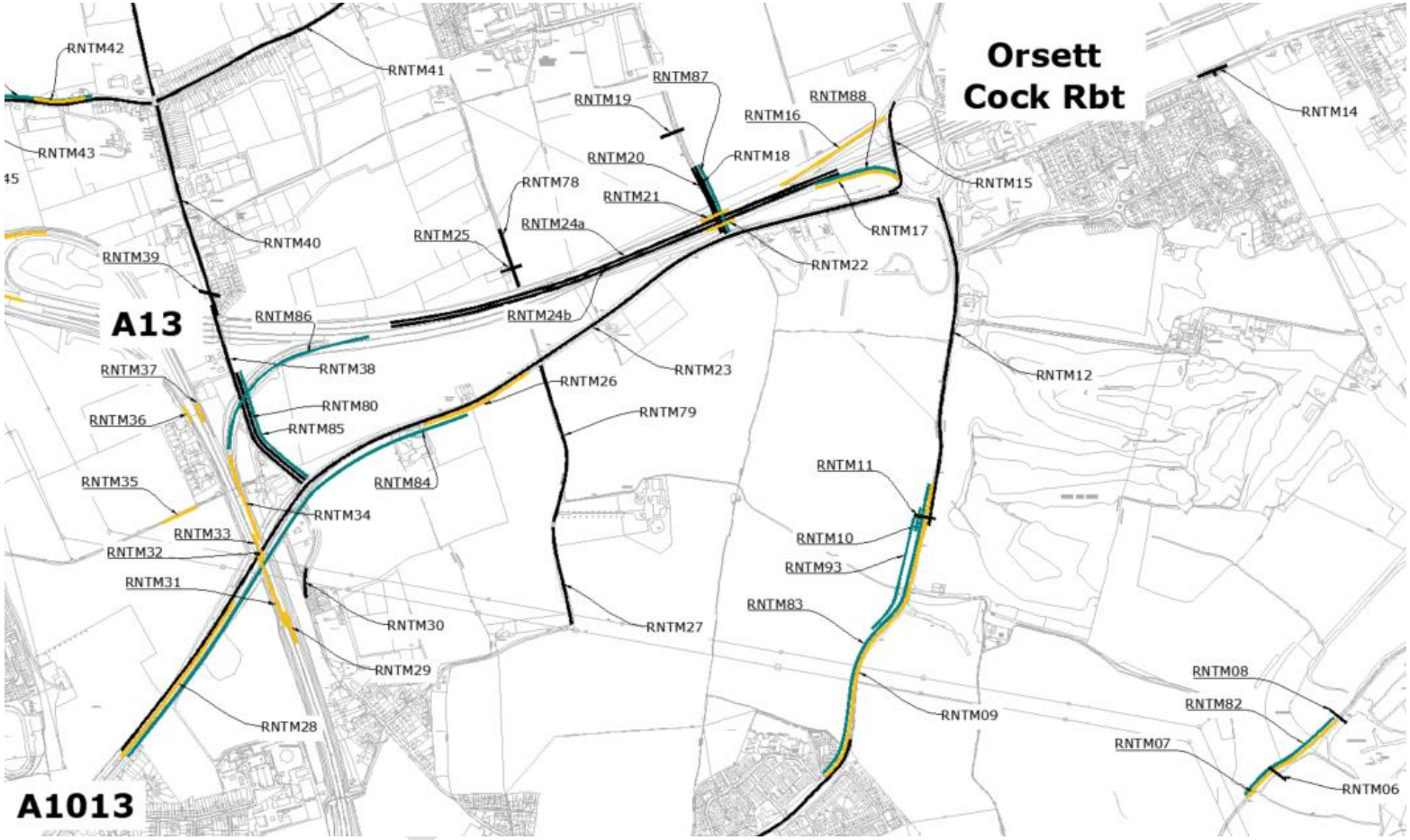


Plate A.7 Roads North traffic management measures location plan (3 of 7)

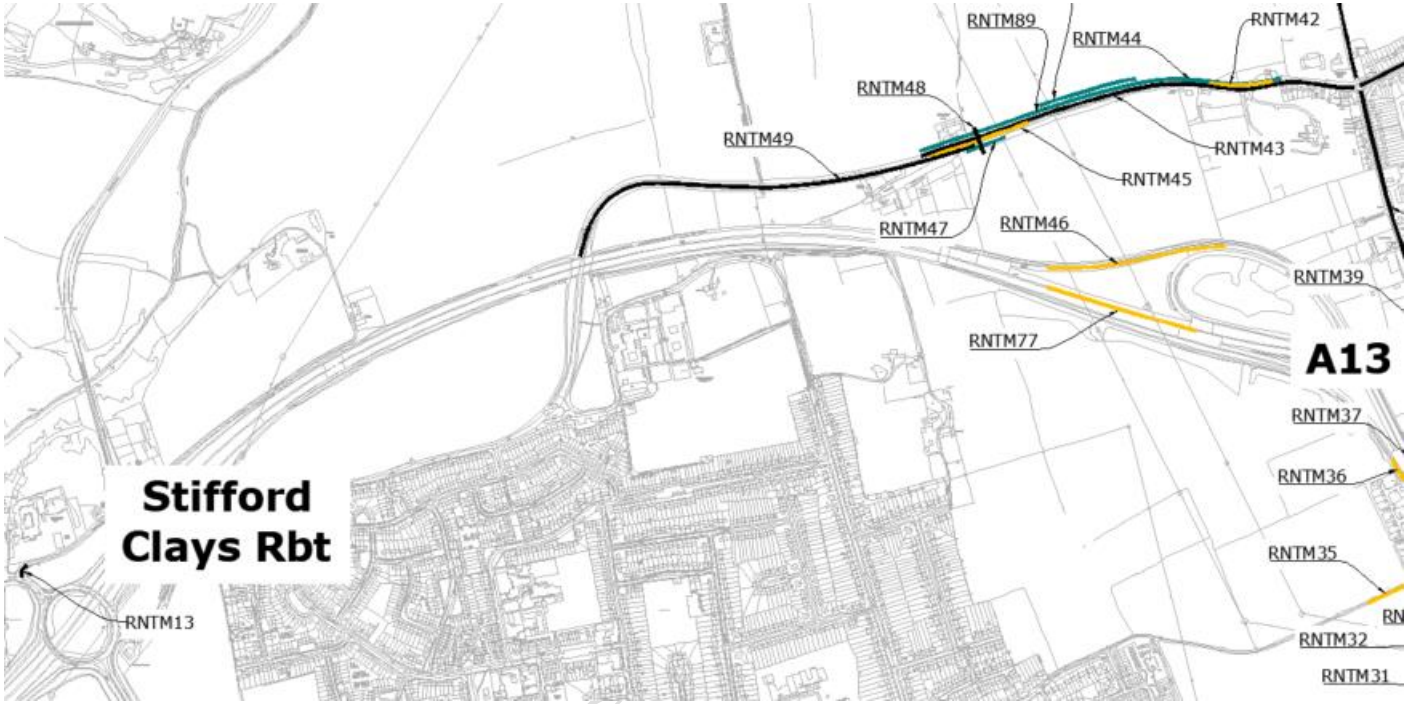


Plate A.8 Roads North traffic management measures location plan (4 of 7)

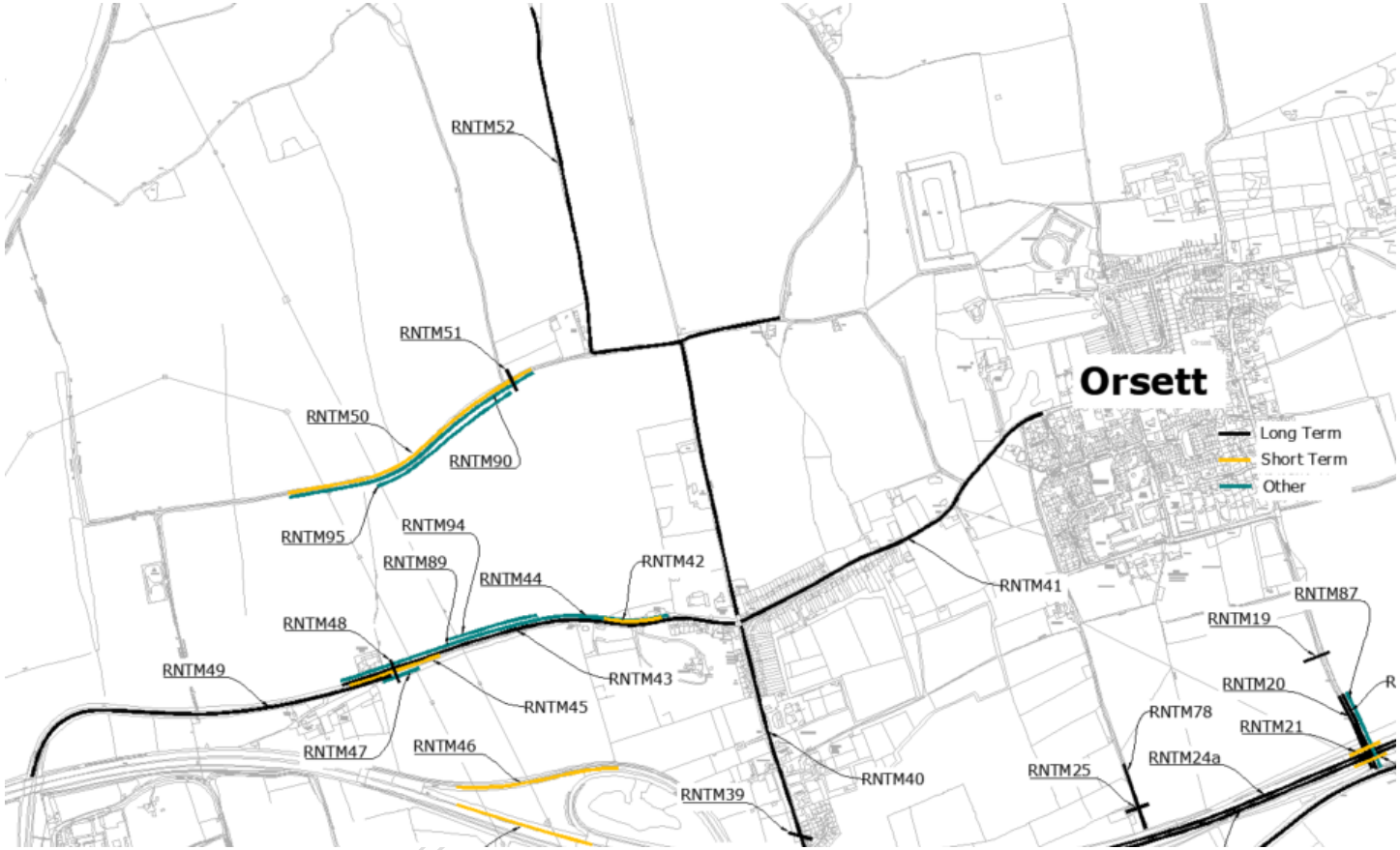


Plate A.9 Roads North traffic management measures location plan (5 of 7)

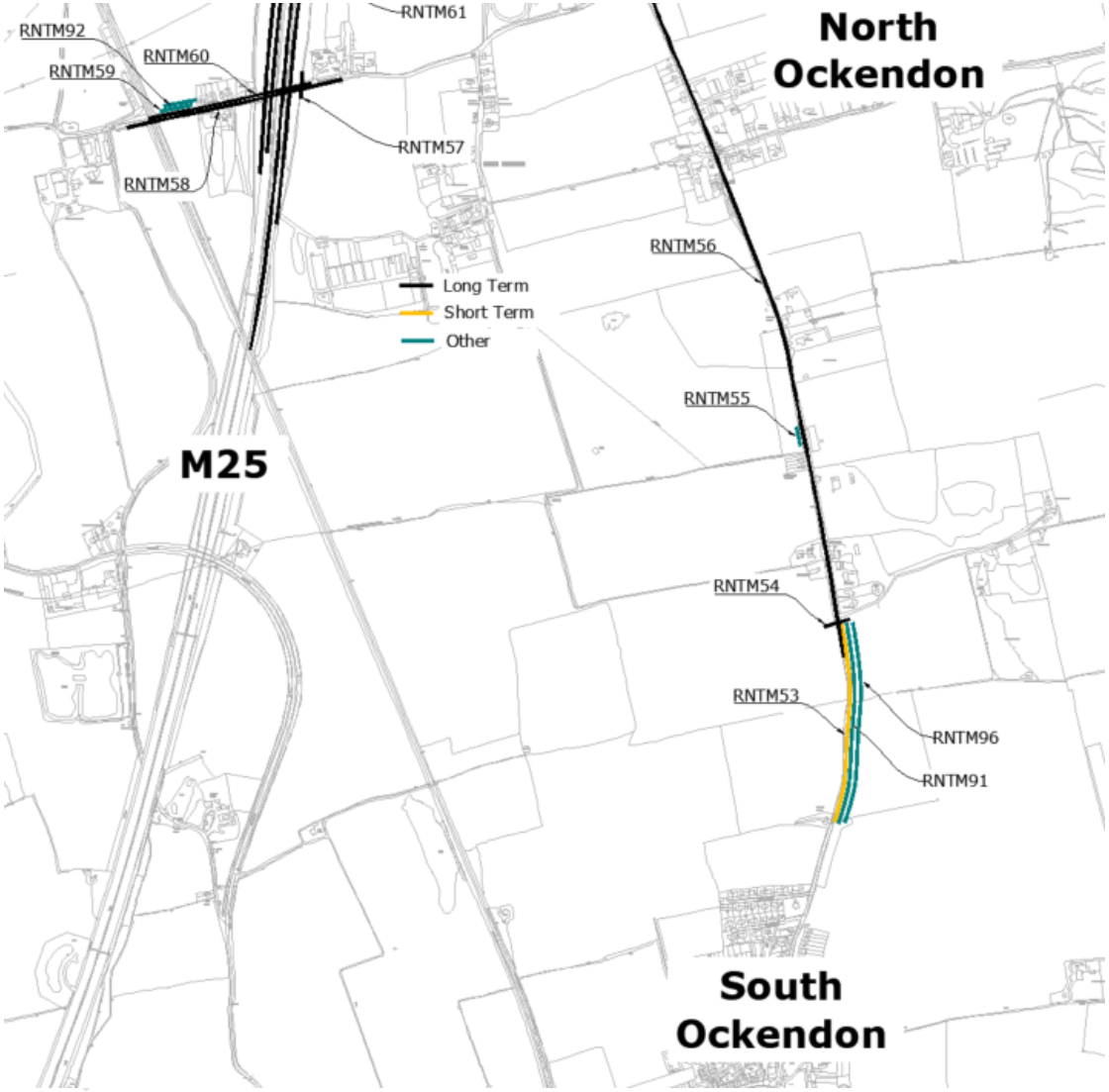


Plate A.10 Roads North traffic management measures location plan (6 of 7)

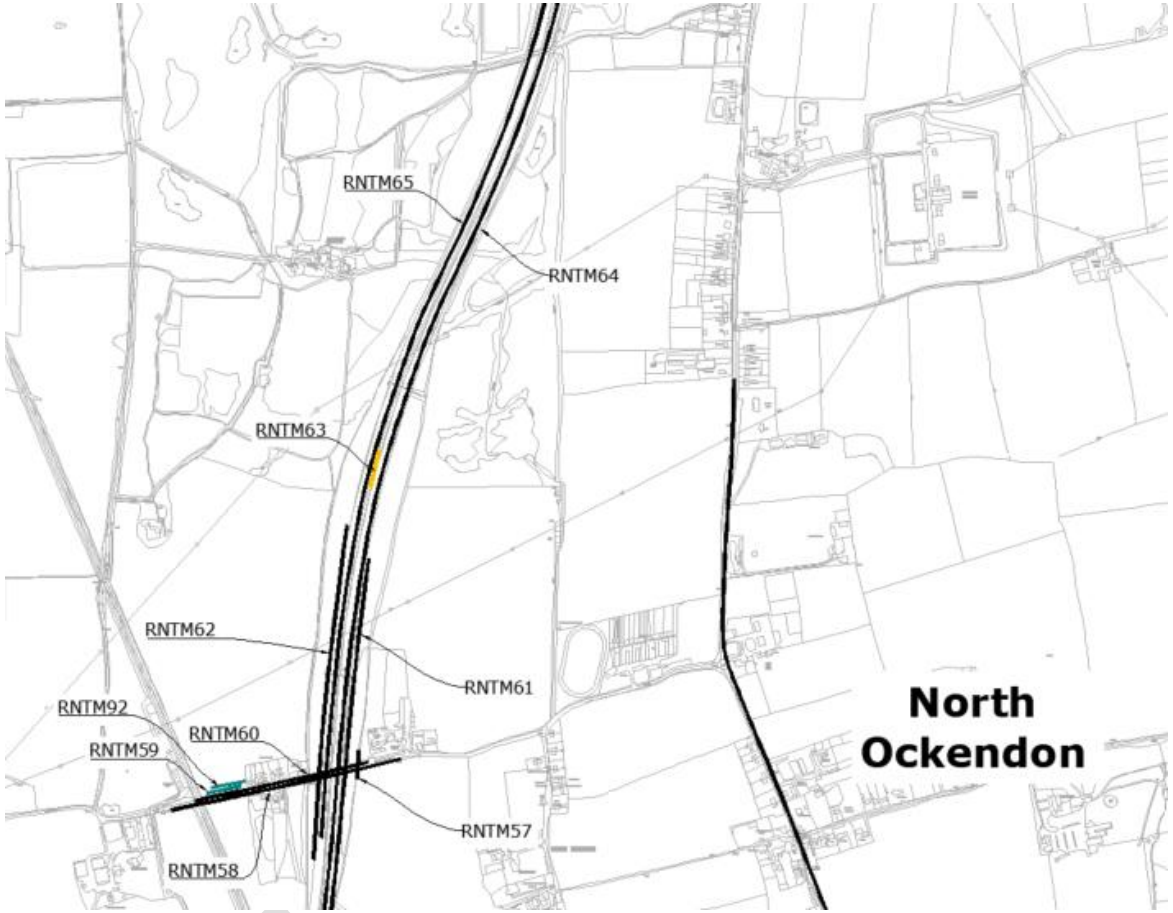


Plate A.11 Roads North traffic management measures location plan (7 of 7)

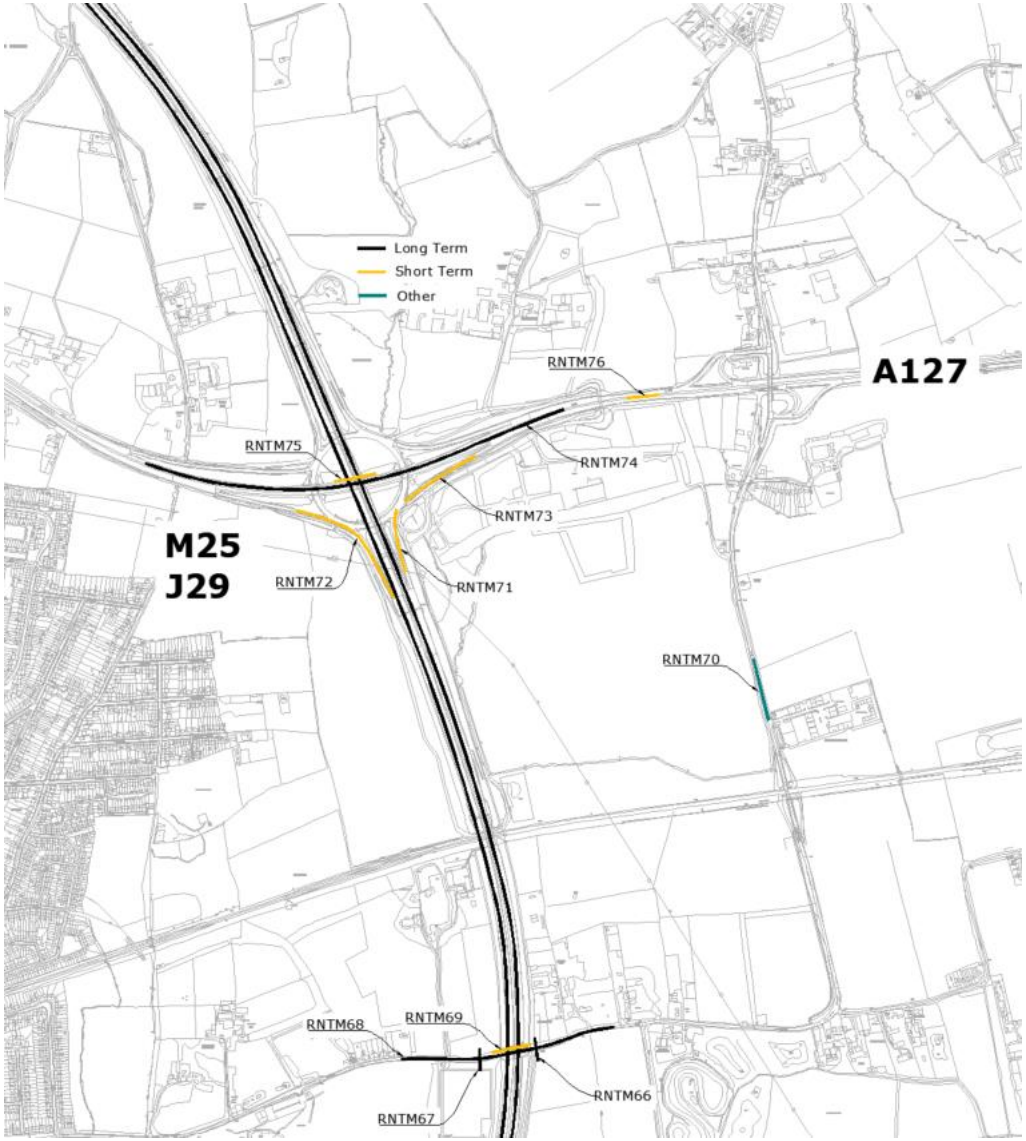


Table A.4 Roads North traffic management measures (1 of 3)

TM ID	Name	Type	Description	Estimated Duration	Phase
RNTM01	Muckingford Rd	Contraflow (300m sections)	Carry out nearby works & modifications to local utility networks	6 Months	3,4
RNTM02	Muckingford Rd	Crossing Point	Allow construction vehicles to cross	Until access under overbridge	1,2,3,4
RNTM03	Muckingford Rd	Contraflow	Construction access works & modifications to local utility networks	1 Week	1
RNTM04	Muckingford Rd	Closure	Bridge works & modifications to local utility networks	Nights/Weekends	TBC
RNTM05	Marshfoot Rd/Chadwell Hill/Brentwood Rd	Contraflow (300m sections)	Installation of new electricity network for Compounds CA06 to CA11	12 Months	1,2
RNTM06	Hoford Rd	Crossing Point	Allow construction vehicles to cross	Until access under overbridge	1,2,3,4,5,6
RNTM07	Hoford Rd	Closure	Bridge works & modifications to local utility networks	Nights/Weekends	TBC
RNTM08	Hoford Rd	Crossing Point	Allow construction vehicles to cross	Until access under overbridge	1,2,3,4,5,6
RNTM09	Brentwood Rd	Closure	Bridge works & modifications to local utility networks & installation of temporary compound CA06 connections	Nights/Weekends	TBC
RNTM10	Brentwood Rd	Contraflow	Construction access works & installation of temporary compound CA06 connections	4 Weeks	1
RNTM11	Brentwood Rd	Crossing Point	Allow construction vehicles to cross	Until access under overbridge	1,2,3,4,5,6
RNTM12	Brentwood Rd	Contraflow (300m sections)	Modifications to local utility networks & installation of temporary compound connections	6 Months	1
RNTM13	Medebridge Rd	Lane restrictions	Install traffic measures for construction vehicles	4 Months	1
RNTM14	A1013	Contraflow	Construction of a new permanent access & modifications to local utility networks	1 Month	1
RNTM15	Orsett Cock Rbt	Lane restrictions	Temporary modifications to local utility networks	1 Month x 2	3, 10
RNTM16	A13EB Off-Slip	Closure	Carry out nearby works	Nights/Weekends	TBC
RNTM17	A13WB On-Slip	Closure	Carry out nearby works	Nights/Weekends	TBC
RNTM18	Rectory Rd	Closure	Installation of new high pressure gas pipeline	2 weeks	2
RNTM19	Rectory Rd	Crossing Point	Allow construction vehicles to cross	Until access under overbridge	1,2,3,4,5,6,7,8,9
RNTM20	Rectory Rd	Closure	Bridge works	7 Months	9
RNTM21	A13	Closure	Bridge works	Nights/Weekends	TBC
RNTM22	A13	Closure	Bridge demolition works & modifications to local utility networks	Nights/Weekends	TBC
RNTM23	A1013	Contraflow	Carry out nearby works & modifications to local utility networks	8 Months	4,5
RNTM24a	A13EB	Narrow lanes, 60mph	Carry out nearby works	3 Months	10
RNTM24b	A13WB	Narrow lanes, 60mph	Carry out nearby works	3 Months	4
RNTM25	Mill Lane	Crossing Point	Allow construction vehicles to cross	Until A13EB tie in works	1,2,3,4,5,6,7,8,9,10
RNTM26	A1013	Closure	Carry out nearby works & modifications to local utility networks & installation of temporary compound CA07 connections	Nights/Weekends	TBC
RNTM27	Hornsby Lane	Perm closure	Perm closure to new alignment & modifications to local utility networks	N/A	1,2,3,4,5,6,7,8,9,10,11
RNTM28	A1013	Closure	Carry out nearby works	Nights/Weekends	TBC
RNTM29	A1089SB	Lane Closure	Carry out nearby works	Nights/Weekends	TBC
RNTM30	Heath Road	Lane restrictions	Carry out nearby works & modifications to local utility networks	1 Month	5
RNTM31	A1089NB	Lane closure	Carry out nearby works	Nights/Weekends	TBC
RNTM32	A1089	Closure	Bridge demolition works & removal of OHL equipment	Nights/Weekends	TBC
RNTM33	A1089	Closure	Bridge works & removal of OHL equipment	Nights/Weekends	TBC

Table A.5 Roads North traffic management measures (2 of 3)

TM ID	Name	Type	Description	Estimated Duration	Phase
RNTM34	A13WB to A1089SB	Closure	Carry out nearby works	Nights/Weekends	TBC
RNTM35	Long Lane	Closure	Carry out nearby works & modifications to local utility networks & installation of temporary compound CA08 connections	Nights/Weekends	TBC
RNTM36	A1089NB Off-Slip to A13WB	Closure	Bridge works	Nights/Weekends	TBC
RNTM37	A1089	Closure	Bridge works	Nights/Weekends	TBC
RNTM38	Baker Street	Closure	Carry out nearby works	16 Months	6,7,8
RNTM39	Baker Street	Crossing Point	Allow construction vehicles to cross	Until A13EB tie in works	1,2,3,4,5,6,7,8,9,10
RNTM40	Baker Street	Contraflow (300m sections)	Modifications to local utility networks	5 Months	7
RNTM41	High Road	Contraflow (300m sections)	Modifications to local utility networks & installation of temporary compound CA09 & CA10 connections	6 Months	1
RNTM42	Stifford Clays Rd	Closure	Carry out nearby works & modifications to local utility networks & installation of temporary compound CA09 & CA10 connections	Nights/Weekends	TBC
RNTM43	Stifford Clays Rd	Contraflow (300m sections)	Modifications to local utility networks & installation of temporary compound CA09 & CA10 connections	4 Months	1
RNTM44	Stifford Clays Rd	Contraflow	Construction access works & modifications to local utility networks & installation of temporary compound CA09 & CA10 connections	2 Weeks	1
RNTM45	Stifford Clays Rd	Closure	Carry out nearby works & modifications to local utility networks	Nights/Weekends	TBC
RNTM46	A13EB Off-Slip to A1089SB	Closure	Carry out nearby works & modifications to local utility networks	Nights/Weekends	TBC
RNTM47	Stifford Clays Rd	Contraflow	Construction access works & modifications to local utility networks	1 Week	1
RNTM48	Stifford Clays Rd	Crossing Point	Allow construction vehicles to cross	Until access under overbridge	1,2,3,4,5,6,7
RNTM49	Stifford Clays Rd	Contraflow (300m sections)	Modifications to local utility networks & installation of temporary compound CA09 connections	Nights/Weekends	1
RNTM50	Green Lane	Closure	Bridge works & modifications to local utility networks & installation of temporary compound CA09 connections	Nights/Weekends	TBC
RNTM51	Green Lane	Crossing Point	Allow construction vehicles to cross	Full period	1,2,3,4,5,6,7,8,9,10,11
RNTM52	Fen Lane/Green Lane	Closure (in sections)	Installation of temporary compound CA11 connections	9 Months	1,2
RNTM53	B186	Closure	Bridge works & modifications to local utility networks & installation of temporary compound CA13 & CA14 connections	Nights/Weekends	TBC
RNTM54	B186 North Road	Crossing Point	Allow construction vehicles to cross	Until access under overbridge	1,2,3,4,5,6,7
RNTM55	B186	Contraflow	Construction access works & modifications to local utility networks & installation of temporary compound CA13 & CA14 connections	4 Weeks	1
RNTM56	B186	Contraflow (300m sections)	Installation of temporary compound CA13 & CA14 connections	12 Months	1,2
RNTM57	Ockendon Rd	Crossing Point	Allow construction vehicles to cross	Full period	1,2,3,4,5,6,7,8,9,10,11
RNTM58	Ockendon Rd	Closure	Bridge works & earthworks logistics route & modifications to local utility networks	19 Months	4,5,6,7
RNTM59	Ockendon Rd	Contraflow	Construction access works & modifications to local utility networks & installation of temporary compound CA15 connections	2 Weeks	1
RNTM60	Ockendon Rd	Contraflow	Modifications to local utility networks & installation of temporary compound CA15 connections	6 Months x 2	1,6
RNTM61	M25SB	Narrow lanes	Construction access works	7 Months	3,4
RNTM62	M25NB	Narrow lanes	Construction access works	7 Months	3,4
RNTM63	M25	Closure	Bridge works & removal of OHL equipment	Nights	TBC
RNTM64	M25SB	Narrow lanes, 60mph	Carry out nearby works	38 Months	4,5,6,7,8,9,10
RNTM65	M25NB	Narrow lanes, 60mph	Carry out nearby works	28 Months	5,6,7,8,9,10
RNTM66	St Marys Lane	Crossing Point	Allow construction vehicles to cross	Full period	1,2,3,4,5,6,7,8,9,10,11

Table A.6 Roads North traffic management measures (3 of 3)

TM ID	Name	Type	Description	Estimated Duration	Phase
RNTM67	St Marys Lane	Crossing Point	Allow construction vehicles to cross	Full period	1,2,3,4,5,6,7,8,9,10,11
RNTM68	St Marys Lane	Contraflow	Carry out nearby works & modifications to local utility networks	9 Months	2,3
RNTM69	St Marys Lane	Closure	Bridge works & modifications to local utility networks	Nights/Weekends	TBC
RNTM70	B186	Contraflow	Construction access works & modifications to local utility networks	4 Weeks	1
RNTM71	M25SB On-Slip	Closure	Carry out nearby works	Nights/Weekends	TBC
RNTM72	M25NB Off-Slip	Closure	Carry out nearby works	Nights/Weekends	TBC
RNTM73	A127WB Off-Slip	Closure	Carry out nearby works	Nights/Weekends	TBC
RNTM74	A127	Narrow lanes, 50mph	Carry out nearby works & modifications to local utility networks	27 Months	4,5,6,7,8
RNTM75	A127	Closure	Bridge works & modifications to local utility networks	Nights/Weekends	TBC
RNTM76	A127	Closure	Bridge works & modifications to local utility networks	Nights/Weekends	TBC
RNTM77	A13	Closure	Modifications to local utility networks	Nights/Weekends	TBC
RNTM78	Mill Lane	Closure	Modifications to local utility networks	2 Weeks	2
RNTM79	Hornsby Lane	Contraflow (300m sections)	Modifications to local utility networks	2 Months	2
RNTM80	Baker Street	Contraflow (300m sections)	Modifications to local utility networks	6 Months	1,2
RNTM81	Muckingford Rd	Switchover	Switch to permenant alignment	Weekend	4
RNTM82	Hoford Rd	Switchover	Switch to permenant alignment	Weekend	6
RNTM83	Brentwood Rd	Switchover	Switch to permenant alignment	Weekend	7
RNTM84	A1013	Switchover	Switch to permenant alignment	Weekend	9
RNTM85	Baker Street	Switchover	Switch to permenant alignment	Weekend	8
RNTM86	A13WB to A1089SB	Switchover	Switch to permenant alignment	Weekend	4
RNTM87	Rectory Rd	Switchover	Switch to permenant alignment	Weekend	9
RNTM88	A13WB On-Slip	Switchover	Switch to permenant alignment	Weekend	4
RNTM89	Stifford Clays Rd	Switchover	Switch to permenant alignment	Weekend	7
RNTM90	Green Lane	Switchover	Switch to permenant alignment	Weekend	8
RNTM91	B186 North Road	Switchover	Switch to permenant alignment	Weekend	8
RNTM92	Ockendon Rd	Switchover	Switch to permenant alignment	Weekend	7
RNTM93	Brentwood Rd	Switchover	Switch to permenant temp alignment	Weekend	4
RNTM94	Stifford Clays Rd	Switchover	Switch to permenant temp alignment	Weekend	5
RNTM95	Green Lane	Switchover	Switch to permenant temp alignment	Weekend	6
RNTM96	B186 North Road	Switchover	Switch to permenant temp alignment	Weekend	4

Appendix B

B.1 Construction and utilities works on local road network

B.1.1 The tables below show the indicative construction activities for the local roads south of the River Thames and north of the River Thames respectively. 'Main works' are related to construction elements associated with the permanent designed scheme (including earthworks, structures, roads, drainage etc). 'Utility' are works related to both the temporary utility works (e.g. temporary power to compounds) and the permanent utility works (e.g. diversion of assets, permanent power to the tunnels etc). There are many utility networks across the Project which require temporary and/or permanent diversion to allow main construction works to proceed (e.g. power, gas, foul sewers, water, communications etc).

B.1.2 The table below shows indicative construction activities on/near the local road network (south of the River Thames).

Table B.1 Indicative Construction Activities on/near the local road network (south of the River Thames).

Road	Main works location	Main works construction information (indicative)	Nearby utility information (indicative)
Thong Lane	Bridge over A2	A new proposed green bridge to the west of the existing bridge is proposed. The foundation for the bridge can be constructed offline without impacting the existing Thong Lane. It should be noted that construction vehicles would use Thong Lane between CA2 and Halfpence Lane roundabout for a period of time to access the works between the A2 and HS1. Construction HGVs would be banned from use through Thong village (between CA2 access and the A226) other than for specific utility works. While the main access to CA2 would be via the A2, staff would be able to access via Thong Lane (it is likely local workforce may use the Thong Lane access if more convenient whereas staff coming from further would generally use the A2 access). In order to tie-in the new structure to the existing road a weekend closure or similar of Thong Lane (starting approximately 300m north of the A2, to the A2) would be required.	Diverting and installation of utility networks would require areas of Thong Lane beyond the new structure, both north and south, in which to connect to the existing networks to be utilised. Compound supplies for CA2 are envisaged to be provided from the Inn On The Lake area and require the area north of the Thong Lane Bridge for a period of time to install the new assets. These works would require the use of traffic lights and single lane closures to control traffic around the works area.
Thong Lane	Between Halfpence Lane and A2	Thong Lane is proposed to be realigned in this location which would connect Halfpence Lane roundabout and the new Thong Lane structure over the A2. In order to access the works, Thong Lane would be used between CA2 Halfpence Lane roundabout. The new alignment is mostly offline, meaning the majority of work would not affect Thong Lane in this location. Several night and/or weekend closures would be required to complete the tie-in works for both the temporary and permanent alignments during the construction period.	It is envisaged that the associated diverting and installation of utility networks would be completed at the same time as the construction of the new infrastructure to ensure network connectivity and customer supply.

Road	Main works location	Main works construction information (indicative)	Nearby utility information (indicative)
Thong Lane	Bridge Over Lower Thames Crossing	A new large green bridge is proposed across the Project alignment. To construct the structure a temporary realignment of Thong Lane to the north would be required approximately between Shorne Ifield Road and Southern Valley Golf Club entrance. A few night/weekend or similar closures would be required for tie-in works for both the temporary realignment and permanent new alignment over the green bridge during the construction period. Access across Thong Lane at this location would also be required to allow movement of material across the site. Temporary traffic signals or similar would be installed on Thong Lane to allow construction traffic to cross Thong Lane throughout the construction period. It is however planned that the majority of the works south of Thong Lane would use the A2 and the works north of Thong Lane would use the A226, thereby limiting movements across Thong Lane. Access to the works around this area would be via offline haul routes and not via Thong Village or Riverview Park.	To maintain utility network connections within the area, assets would be diverted into the new green bridge. To connect them to the existing networks, works areas will be required north and south of the existing and proposed structure for a period of time. This would be completed via single lane closures and traffic lights. Two high pressure gas pipelines would be diverted under Thong Lane and there are currently overhead power lines located on pylons over Thong Lane that would require diverting. It is currently envisaged that works to these assets will not impact the use of Thong Lane, however short-term night and/or weekend closures may be required on the grounds of safety to complete these works.
Brewers Road	Bridge Over A2	A replacement bridge is proposed at the Brewers Road bridge. Due to constraints, the existing bridge would need to be demolished before constructing the replacement. As a result access over the A2 would be closed at this location for approximately 19 months with a diversion route in place. The eastbound slips on and off the A2 would remain open other than for specific works which would require night and/or weekend closures.	To maintain utility network connections within the area, assets would be diverted into the new bridge permanently, but will temporarily be diverted out of the area of demolition and construction. To connect them to the existing networks, works areas would be required north and south of the existing and proposed structure for a period of time prior to the bridge works commencing. These areas would be

Road	Main works location	Main works construction information (indicative)	Nearby utility information (indicative)
		The diversion route would likely be via Three Crutches roundabout.	controlled using traffic lights and single lane closures.
Valley Drive	Valley Drive Roundabout	No significant works are proposed on Valley Drive or the Valley Drive roundabout other than minor realignment works. Access to the A2 eastbound from the Valley Drive roundabout would be maintained although would need to be closed for a weekend or similar to allow the switch from the current alignment to the new proposed alignment.	There is a significant amount of utility infrastructure around the southern end of Valley Drive that would need to be relocated to ensure it is operational when the Project is complete; as such, areas of the highway boundary are likely to be restricted for use. For safety reasons, Valley Drive and the A2 eastbound on-slip may have lane reduction and traffic measures in place to complete some of the works.
Hever Court Road	North-west arm of Gravesend East junction north roundabout	Minor works are required to Hever Court Road where it connects into the northern roundabout of the Gravesend East junction. Traffic restrictions would be required to carry out these works in the form of lane restrictions and short-term closures.	All required utility works would be considered as part of the main works for the installation and reconnection of utility networks.
Henhurst Road	Between HS1 and Gravesend East junction southern roundabout	Works are required to Henhurst Road between the point it goes over HS1 and the southern roundabout of the Gravesend East junction. Henhurst Road would stay open other than for a few specific works which may require weekend or similar short-term closures.	All required utility works would be considered as part of the main works for the installation and reconnection of utility networks. There are currently overhead power lines located on pylons over Henhurst Road that would require works associated with the diversion over the A2. It is currently envisaged that works to these assets would not impact the use of Henhurst Road, however night and/or weekend closures may be required on the grounds of safety to complete these works.

Road	Main works location	Main works construction information (indicative)	Nearby utility information (indicative)
Park Pale	At U-bend near Park Pale bridge	Minor works are required to Park Pale which involve altering an access. Park Pale may require a night or weekend closure for tie-in works but would otherwise be largely unaffected during the construction period by main works.	Installation of a gas pipeline would be installed using traffic lights and single lane closure moving along the road with the works area. This is envisaged to take 6 months. Albeit not envisaged, night and/or weekend closures may be required on the grounds of safety to complete these works.
Gravesend East junction	A2 junction	The northern roundabout and associated slips are proposed to be widened including the bridge over the A2. The northern roundabout and associated works are scheduled to take place early in the programme and would take approximately nine months to complete. The works would require traffic restrictions in the form of lane restrictions however the roundabout would remain open other than for specific works which may require night and/or weekend closures. Similarly, the bridge over A2 would remain open other than for specific works which may require night and/or weekend closures. The southern roundabout would be constructed in phases, and as such would likely be worked on throughout construction (generally at the start and then at the end). The roundabout would remain open other than for certain specific works which may require night and/or weekend closures. Due to the need to phase the works for the southern roundabout and associated elements it may be the case that activity levels fluctuate throughout construction, which would mean periods of little work and periods of substantial work. Access on	There is a significant amount of utility infrastructure around the southern end of Valley Drive that would need to be relocated to ensure it is operational when the Project is complete; as such, areas of the highway boundary are likely to be restricted for use. For safety reasons, Valley Drive and the A2 eastbound on-slip may have lane reduction and traffic measures in place to complete some of the works.

Road	Main works location	Main works construction information (indicative)	Nearby utility information (indicative)
		and off the A2 from the southern roundabout would be maintained throughout other than for specific tie-in works which would require night, weekend or similar closures.	
A226 / Gravesend Road	Mainly between St Marys Church and Chalk Road	A works access would be required off the A226 into and out of site (CA3). Traffic signals may be required to allow construction traffic and public traffic to be managed. It is proposed that access into site would be off the A226 via a left turn and exit would be vice versa (right turn only out of site onto the A226). It should be noted that two other smaller construction sites are proposed (CA3a and CA3b) which would require access using the local road access, namely Lower Higham Road, Milton Road, Ordnance Road, Canal Road and Norfolk Road.	Compound utility connections and required diversions would be completed under traffic lights and single lane closures that move with the works area.
Halfpence Lane	From Brewers Road Roundabout South	N/A	Installation of foul water pipeline would be installed using traffic lights and single lane closure moving along Halfpence Lane with the works area. This is envisaged to take a couple of months.

B.1.3 The table below shows indicative construction activities on/near the LRN (north of River Thames).

Table B.2 Indicative construction activities on/near the LRN (north of River Thames).

Road	Main works location	Main works construction information (indicative)	Nearby utility information (indicative)
Fort Road	Entire road	Fort Road would be used to access worksites between the River Thames and the Tilbury Loop railway line, namely the works associated with the tunnel bores. The bulk of the traffic movements would use the stretch of Fort Road south of the Tilbury Loop railway line, with a construction haul route created from Fort Road to worksites. The section of Fort Road to the north of the Tilbury Loop railway line would be a secondary access which would allow access to the sites between the River Thames and the Tilbury Loop railway line via Station Road.	Utility compound connections would be completed under traffic lights and single lane closures.
Station Road	Section between Church Road and intersection with Love Lane	Station Road would be used as a secondary access to the worksites between Tilbury Loop railway line and the River Thames. Station Road has a level crossing and is not suitable for a large number of vehicle movements, therefore the main access to the worksites south of Tilbury Loop railway line would be via Fort Road and a temporary construction haul route. Station Road would initially be used for site setup prior to construction of the temporary haul route and consequently used mainly for staff access rather than for larger vehicles. The temporary haul route is programmed to be constructed very early in the programme, therefore the usage of Station Road by HGVs is envisaged to be limited.	Utility diversions would be completed using traffic lights and single lane closures.
Princess Margaret Road	Entire road	There is no intention to use the road as a construction route for HGVs other than possibly for emergency access should it be required.	A crossing of the highway may be required and could be undertaken on a weekend using traffic lights and single lane closures.

Road	Main works location	Main works construction information (indicative)	Nearby utility information (indicative)
Love Lane	Princess Margaret Road to site	N/A	Road closure would be required for the installation of compound supplies. Closure would be required as Love Lane is too narrow to safely pass works area.
Muckingford Road	Intersection with Hoford Road to the Princess Margaret Road roundabout	Muckingford Road would be used for initial access to the area prior to the construction of the offline haul routes. Traffic volumes using the route would be low as they would mainly be facilitating site setup and the construction of the offline haul routes. The access is not intended to be used to facilitate main civil works (e.g. the Muckingford Road overbridge). Once the haul routes are in the place, construction traffic volumes would increase but use the offline routes. The offline routes would intersect Muckingford Road and would need a crossing point. Traffic lights or similar would be installed on Muckingford Road to allow construction traffic to cross. The traffic signals would be in place until the new overbridge is constructed. Once the Muckingford Road overbridge is constructed and opened, the traffic lights would be removed and construction traffic would be able to cross under the new bridge. Traffic management measures (in the form of contraflow) would be required for a period of time to allow Muckingford Road to be widened where the new bridge ties into the existing and for the proposed WCH route. The traffic management may involve the installation of traffic signals to allow a one-way system. Muckingford Road would also be closed for a weekend or similar at the location of the new bridge for tie-in	Diverting and installation of utility networks would require areas of Muckingford Road beyond the new structure, both east and west, in which to connect to the existing networks to be utilised. Multiple crossings of the highway may be required and could be undertaken using traffic lights and single lane closures. There are currently overhead power lines located on pylons over Muckingford Road that would require works associated with the diversions. It is currently envisaged that works to these assets would not impact the use of Muckingford Road, however night closures may be required on the grounds of safety to complete these works.

Road	Main works location	Main works construction information (indicative)	Nearby utility information (indicative)
		works of the new overbridge but otherwise would remain open throughout construction.	
Brentwood Road	Between Orsett Cock roundabout and the Project alignment	The stretch of Brentwood Road would be used for construction traffic to access the worksite (CA6) and also to access the temporary offline haul routes. Once they meet the Project alignment, construction vehicles would either go north or south of the temporary offline haul routes to access the worksites. Construction HGV traffic would not go further south than the proposed new Brentwood Road overbridge i.e. would not go through the residential areas of Chadwell St Mary. The stretch between the Orsett Cock junction and the Project alignment would be heavily used for the duration of the Project. Traffic signals or similar would be required to manage the construction and public traffic at the location where the offline haul routes meet the road. Brentwood Road would need a slight alignment change to facilitate works on the bridge. As such, Brentwood Road would be closed for a number of weekends to tie-in the temporary alignment and also subsequently tie-in the permanent alignment. Other than these infrequent weekend closures, the road would remain open.	Diverting and installation of utility networks would require areas of Brentwood Road beyond the new structure, both north and south, in which to connect to the existing networks to be utilised. There are currently overhead power lines located on pylons over Brentwood Road that would require works associated with the diversions. These works are likely to be managed via the use of traffic lights and single lane closures, however short-term closures may be required on the grounds of safety to complete these works.
Brentwood Road, Chadwell Hill & Marshfoot Road	Brentwood Road, Lower Thames Crossing south	N/A	Installation of compound electricity supplies potentially requires the use of traffic lights and single lane closure for 12 months. Lane closure would move along the alignment with the works.
Hornsby Lane	Intersection with Project alignment	Hornsby Lane is proposed to be stopped up either side of the new road. Hornsby Lane is planned to be stopped	Modifications to the local utility networks would be required which

Road	Main works location	Main works construction information (indicative)	Nearby utility information (indicative)
		up early in the construction programme with a turning arrangement constructed prior to closing to allow vehicles to turn around.	may require lane narrowing and traffic lights around the works area on the grounds of safety. These are proposed in the period that Hornsby Lane would be stopped up. There are currently overhead power lines located on pylons over Hornsby Lane that would require works associated with the diversions. It is currently envisaged that works to these assets would not impact the use of the Hornsby Lane turnaround, however night closures may be required on the grounds of safety to complete these works.
Heath Road	Approximate stretch from A1013 and 250m south of A1013 (where overhead pylons are)	The alignment of Heath Road in this stretch is proposed to be slightly altered with the access to the A1013. Heath Road would remain open for the duration of construction as would its connection with the A1013 in some form other than for specific tie-in works which would require weekend or similar closures.	Local works would be required to the utility networks within this area. There are currently overhead power lines located on pylons over Heath Road that would require works associated with the diversions. These works are likely to be managed via the use of traffic lights and single lane closures, however short-term closures may be required on the grounds of safety to complete these works.
A1013 / Stanford Road	Orsett Cock junction and Gammonfields Way	Stanford Road is proposed to be realigned as part of the works which include the construction of three new structures. The works around the area, particularly between the A1013 and A13 are substantial. As a result, there would be significant construction activity within the	Local works would be required to the utility networks within this area. These works are likely to be managed via the use of traffic lights and single lane closures where

Road	Main works location	Main works construction information (indicative)	Nearby utility information (indicative)
		area, from piling activities and earthworks to road construction. Traffic restriction on the A1013 would be required in localised areas and would change during construction to allow construction vehicles and staff to access the works area around the road, predominantly to access the junction works between the A1013 and A13. The A1013 is however envisaged to remain open throughout the works other than for specific works which would require several night closures and a few weekend closures. The works would be conducted in phases, whereby temporary/ permanent alignments may be used to ensure the A1013 remains open. Signage would be prevalent on the road to ensure the road user is aware of the current arrangement.	required. Any closures required are likely to be as part of a wider closure proposal. Within this area there are currently overhead power lines located on pylons over Stanford Road that would require works associated with the diversions. It is currently envisaged that works to these assets would not impact the use of Stanford Road, however night closures may be required on the grounds of safety to complete these works. East of the roundabout a section of the A1013 would require traffic lights and a single lane closure for a month to complete a new access to a permanent gas compound.
Baker Street	Entire road	Significant works are proposed between the A13 and A1013 around the existing Baker Street alignment. As such it is proposed the approximate section between the A13 and A1013 would be closed to allow these works to be safely carried out. It should be noted, while Baker Street is closed, Rectory Road would be open. Construction vehicles would use Baker Street initially for specific works, namely site preparation works. Construction haul routes would be constructed alongside the alignment which construction vehicles would use going forward. Baker Street would not be used as a through connection for construction works other than during the closure.	Utility works required would largely be via the use of traffic lights and single lane closures where required. Any closures required are likely to be as part of a wider closure proposal.

Road	Main works location	Main works construction information (indicative)	Nearby utility information (indicative)
		Crossing points of Baker Street would be required to access the works north of the A13 and east of Baker Street as well as the works south of the A13 east of the A1089. During the closure, the crossing points would be within the closure limits. When Baker Street is open, crossing points north and south of the A13 would be implemented. Traffic signals or similar would be installed to allow construction traffic to cross while allowing public traffic to use the road.	
Rectory Road	Rectory Road bridge	A new bridge is proposed for Rectory Road which would cross the A13 and Lower Thames Crossing link roads and therefore would have to be longer than the existing. In order to construct the new bridge, the existing bridge would first have to be demolished. As such it is proposed the crossing would be closed for approximately seven months. It should be noted, while Rectory Road is closed, Baker Street would be open. Rectory Road would be used by construction traffic for specific work only. Rectory Road would not be used as a through road for construction works. Temporary haul routes would be constructed along the Project link roads and facilitate the bulk of construction traffic. The haul route would need to cross Rectory Road to access works to the east of Rectory Road therefore traffic signals or similar would be installed to manage the traffic crossing, prior to the closure. The traffic volumes crossing would be low as the works required north of the A13, and east of Rectory Road would not be significant.	The only utility impact on traffic associated with Rectory Road would be the potential two-week closure in which a diverted high-pressure gas pipeline would be installed. All other works would be expected to be completed alongside the road, however traffic lights, lane narrowing or short-term night and/or weekend closures may be required on the grounds of safety.
Stifford Clays Road	Stifford Clays roundabout to CA10 access	Stifford Clays Road would initially be used as a construction route to access the construction sites (CA9 and CA10). This use would be until an offline link is constructed to the sites from the Stifford Clays junction. This temporary offline link is envisaged to be	Diverting of and installation of utility networks would require areas of Stifford Clays Road beyond the new structure, both east and west, in which to connect to the existing

Road	Main works location	Main works construction information (indicative)	Nearby utility information (indicative)
		constructed and available for construction vehicles within approximately the first six months of the construction period. Once the temporary link is open, the stretch of Stifford Clays Road would not be used other than for infrequent and specific works. Stifford Clays Road would however need to be crossed by construction traffic via a crossing point which would likely be in the form of traffic signals or similar. This would allow construction vehicles to cross the road to access worksites between the A13 and Stifford Clays Road. The temporary traffic signals would be in place until the new Stifford Clays Road overbridges are in place which would allow construction traffic to access by going under the new overbridges. Stifford Clays Road would need to be realigned as part of the works which include two new bridges. The realignment and bridges would largely be constructed offline allowing Stifford Clays Road to remain open. In localised areas temporary realignment of Stifford Clays Road would be required to ensure it remains open. For tie-in works of these temporary routes as well as connecting the permanent alignment into the existing, short-term closures of Stifford Clays Road would be required. These would be generally be night/weekend or similar closures required a few times within the construction period.	networks to be utilised. Multiple crossings of the highway may be required and could be undertaken using traffic lights and single lane closures. There are currently overhead power lines located on pylons over Stifford Clays Road that would require works associated with the diversions. It is currently envisaged that works to these assets would not impact the use of Stifford Clays Road, however night closures may be required on the grounds of safety to complete these works.
Fen Lane	North of Stifford Clays Road	It is not envisaged Fen Lane would be required to facilitate main works as haul routes would first be installed prior to gaining access to the areas just north of Green Lane. Once haul routes are created early in the programme, access to worksites would use the temporary routes.	Fen Lane would be used for the installation of compound utility supplies and accesses to works. These would be managed via traffic lights and single lane closures. Where this cannot be safely

Road	Main works location	Main works construction information (indicative)	Nearby utility information (indicative)
			implemented, a short-term closure would be required for a period of weeks.
Green Lane	Entire road	Green Lane would be used by construction vehicles initially to facilitate the construction of offline haul routes. Once the haul routes are complete, a section of Green Lane would continue to be used as well as a works access from the Stifford Clays junction to the offline haul routes alongside the Project alignment. Green Lane would need a slight temporary alignment change to facilitate works on the bridge. As such Green Lane would be closed for a weekend or similar to tie-in the temporary alignment and also subsequently tie-in the permanent alignment. Other than these infrequent weekend closures, the road would remain open. A crossing point of Green Lane would also be required to allow construction vehicles to travel north and south along the alignment. Stop/Go signs or similar would be required to manage the construction and public traffic during the construction period.	There are currently overhead power lines located on pylons over Green Lane that would require works associated with the diversions. It is currently envisaged that works to these assets would not impact the use of Green Lane, however short-term closures may be required on the grounds of safety to complete these works.
B186 / North Road	Between CA14 and proposed overbridge	A new bridge is proposed for North Road which would cross over the Project alignment. During construction a temporary localised realignment of North road would be required to facilitate the completion of the bridge and associated embankment. As such a few night/weekend closures would be required during the construction period to tie-in the temporary alignment and subsequently the new permanent bridge alignment, and the existing. Other than these works, North Road would remain open.	Diverting of and installation of utility networks for customer and compound supplies would require areas of North Road beyond the new structure, both north and south, in which to connect to the existing networks to be utilised. These works are likely to be managed via the use of traffic lights and single lane closures however short-term night and/or weekend closures may be required on the

Road	Main works location	Main works construction information (indicative)	Nearby utility information (indicative)
		Prior to the overbridge construction, a crossing point of North Road would be required to allow construction vehicles to travel along the alignment. Traffic signals or similar would be required to manage the construction traffic crossing the alignment prior to completion and opening of the overbridge. Once the overbridge is complete and open, construction traffic would pass under the bridge and the temporary traffic signals could be removed. A small section of North Road (north of the Project alignment) would be used initially to access CA13.	grounds of safety to complete these works.
B186 / Clay Tye Road	Entire road	Clay Tye Road would initially be used by construction vehicles to access the worksites CA14 and CA15. It is proposed works accesses are constructed off the M25 to allow construction vehicles to access the Project alignment and worksites along the route directly from the M25. Once the temporary M25 accesses are complete, which would likely be constructed in the vicinity of Ockendon Road, Clay Tye Road would no longer be used by large construction traffic. Depending on where they would be travelling from, staff may use Clay Tye Road throughout construction.	Any proposed utility works that impact the highway within this area would be managed via traffic lights and single lane closures that would move with the works area.
B186 / Warley Street	Entire road	Warley Street between the A127 junction and the entrance of CA16 (approximately 200-300m north of the bridge over railway) would be used by construction vehicles throughout construction. Construction vehicles from the A127 would not go further south than the entrance to CA16 following construction of the temporary M25 works accesses.	Utility works within this area would require short-term lane narrowing. If this is not possible then short-term closures and traffic lights would be used to complete highway crossings.

Road	Main works location	Main works construction information (indicative)	Nearby utility information (indicative)
		Traffic signals or similar may be required to manage construction vehicles turning off and on Warley Street from the construction site.	
B187 / St Marys Lane	M25 to Warley Street	The M25 bridge over St Marys Lane would need to widened as part of the scheme. The majority of the works would be able to take place without closing St Marys Lane, with access to the worksites from offline haul routes running alongside the M25. Certain specific works would require short-term night/weekend or similar closures of St Marys Lane but otherwise it would remain open. Crossing points for construction vehicles on St Marys Lane would be required. It is likely a crossing point just east and just west of the M25 would be required to allow construction vehicles to travel alongside the M25 to carry out widening works. The M25 widening works on the western side would largely be conducted from the local ground level and some from the M25. It is envisaged the underpass would also be used by appropriately sized construction vehicles to enable access to the east side of the M25 and subsequently along the eastern side of the M25. The M25 widening works on the eastern side would be conducted both from the local ground level and from the M25. The section between the Shoeburyness railway line and the river (between Cranham Golf Course and Thames Chase Forest) would be constructed from the local ground level as well as from the M25 level. Access to the local ground level in this stretch would be via St Marys Lane (via offline routes on the western side and St Marys Lane underpass). The remainder of the	Utility works within this area would require short-term lane narrowing. If this is not possible then short-term closures and traffic lights would be used to complete highway crossings.

Road	Main works location	Main works construction information (indicative)	Nearby utility information (indicative)
		eastern M25 widening works would largely be constructed from the M25 level. In order to facilitate construction vehicle movements using the underpass, the pavement may be narrowed or closed, however pedestrian access would remain open in some form. Traffic signals or similar would be implemented to manage the public and construction traffic in this short (circa 120m) stretch of St Marys Lane. The section of St Marys lane between Clay Tye Road and Warley Street would be initially used by construction traffic to access worksites CA14, CA15 and the temporary haul routes alongside the Project alignment. Once the temporary works accesses of the M25 are constructed, construction traffic would not use St Marys Lane other than the section mentioned above (the circa 120m stretch).	
Ockendon Road	Tilbury Loop line to (and across) M25	A new bridge over the proposed Lower Thames Crossing slip along with a large cutting is required as part of the scheme around Ockendon Road. As such, it is proposed Ockendon Road would be closed in this stretch for approximately 19 months.	Utility works within this area would require short-term lane narrowing. If this is not possible then short-term closures and traffic lights would be used to complete highway crossings.
Ockendon Road	Between M25 and CA14 access	This stretch of road would be initially used to allow construction vehicles to access the works either side of the M25. Following construction of the temporary M25 accesses and associated offline haul routes, this section would not be required.	Utility works within this area would require short-term lane narrowing. If this is not possible then short-term closures and traffic lights would be used to complete highway crossings.
Folkes Lane	From A127 to Folkes Lane car park	N/A	Access would be required for approximately a year along Folkes Lane, of which, some of the required

Road	Main works location	Main works construction information (indicative)	Nearby utility information (indicative)
			traffic movements may require the infrequent use of escorted vehicles and Stop/Go boards.
Mill Lane	Both sides of the A13	N/A	Access would be required for circa a year along Mill Lane to complete utility crossings of the A13, of which, some of the required traffic movements may require the infrequent use of escorted vehicles and Stop/Go boards.
Dock Road & Hume Avenue	South of Asda roundabout	N/A	Installation of new water main potentially requires the use of traffic lights and single lane closure for six months. Lane closure would move along the alignment with the works.
Coopers Shaw Road	Gun Hill, Fort Road junction to Church Road	N/A	Installation of new water main potentially requires the use of traffic lights and single lane closure for two months. Lane closure would move along the alignment with the works. Potential to close Coopers Shaw Road and divert along Church Road to expedite works and improve safety.
B188	Stifford Clays Road to Orsett	N/A	Utility installation is proposed outside of the highway, however for safety, single lane closures and traffic lights may be required for a short period of time (weeks).

Road	Main works location	Main works construction information (indicative)	Nearby utility information (indicative)
Blackshots Lane	North of housing	N/A	Potential weekend closure to install utility compound connection if single lane and traffic lights not feasible.
Beredens Lane	Access from Warley Road	N/A	Access would be required for approximately a year along Beredens Lane, of which, some of the required traffic movements may require the infrequent use of escorted vehicles and Stop/Go boards.

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