

Lower Thames Crossing

Guide to supplementary consultation



January 2020

About this guide

At the end of 2018, we held the most comprehensive consultation Highways England has ever undertaken. Almost 29,000 people shared their views on our proposals for the Lower Thames Crossing, a new road connecting Kent, Thurrock and Essex through a tunnel beneath the River Thames.

We've reviewed the feedback received through our previous consultation and have continued to progress our designs ahead of submitting a Development Consent Order application later this year.

It is vital we get all aspects of the design, construction and operation of the crossing right to ensure we can minimise its impacts and maximise its benefits. We would now like to hear your views on our proposed changes to the route.

This is the latest stage in the planning process and is an opportunity for you to have your say. This guide outlines the changes to the route, provides project updates, explains how to give your feedback and details the planning process we will go through before the final decision is made by the Secretary of State for Transport.

Highways England

Highways England is a government-owned company that works with the Department for Transport.

We operate, maintain and improve England's motorways and major A-roads, also known as the strategic road network.

Our aim is to ensure that road users have safer and more reliable journeys, and that businesses have the high-quality, effective road links they need to prosper.

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Throughout this guide we have highlighted the other documents that give more detail about our consultation, which are available on our website. Images used throughout this guide are illustrative for this consultation and may change in the future.

Foreword



Chris Taylor, Director, Complex Infrastructure Programme

28,493 responses were received in our statutory consultation

Welcome to the Lower Thames Crossing supplementary consultation. Following our statutory consultation in 2018 we are now proposing a number of design changes which are detailed in this document. This is your opportunity to view and comment on the proposed changes.

The Lower Thames Crossing is part of the biggest investment in the country's road network for a generation and an essential component in the UK's future transport infrastructure. It will boost local, regional and national economies, while offering new connections, better journeys and fewer delays.

This supplementary consultation is the next step in progressing our proposals before we submit our Development Consent Order (DCO) application later this year.

Valuable feedback

Our statutory consultation in 2018 received a record-breaking response. Almost 29,000 people commented, 89% via our consultation website. Feedback indicated significant support for our proposals with more than 80% of respondents recognising the need for a new crossing and 70% supporting the location.

Using this valuable feedback, along with ongoing design development, we have refined our proposals with a strong focus on maximising benefits and delivering value for money. We also remain determined to minimise the impact on communities, the environment and the local landscape.

We will produce a Consultation Report that explains whether, and how, we have changed the proposals in response to feedback received from the statutory consultation and this supplementary consultation. The report will form part of our application for development consent.

Share your views

It is important that we get all aspects of the Lower Thames Crossing right, so we are holding this non-statutory consultation to ask for your views on the changes to the project since statutory consultation. You can get all the information you need from this guide, the additional documents on our website, or by attending one of our local consultation events.

Please take the opportunity to let us know what you think. Working together, we can shape the best solution.

Many thanks,

A handwritten signature in black ink, appearing to read 'Chris Taylor', with a long, sweeping horizontal line extending to the right.

Chris Taylor

Director, Complex Infrastructure Programme,
Highways England

 www.lowerthamescrossing.co.uk/consultation-2020

 Twitter – @lowerthames

 www.facebook.com/lowerthames

Project updates

From 10 October to 20 December 2018, Highways England carried out our most comprehensive consultation, receiving nearly 29,000 responses from individuals and stakeholders. After carefully considering the issues raised in these responses, and carrying out further design development, we have refined our proposals and are now consulting on our proposed changes to the Lower Thames Crossing.

What is the Lower Thames Crossing?

The Lower Thames Crossing is a proposed new road connecting Kent, Thurrock and Essex through a tunnel beneath the River Thames. It would provide much-needed new road capacity across the river east of London and deliver the other scheme objectives set out in the consultation materials.

On the south side of the River Thames, the new road would link to the A2 and M2 in Kent. On the north side, it would link to the A13 in Thurrock and the M25 in Havering.

The tunnel crossing is located to the east of Gravesend on the south of the River Thames and to the west of East Tilbury on the north side.

The Lower Thames Crossing proposals will include:

- approximately 14.3 miles (23km) of new roads connecting the tunnel to the existing road network
- three lanes in both directions, apart from the southbound connection between the M25 and A13, where it would be two lanes, and around junctions
- technology providing lane control and variable speed limits up to 70mph
- upgrades to the M25, A2 and A13 where it connects to those roads

- new structures and changes to existing ones including bridges, viaducts and utilities such as electricity pylons
- two 2.6 mile (4.3km) tunnels crossing beneath the river, one for southbound traffic, one for northbound traffic
- a free-flow charging system, where drivers do not need to stop but pay remotely, similar to that at the Dartford Crossing
- traffic regulation measures that include prohibiting use by pedestrians, low-powered motorcycles, cyclists, horse riders and agricultural vehicles
- provision of environment mitigation and replacement of open space and common land

Aims of the Lower Thames Crossing

We worked with the Department for Transport (DfT) to agree the following objectives that we want the Lower Thames Crossing to achieve:

- to support sustainable local development and regional economic growth in the medium to long term
- to be affordable to government and users
- to achieve value for money
- to minimise adverse impacts on health and the environment
- to relieve the congested Dartford Crossing and approach roads, and improve their performance by providing free-flowing, north-south capacity
- to improve resilience of the Thames crossings and the major road network
- to improve safety

As well as following the scheme objectives, we are obliged to develop the Lower Thames Crossing so it meets the standards outlined by the National Policy Statement for National Networks, which sets out government policies for nationally significant infrastructure road projects for England.

Why have we made changes to the project?

The changes described in detail in this guide were informed by our consideration of the issues raised through the nearly 29,000 responses submitted to our statutory consultation, as well as detailed technical assessments and other considerations. They have been designed to improve the Lower Thames Crossing, while being practicable and fair.

We have tried to be sensitive to the needs of interested parties, especially those living in the vicinity of the project, while always being aware that we must deliver a viable scheme that satisfies national policy and the scheme objectives agreed with the DfT.

Outside of the proposals highlighted in this guide and our associated consultation material, we are not currently considering further changes to the elements of the project presented during statutory consultation. We consider the justifications we made for these elements at that time to still be valid.

As part of our DCO application, we will submit a Consultation Report, which will explain how we considered the issues raised during statutory consultation and this supplementary consultation. This report will highlight those elements of the project that we have changed as a result of the feedback received during consultation and those that have stayed the same.

This supplementary consultation is the latest stage in the planning process and is an opportunity for you to have your say on the proposals outlined in this guide and associated consultation material. Please see chapter 11 for information about how you can give your feedback on the proposed changes. If you would like to comment on areas of the project that are not covered by a specific question on our supplementary consultation response form, please use question 8 'Other comments'.

Summary of our updated proposals

The information we are presenting during this supplementary consultation includes changes to what was outlined during our statutory consultation in 2018, and updates to the project where further information has become available. The main updates are highlighted below.

Key changes to our proposals:

- **M2/A2, including the junction with the Lower Thames Crossing:** Following feedback from our statutory consultation, we have looked at junction configuration. We have provided more direct connectivity between Gravesend and the M2/A2 eastbound, and redesigned the Gravesend East junction and link roads to improve journey times.
- **Southern tunnel entrance:** We have moved the entrance 350 metres to the south to reduce the impact on the Thames Estuary and Marshes Ramsar site. An informal public space, Chalk Park, would be created around the southern tunnel entrance to improve local biodiversity and ecological connectivity.
- **Removal of the rest and service area and Tilbury junction:** After further investigation and consideration of the feedback from statutory consultation and environmental considerations, we have decided not to progress with the rest and service area or the maintenance depot. Resources will be provided from other local maintenance depots to serve LTC. This means the junction at Tilbury is no longer required.
- **Route between Tilbury and A13 junction:** We have moved the route approximately 60 metres north-east to avoid the need for major overhead cable diversion works.
- **A13/A1089 junction:** We have redesigned some slip roads at the junction between the Lower Thames Crossing, A13, A1089 and A1013 to reduce the visual impact, move roads away from properties, and improve safety and connectivity at the junctions.
- **Number of lanes:** We have removed one lane southbound between the M25 and A13/A1089 junction to reduce the route's impact, while still providing sufficient vehicle capacity.
- **Route through the Mardyke:** We have changed the structures over the Mardyke River, Golden Bridge Sewer and the Orsett Fen Sewer to reduce the visual impact and the volume of flood compensation needed. The route has moved approximately 200 metres south-west to reduce the work required to move an existing gas main. It also reduces the impact on a nearby landfill site.

- **M25 junction:** We have redesigned the southbound link from the M25 to the Lower Thames Crossing to avoid demolition and reconstruction of the existing Ockendon Road bridge over the M25.
- **M25 junction 29:** We have changed the layout of junction 29 to reduce the amount of overhead cable diversion works. See chapter 3 for more details on these proposed changes.

Property and landowners: We have revised the development boundary as a result of the design changes, proposed utility diversions and additional land required for environmental mitigation. See chapter 4 for further information on the development boundary.

Facilities for walking, cycling and horse riding: We have developed a detailed set of proposals for maintaining, improving and upgrading the walking, cycling and horse-riding network in the vicinity of the project. See chapter 5 for more details.

Environmental impact: As a result of our proposed design changes to the route, revised development boundary and utility diversions, we have set out our current understanding of how these affect the information that was presented in our 2018 Preliminary Environmental Information Report (PEIR). Further details are set out in chapter 6 and our Environmental Impacts Update.

Building the Lower Thames Crossing: We have progressed our plans for how we will build the scheme, and further details can be found in chapter 7.

Utilities (gas, electricity, water, sewers and communications): We have progressed our plans to divert utilities in a way that is necessary to build the Lower Thames Crossing safely, protect existing supplies and enable future maintenance. See chapter 8 for further details.

Using the Lower Thames Crossing: We have updated elements of our traffic model as part of our ongoing work to prepare for our DCO application, details of which can be found in chapter 9.

Other updates to the Lower Thames Crossing:

As well as the changes summarised above and presented in detail in this guide, we have also made progress in the following areas:

Funding

Following the Chancellor of the Exchequer's announcement in October 2018 to end the use of private finance, the project is now being developed as a fully publicly-funded scheme. Now the project is not being delivered through a single private finance supplier, which could have brought commercial constraints, we are able to revise our procurement strategy. This includes improving the packaging of works, which can be divided into southern and northern packages, each with different challenges and required skills.

As the construction and maintenance of the approach roads and the junctions are no longer combined, the maintenance can be absorbed into Highways England's existing strategy for the Strategic Road Network in the South East. As a result, there is no need for a dedicated maintenance depot along the Lower Thames Crossing route.

Equal charging at Dartford and the Lower Thames Crossing

Our proposal at statutory consultation was to seek flexibility for a range of charging scenarios. In recent months, we have reviewed a number of charging options to fully inform our proposals ahead of our DCO submission.

The most recent modelling and assessments have shown that making the charge for the Lower Thames Crossing the same as the Dartford Crossing would be the most beneficial option.

Our DCO application will therefore include an equal charging scenario for the following reasons:

- It simplifies decision making for the driver as the choice of crossing will be informed by the easiest route.
- It relieves congestion at the Dartford Crossing while balancing use of the Lower Thames Crossing.
- It minimises operational complexity, enabling the combined operation of the Dartford Crossing and Lower Thames Crossing charging schemes.

Local Residents Discount Scheme

Our continued engagement with stakeholders and the feedback we received during statutory consultation shows there is a high expectation that the Lower Thames Crossing project will include a local residents' discount scheme (LRDS). It is our intention that a local resident discount scheme shall apply to residents of both Thurrock and Gravesham, and will be implemented on a similar basis, with the same level as applies to Dartford.

To find out more about the Dart Charge LRDS, visit

www.gov.uk/pay-dartford-crossing-charge/charges-fines

In our 2018 statutory consultation there were:



60

events



14,868

event attendees



2,500,000

emails sent



132

Tweets sent by
@lowerthames



300,000

people reached
via Twitter



212,000

visitors to our
consultation website



2,000,000

views of our
consultation web pages

For more information

Please see our 2019 Project Update to read about how people responded to our 2018 statutory consultation. This can be found online at www.lowerthamescrossing.co.uk

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Changes to the route

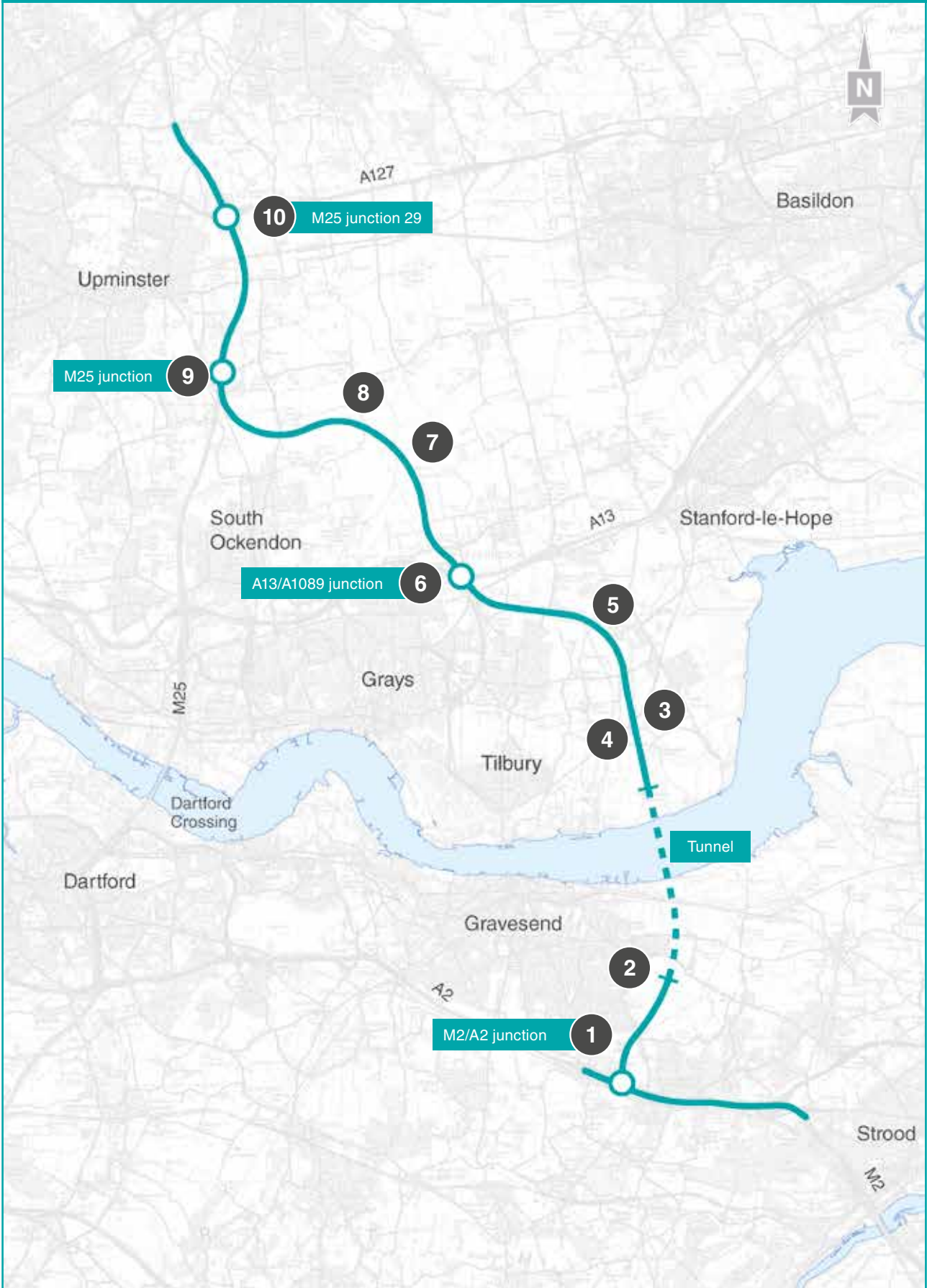
Our proposals have been shaped following multiple phases of stakeholder engagement and public consultation. We have listened carefully to all feedback we've received and have continued our own investigations. This will make sure we are developing a long-term solution that considers the environment and the communities it passes, while delivering the project objectives including value for money.

It is important that we consult on changes to the project and listen to your views to shape our proposals, ahead of us submitting our DCO application to the Planning Inspectorate in summer 2020.

Our approach to design has been guided by standards and best practice, which seek to ensure the Lower Thames Crossing is safe to construct and operate, sustainable and will create a positive legacy for future generations.

NOTE: Throughout this section, we will refer to the Lower Thames Crossing as 'LTC'. Any distances provided are approximate and subject to change. The images used are illustrative for this consultation and may change as a result of our ongoing assessments and the feedback we receive. The pictures of our supplementary consultation proposals illustrate how locations might look 15 years after the opening of the LTC.

Overview of design changes



Overview of design changes

South of the river in Kent

- 1 M2/A2 junction:** we have made significant changes to the M2/A2 junction and local link roads, including:
 - Where possible, reducing the width of lane four on both M2 carriageways, from 3.65 metres to 3.3 metres, as well as reducing the central reservation, to minimise its impact on the Kent Downs Area of Outstanding Natural Beauty (AONB).
 - Replacing the hard shoulder on the eastbound link road along the A2 with a hard strip.
 - Adding a new connection to the junction to provide improved local access from Valley Drive in Gravesend on to the A2 eastbound where the LTC joins.
 - Realigning the slip roads to reduce the overall footprint of the A2/LTC junction and to reduce the impact on nearby residents.
 - Modifying the Gravesend East junction, Henhurst Road roundabout and local link roads to reduce congestion.

Did you know?

A link road moves traffic from local streets to arterial roads. They are primarily designed to provide access to homes.

Did you know?

An Area of Outstanding Natural Beauty is an area of countryside that has been designated for conservation due to its significant landscape value.

- 2 Southern tunnel entrance:** we have relocated the southern entrance 350 metres to the south to significantly reduce any adverse impact on the Thames Estuary and Marshes Ramsar site, a wetland of international importance. Changes to the M2/A2 junction have enabled this.

North of the river in Thurrock and Essex

- 3 Removal of the rest and service area:** after further investigation and consideration of the issues raised during statutory consultation and environmental considerations, we have decided not to progress with the rest and service area. Highways England is looking at future rest and service provision in the South East.
- 4 Tilbury junction:** removing the rest and service area and depot means a junction at Tilbury is no longer required but we have retained our operational facilities and the tunnel service building.
- 5 Routing between Tilbury and the A13 junction:** to reduce disruption and environmental impacts, we have moved the route approximately 60 metres north-east. This will avoid moving some pylons and overhead cables.

Road terms explained

6 A13/A1089 junction: we have modified a number of slip roads at the junction between the LTC, A13, A1089 and A1013, for various reasons. These include reducing the visual impact, moving roads away from nearby properties and improving safety at the junctions.

7 Number of lanes: we have removed one lane southbound between the M25 and A13 junction, taking it from three to two. Reducing the number of lanes has lessened the project's physical environmental and carbon footprint. Furthermore, our traffic modelling, which includes the recently published DfT freight forecast, has shown that this provides sufficient capacity for vehicles travelling southbound on the LTC, along this stretch.

8 Routing through the Mardyke: we have further developed the design in this area and we are proposing changes to the structures over the Mardyke River, Golden Bridge Sewer and the Orsett Fen Sewer. This change reduces the visual impact and the volume of flood compensation required in this area.

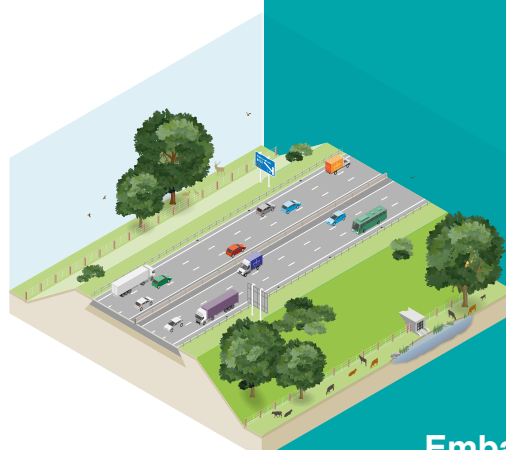
The route has moved approximately 200 metres south-west to reduce the work required to move an existing gas main. It also minimises the impact on a nearby landfill site.

9 M25 junction: we have altered the southbound link from the M25 to the LTC to avoid demolition and reconstruction of the existing Ockendon Road bridge over the M25.

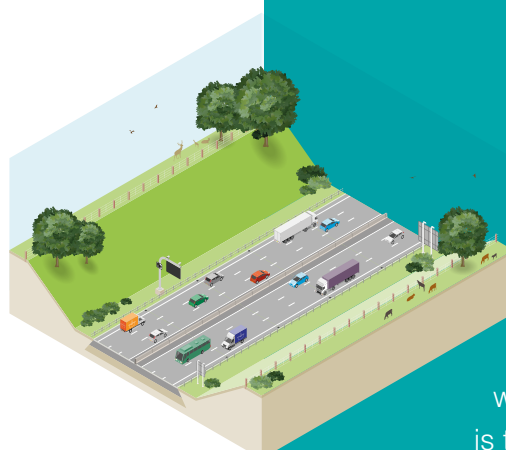
10 M25 junction 29: we have made some minor alterations to the layout of junction 29 of the M25 to reduce the amount of overhead cable diversion works.



Viaduct:
an elevated road bridge supported by pillars.



Embankment:
a wall of earth or stones to support a road, or to stop water from flooding an area.



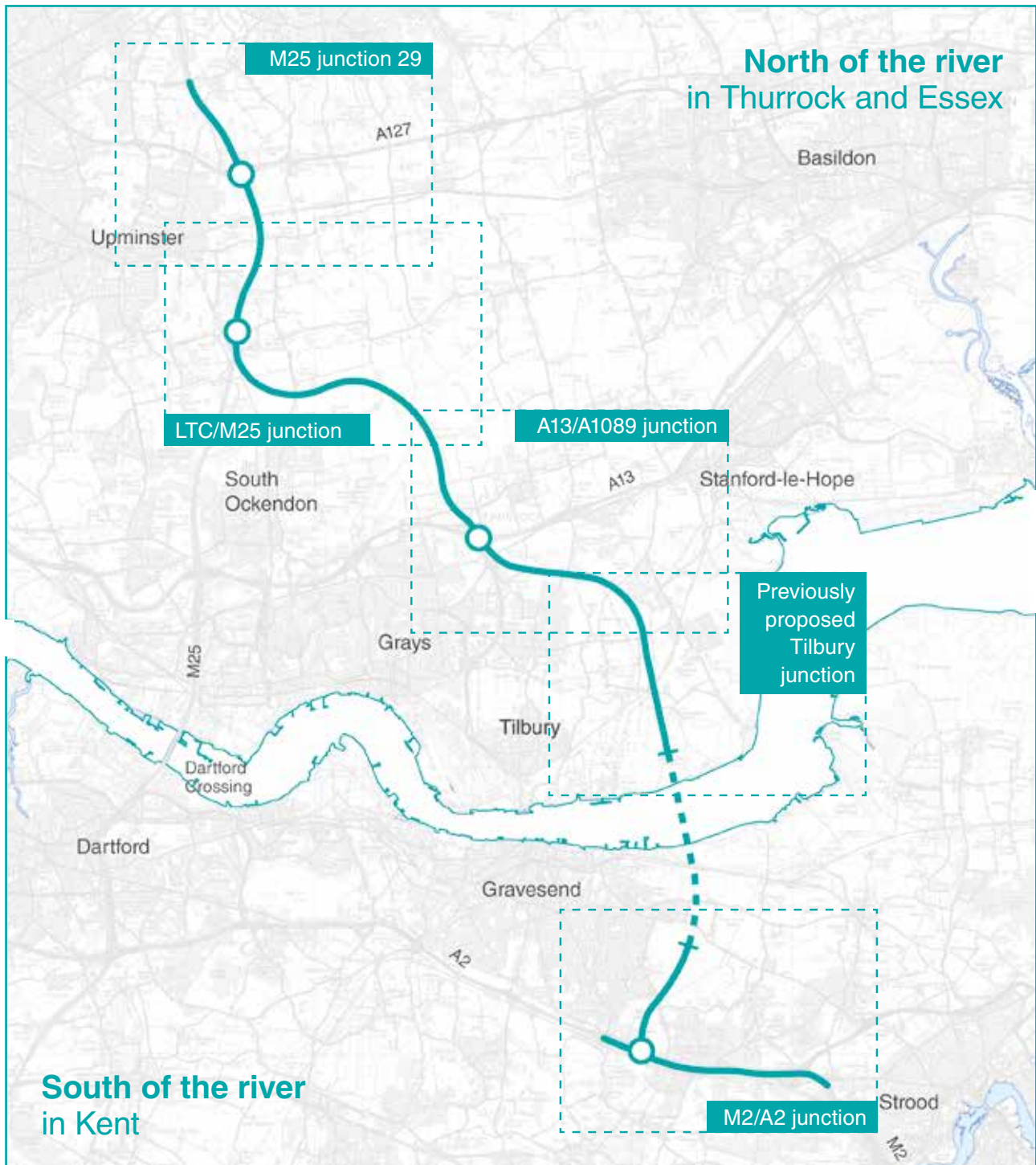
Cutting:
when a road is to go below existing ground, the soil or rock is removed, either altogether or to form landscape embankments on each side.

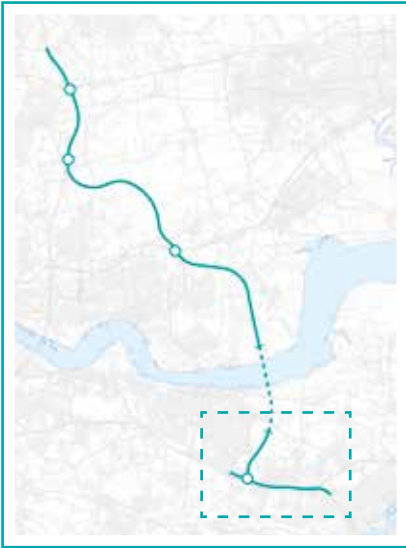
The route explained

For the purpose of describing the changes to the route in more detail, we have divided it into two sections:

- South of the river in Kent: M2/A2 junction and southern tunnel entrance.
- North of the river in Thurrock and Essex: northern tunnel entrance, previously proposed Tilbury junction, A13/A1089 junction, LTC/M25 junction and M25 junction 29.

First, we will describe our proposals south of the river, then work our way north of the river.





South of the river in Kent

M2/A2 junction

Feedback from our statutory consultation and further engagement with stakeholders prompted us to investigate the overall junction configuration.

Some of the significant changes we've made in this section of the route are shown below:

Removal of the M2/A2 link at M2 junction 1

The link between the A2 eastbound link road and the M2 eastbound has been removed. This has been replaced by the new link road connecting Valley Drive in Gravesend to the M2 eastbound.

M2/A2 narrowing

We have made alterations to minimise the footprint of the road through the AONB and Shorne Woods Country Park.

On both M2 carriageways, the fourth lane has been reverted to standard width, where possible, through the AONB. The central reservation between the Brewers Road bridge and the Park Pale bridge has been reduced in width. The hard shoulder has also been removed from the eastbound link road along the A2. To mitigate this it has been replaced with a hard strip and if an incident occurs we will use technology to control the traffic to prevent the link road backing up into the tunnel. A hard shoulder has been retained on the Brewers Road eastbound slip to accommodate broken-down vehicles at this junction.



Have your say

To comment on the changes to the route south of the river, answer question 1a and 1b in the response form.

The M2/A2 junction

This has been altered significantly to provide a more compact layout. Now, the north-facing slip roads do not extend as far northward up the route which allows the southern tunnel entrance to be moved 350 metres south. The main changes are:

- A new junction now partially encroaches into the Claylane Ancient Woodland as a result of the southern tunnel entrance move and the new connection from Valley Drive (see below).
- The main route of the LTC is located further away from Thong, Thong Lane and the Shorne Woods Country Park.

A new connection has been added to the junction between the Valley Drive roundabout and the M2 in the eastbound direction to make journeys for motorists travelling from Gravesend more direct. This connection will also provide access to the LTC northbound.

A2 local connections

We have modified the Gravesend East junction, roundabouts and local link roads to reduce congestion and provide better connections with the existing Marling Cross bridge and Henhurst Road.

We have moved the A2 westbound slip road to Brewers Road slip road further west, from the Halfpence Lane roundabout to the new roundabout west of Thong Lane off the A2, to avoid HS1 land.

Changes have been made to the walkers, cyclists and horse-riding network around the A2 junction. Please see chapter 5 for more information.

Southern tunnel entrance redesign

We have extended the tunnel southwards, which has moved the entrance 350 metres to the south. This has also required the tunnel to move approximately 50 metres to the west. This change should lessen any potential impacts on the Thames Estuary and Marshes Ramsar site and Special Protection Area. However, as a result of reducing the impact on the Thames Estuary and Marshes Ramsar site, the junction now encroaches into the Claylane Ancient Woodlands. Moving the entrance south

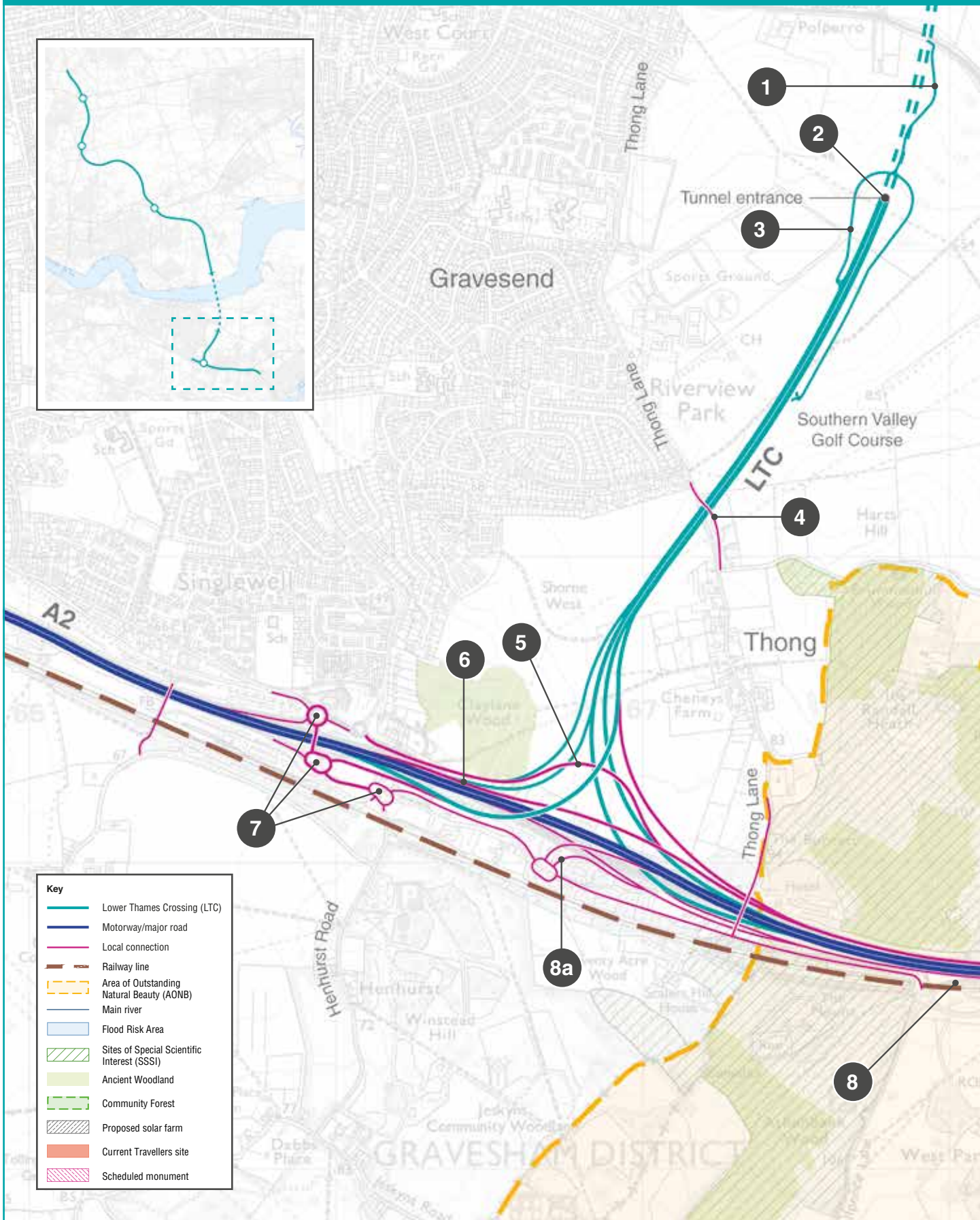
will move the road away from properties in Chalk. In addition, this change will enable a dry evacuation above water level and reduce the permanent land needed in this area.

Southern tunnel entrance maintenance and access road

The width of the private maintenance and access road corridor around the southern tunnel entrance has been increased from eight metres to 12 metres. This provides enough space for drainage, lighting, a safety barrier and a road that can cater for two-way traffic.

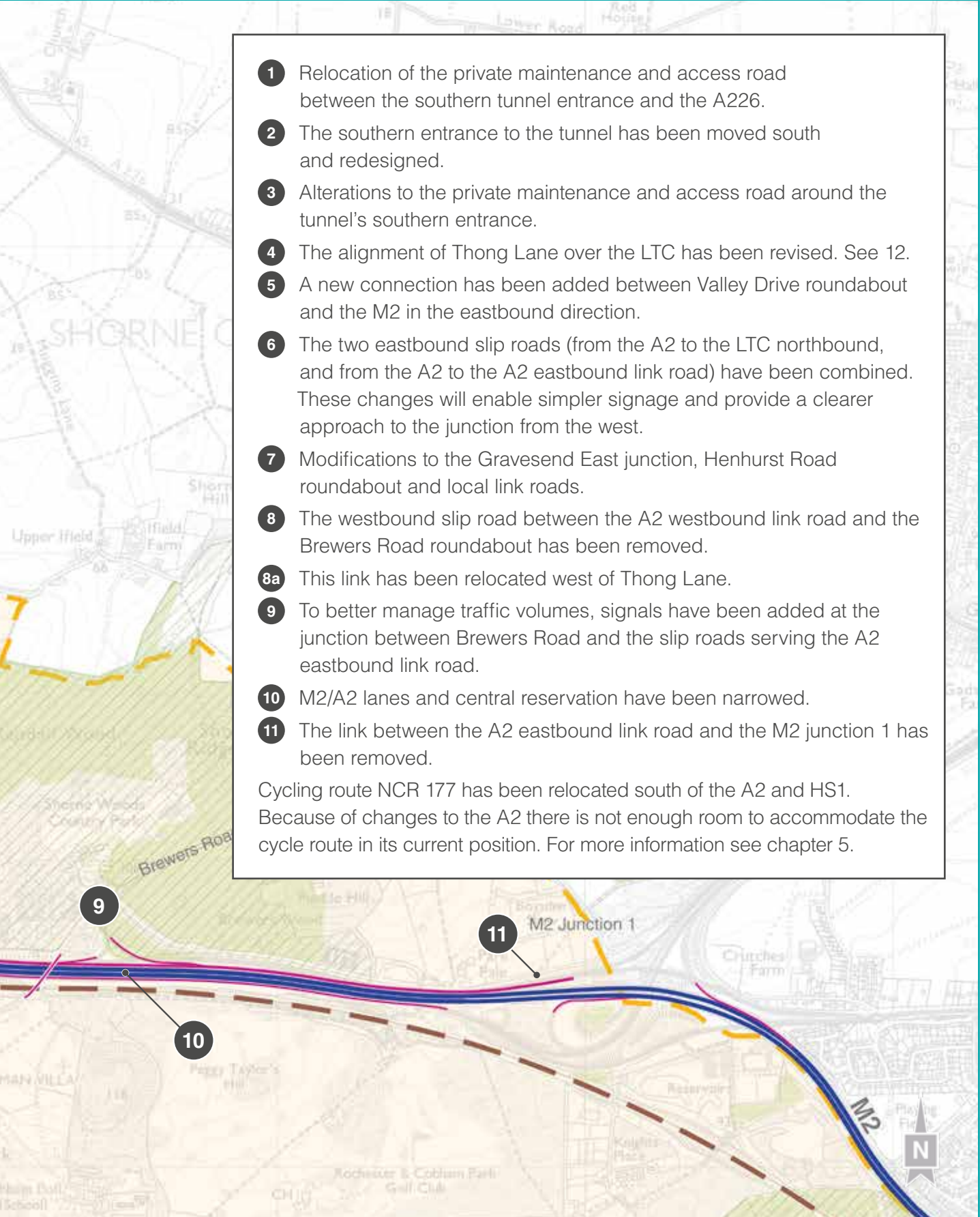
The private maintenance and access road to the A226 has been moved to the west, away from the Church Lane junction that provides access to St Mary's Church, Chalk. The new location for the access road also moves it away from the church, which some consultation respondents told us they were concerned about.

South of the river in Kent

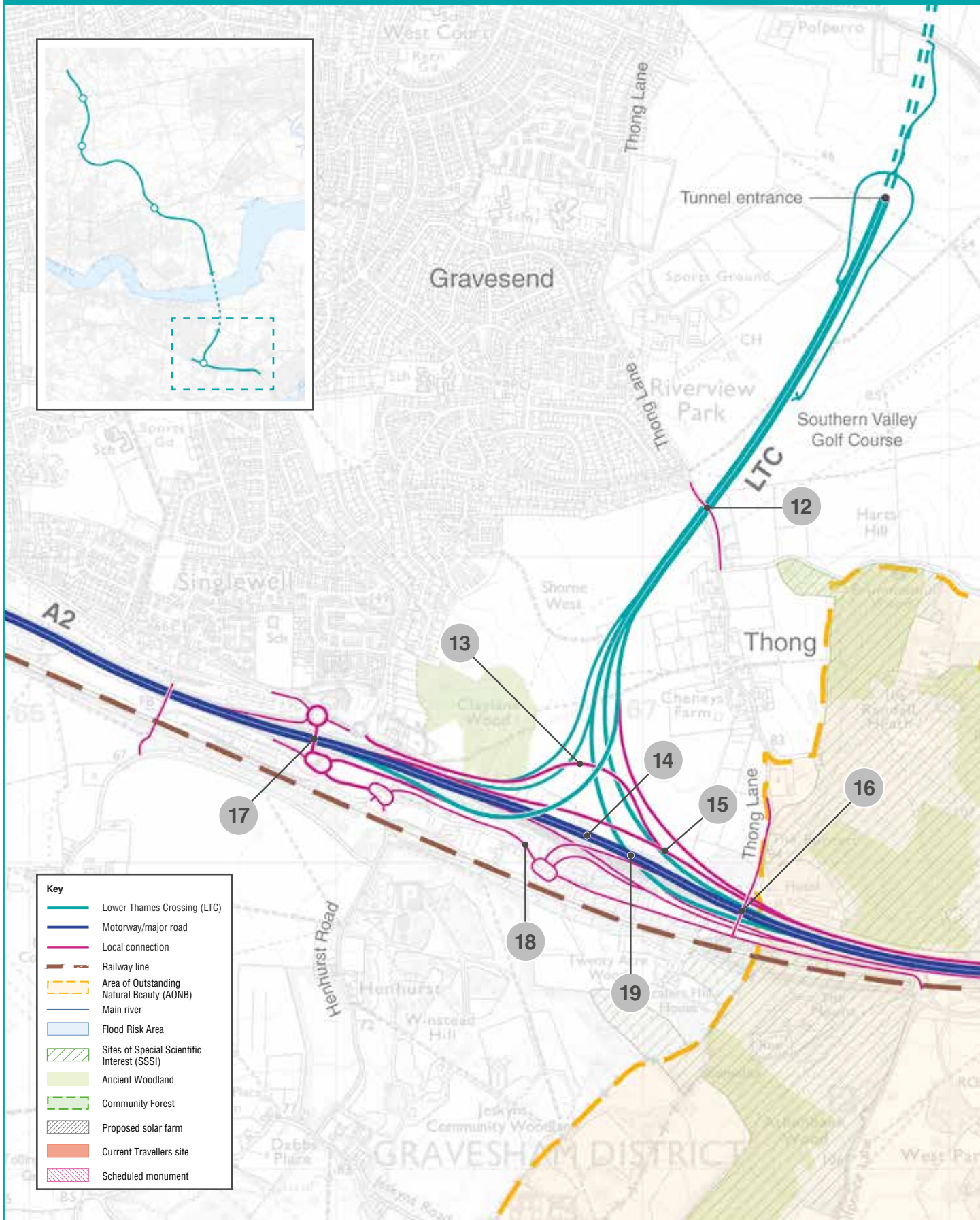


- 1 Relocation of the private maintenance and access road between the southern tunnel entrance and the A226.
- 2 The southern entrance to the tunnel has been moved south and redesigned.
- 3 Alterations to the private maintenance and access road around the tunnel's southern entrance.
- 4 The alignment of Thong Lane over the LTC has been revised. See 12.
- 5 A new connection has been added between Valley Drive roundabout and the M2 in the eastbound direction.
- 6 The two eastbound slip roads (from the A2 to the LTC northbound, and from the A2 to the A2 eastbound link road) have been combined. These changes will enable simpler signage and provide a clearer approach to the junction from the west.
- 7 Modifications to the Gravesend East junction, Henhurst Road roundabout and local link roads.
- 8 The westbound slip road between the A2 westbound link road and the Brewers Road roundabout has been removed.
- 8a This link has been relocated west of Thong Lane.
- 9 To better manage traffic volumes, signals have been added at the junction between Brewers Road and the slip roads serving the A2 eastbound link road.
- 10 M2/A2 lanes and central reservation have been narrowed.
- 11 The link between the A2 eastbound link road and the M2 junction 1 has been removed.

Cycling route NCR 177 has been relocated south of the A2 and HS1. Because of changes to the A2 there is not enough room to accommodate the cycle route in its current position. For more information see chapter 5.

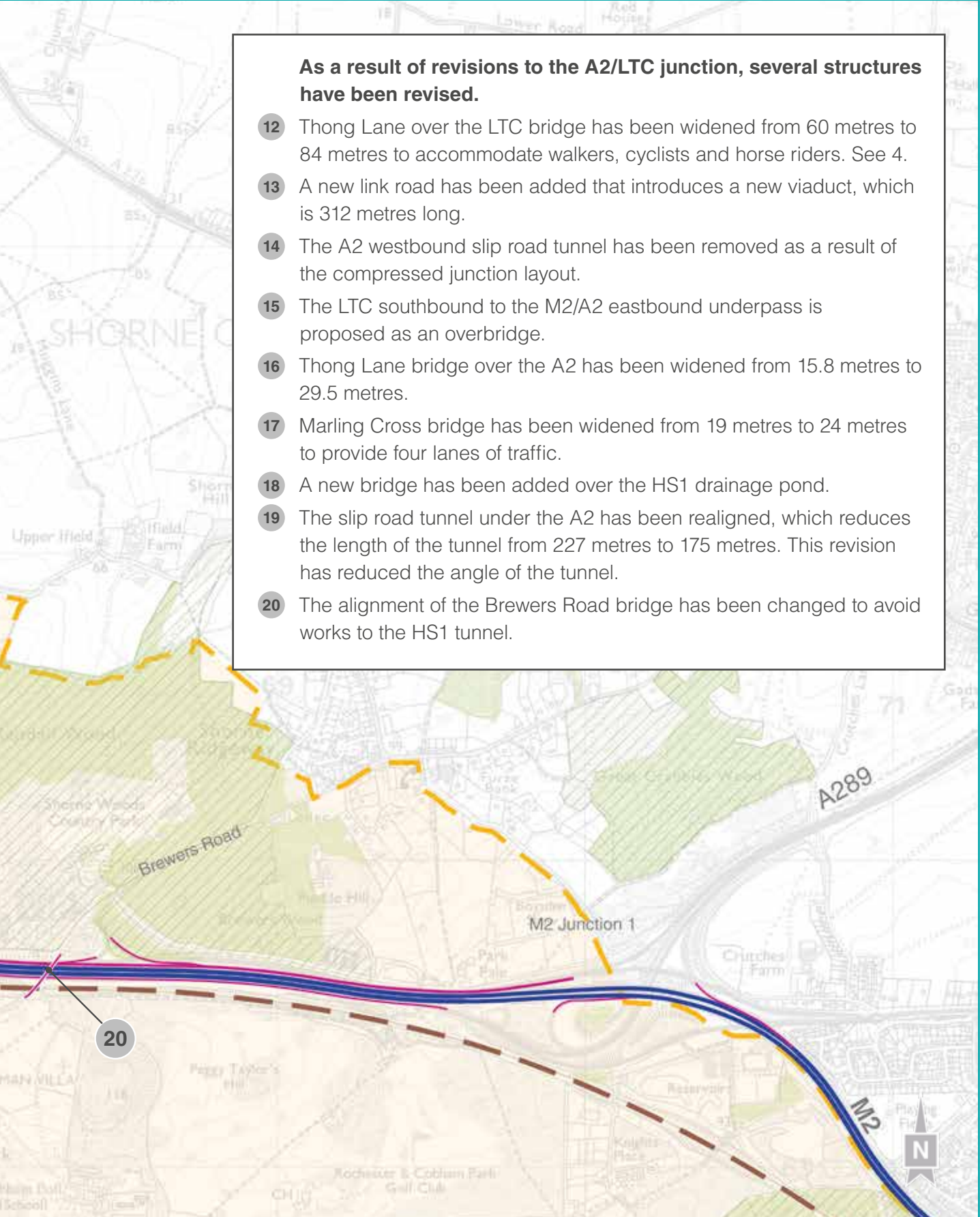


South of the river in Kent



As a result of revisions to the A2/LTC junction, several structures have been revised.

- 12 Thong Lane over the LTC bridge has been widened from 60 metres to 84 metres to accommodate walkers, cyclists and horse riders. See 4.
- 13 A new link road has been added that introduces a new viaduct, which is 312 metres long.
- 14 The A2 westbound slip road tunnel has been removed as a result of the compressed junction layout.
- 15 The LTC southbound to the M2/A2 eastbound underpass is proposed as an overbridge.
- 16 Thong Lane bridge over the A2 has been widened from 15.8 metres to 29.5 metres.
- 17 Marling Cross bridge has been widened from 19 metres to 24 metres to provide four lanes of traffic.
- 18 A new bridge has been added over the HS1 drainage pond.
- 19 The slip road tunnel under the A2 has been realigned, which reduces the length of the tunnel from 227 metres to 175 metres. This revision has reduced the angle of the tunnel.
- 20 The alignment of the Brewers Road bridge has been changed to avoid works to the HS1 tunnel.



M2/A2 junction connections – to and from the LTC



Figure 5-1. LTC southbound to join the M2/A2 eastbound. Follow the LTC southbound passing the exit that leads to the A2 eastbound parallel link road and A2 westbound carriageway. Continue to follow the road, passing the entry slip where traffic joins from Gravesend East and join the M2 eastbound.



Figure 5-2. Leaving the LTC to join the A2 westbound. Follow the LTC southbound, leaving at the exit slip for the A2 eastbound parallel link road and A2 westbound carriageway. Follow the road, passing the exit for the A2 eastbound parallel link road, continue south over the A2/M2, follow the road passing the exit for the Gravesend East junction and join the A2 westbound.



Figure 5-3. Joining LTC from the A2 eastbound and Gravesend East junction. Travel east along the M2/A2 taking the exit that leads to the LTC northbound. The new connection that has been added to the Gravesend East junction will also provide access from the Valley Drive roundabout to the LTC northbound.



Figure 5-4. Joining the LTC from the M2/A2 westbound. Leave the M2 westbound at the exit for the LTC northbound, follow the road passing an entry slip where traffic joins from the A2 westbound parallel link road, through an underpass beneath the M2/A2, past a second entry slip road where traffic joins from the A2 eastbound and past a third entry slip road where traffic joins from Gravesend East.

M2/A2 junction connections – from London and Kent



Figure 5-5. A2 eastbound to eastbound parallel link road. Travelling east along the M2/A2, follow the road passing the LTC northbound exit slip road. Leave the A2 at the point where the road becomes the M2 on to the A2 eastbound parallel link road.

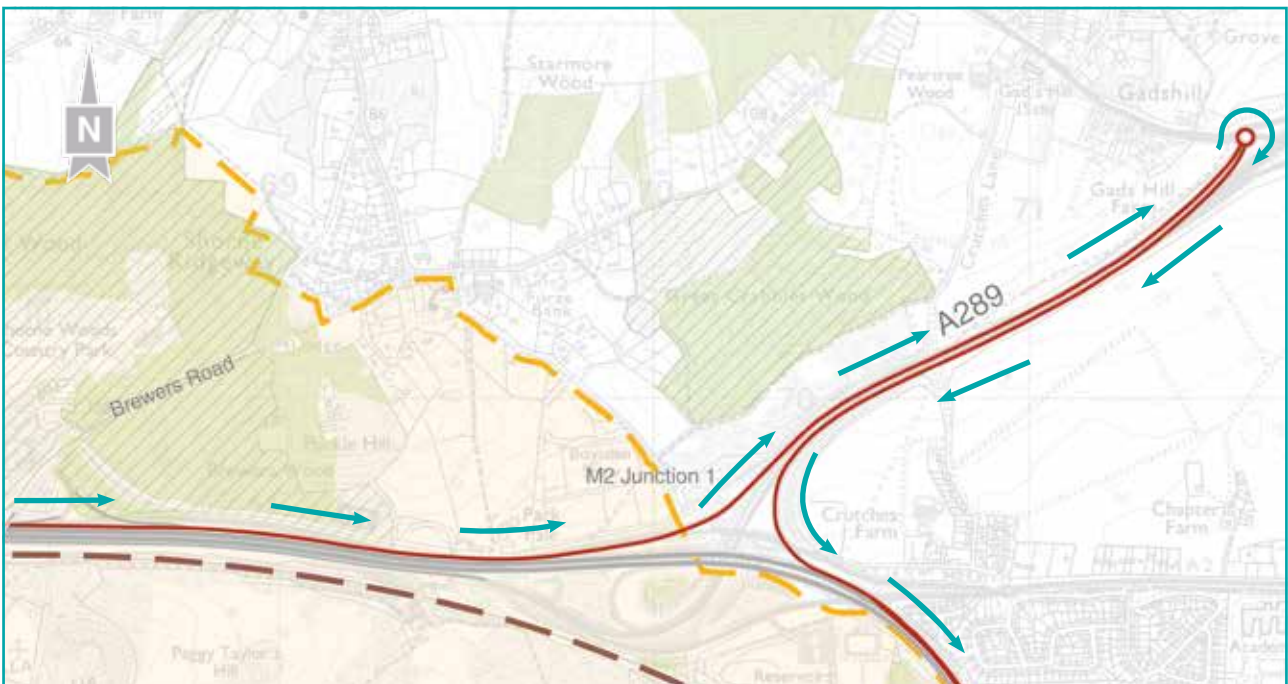


Figure 5-6. Brewers Road to M2 eastbound. This connection has been removed. From the A2 eastbound parallel link road, follow the road to the A289 eastbound. Travel approximately 1km along the A289 and then perform a 'U-turn' at the A226 junction. Head back west along the A289 before taking the existing exit to join the M2 eastbound.



Figure 5-7. A2 eastbound to Brewers Road. Travelling east along the M2/A2 follow the road passing the LTC northbound exit. Leave the A2 at the point where the road becomes the M2 on to the A2 eastbound parallel link road. Continue along the A2 eastbound parallel link road and leave at the Brewers Road exit.

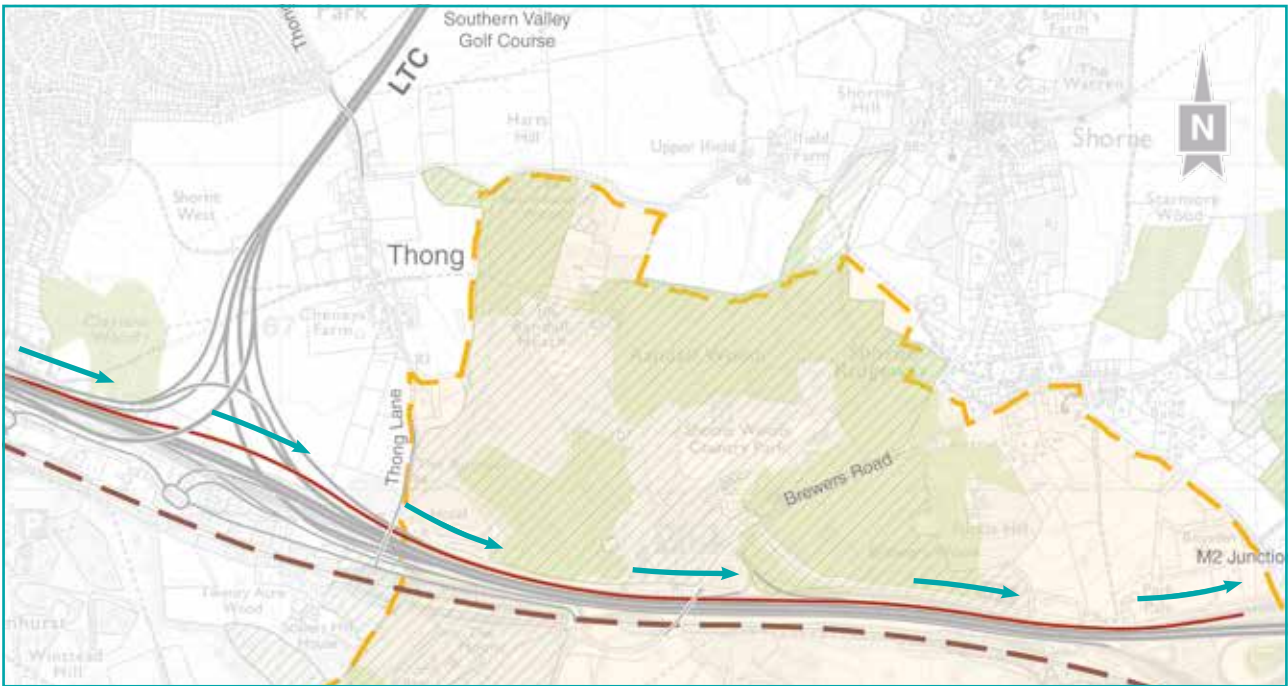


Figure 5-8. A2 eastbound to A289. Travelling east along the M2/A2 follow the road, passing the LTC northbound exit. Leave the A2 at the point where the road becomes the M2, on to the A2 eastbound parallel link road. Follow the A2 eastbound parallel link road, passing the slip roads at the Brewers Road junction, and then follow the road left to join the A289 eastbound.

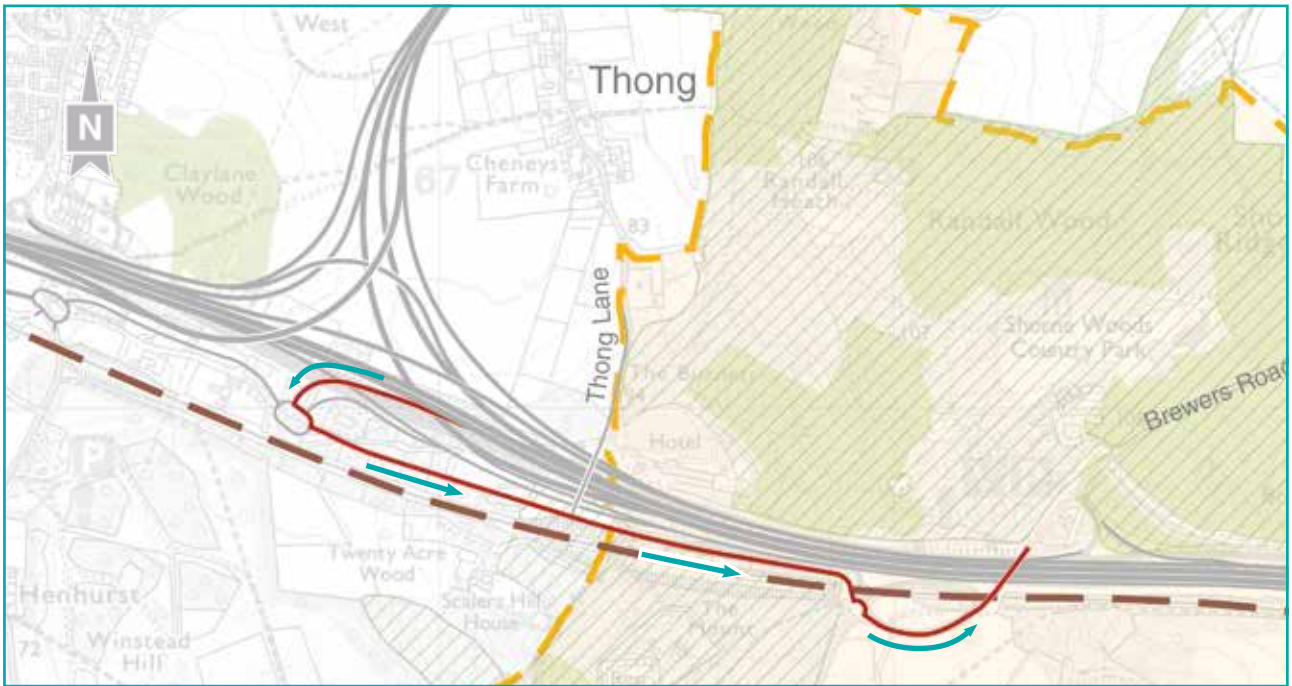


Figure 5-9. M2 westbound to Brewers Road. Leave the M2 westbound using a slip road that connects with the local network via a new roundabout at the site of the existing A2 service station. From the roundabout head east along the new two-way local link road towards the roundabout on Halfpence Lane and Brewers Road.

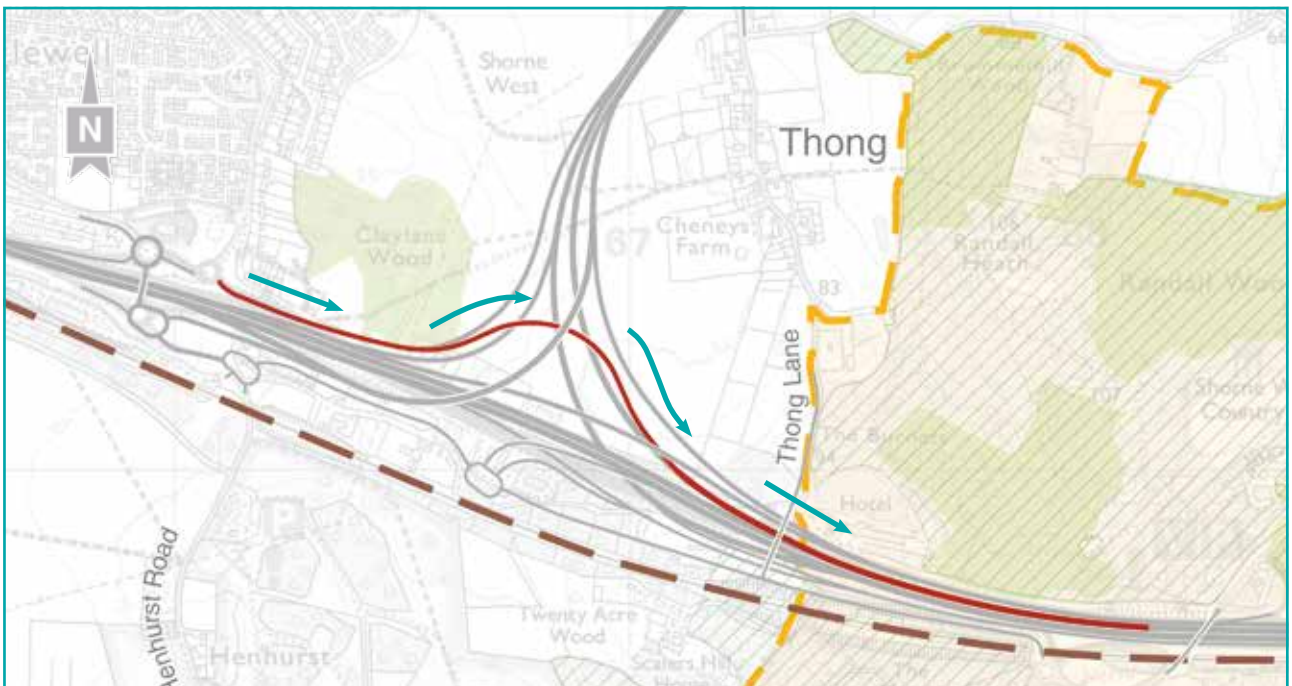


Figure 5-10. Gravesend East/Valley Drive Roundabout to M2 eastbound. A new connection has been added to the Gravesend East junction to provide a direct connection between the Valley Drive roundabout and M2 in the eastbound direction.

M2/A2 junction connections

The table below shows the connections to and from the M2/A2 junction.

How to read this table: Find your starting point or location in the left hand column then look along the columns to see which direct connections you can make.

Your direct connections	LTC northbound	LTC southbound	M2 eastbound	M2 westbound	A2 eastbound	A2 westbound	Gravesend East eastbound	Gravesend East westbound	A289 eastbound	A289 westbound	Brewers Road eastbound	Brewers Road westbound
Starting location	LTC northbound	LTC southbound	M2 eastbound	M2 westbound	A2 eastbound	A2 westbound	Gravesend East eastbound	Gravesend East westbound	A289 eastbound	A289 westbound	Brewers Road eastbound	Brewers Road westbound
LTC northbound			✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
LTC southbound			✓	✗	✓	✓	✗	✓	✓	✗	✗	✓
M2 eastbound	✗	✗			✗	✗	✗	✗	✗	✗	✗	✗
M2 westbound	✓	✗			✗	✓	✗	✓	✓	✗	✓	✗
A2 eastbound	✓	✗	✓	✗			✓	✗	✓	✗	✓	✗
A2 westbound	✓	✗	✗	✗			✗	✓	✗	✗	✓	✗
Gravesend East eastbound	✓	✗	✓	✗	✓	✗			✓	✗	✓	✗
Gravesend East westbound	✗	✗	✗	✗	✗	✓			✗	✗	✗	✗
A289 eastbound	✗	✗	✗	✗	✗	✗	✗	✗			✗	✗
A289 westbound	✓	✗	✓	✗	✗	✓	✗	✓			✗	✓
Brewers Road eastbound	✗	✗	✓	✗	✓	✗	✗	✗	✓	✗		
Brewers Road westbound	✓	✗	✗	✗	✗	✓	✗	✓	✗	✗		

M2/A2 junction images

Existing view



Figure 5-11. Existing M2/A2 along the A2 near Park Pale bridge, looking west

Proposed in 2018 public consultation



Figure 5-12. Statutory consultation – proposed M2/A2 along the A2 near Park Pale bridge, looking west



Figure 5-13. Supplementary consultation – proposed M2/A2 along the A2 near Park Pale bridge, looking west

M2/A2 junction images

Existing view



Figure 5-14. Existing A2, looking north

Proposed in 2018 public consultation



Figure 5-15. Statutory consultation – proposed M2/A2/LTC junction, looking north



Figure 5-16. Supplementary consultation – proposed M2/A2/LTC junction, looking north

M2/A2 junction images

Existing view



Figure 5-17. Existing Thong Lane and A2, looking north

Proposed in new 2020 supplementary consultation



Figure 5-18. Supplementary consultation – proposed Thong Lane and M2/A2/LTC junction, looking north

Existing view



Figure 5-19. Existing footpath from Gravesend East, looking north-east towards Thong

Proposed in new 2020 supplementary consultation



Figure 5-20. Supplementary consultation – proposed footpath from Gravesend East, looking north east towards Thong

M2/A2 junction images



Figure 5-21. Existing Thong Lane linking Gravesend and Thong, looking north



Figure 5-22. Statutory consultation – proposed Thong Lane bridge linking Gravesend and Thong, and the approach to the south tunnel entrance, looking north



Figure 5-23. Supplementary consultation – proposed Thong Lane bridge linking Gravesend and Thong, and the approach to the south tunnel entrance, looking north

M2/A2 junction images

Existing view



Figure 5-24. Existing landscape, looking north towards Chalk

Proposed in 2018 public consultation



Figure 5-25. Statutory consultation – proposed south tunnel entrance approach, looking north



Figure 5-26. Supplementary consultation – proposed south tunnel entrance approach, looking north

Our landscaping proposals have been developed to mitigate the visual impact of the crossing's permanent above-ground infrastructure. The tunnel entrances are a relatively short distance away from each other but the environment and landscape at each site is quite different.

In the south there is the wooded high ground of the North Downs. At the southern entrance, the landscaping proposals would reflect the existing character of the local environment, which has undulating chalk landforms, dry valleys and tree cover on higher areas of terrain. An informal public space, Chalk Park would be created around the southern tunnel entrance, using a mixture of chalk grassland, woodland and other suitable habitats to improve local biodiversity and ecological connectivity. A new landform, with woodland planting to the top, would create vantage points to the wider Thames Estuary.

Construction of the chalk cutting, and creation of this landform require the relocation of the existing pitch and putt facility. We are proposing that this is moved to adjacent land immediately south-east of Cascades leisure centre.

Please see the Environmental Impacts Update for more information on Chalk Park.



North of the river in Thurrock and Essex

Previously proposed Tilbury junction

The significant changes we've made in this section of the route are shown below:

Northern tunnel entrance redesign – the northern tunnel entrance will remain in the same position, but the distance between the northbound and southbound tunnels has been narrowed, reducing the footprint of the project. We are proposing two private maintenance and access roads, both of which connect the LTC and Station Road in East Tilbury, and provide access to the tunnel control building.

Removal of the rest and service area and maintenance depot – having considered the benefits, the environmental impact and the views of consultees, we have concluded that it is not necessary to include the rest and service area in our proposals, but it would be beneficial for one to be located in the vicinity of the LTC.

Highways England will be working with service area operators, the haulage industry and road user groups to consider the most appropriate location for any further service area provision on the Strategic Road Network. Any facility proposed in the future would need planning consent from the local planning authority.

Removal of the previously proposed Tilbury junction – as we are no longer including a rest and service area or maintenance depot in our proposals, there is now no requirement to have a junction at Tilbury. For this reason, the junction has been removed from our proposals, allowing the route here to be redesigned to reduce costs and impacts. As the junction is no longer required, there is no need for the connecting slip roads.

Access to the tunnel control building has been retained. We have also made sure there is access to the LTC via Station Road for maintenance, operations and emergency vehicles, and maintenance vehicles can turn around if there is an incident in the tunnel.

Tilbury viaduct length reduced – removing the Tilbury junction also means that we can reduce the length and height of the viaduct over the Tilbury Loop railway and Station Road. Removal of the junction has enabled us to reduce the length from 1,100 metres to 660 metres, and the height from a maximum of 12.5 metres to 6.8 metres. Changes to the viaduct will reduce both the cost and visual impact. The viaduct design also allows Station Road to remain as it is, with construction taking place overhead.

Due to the design changes in this section, we have modified our proposals for the provision of compensatory flood storage areas:

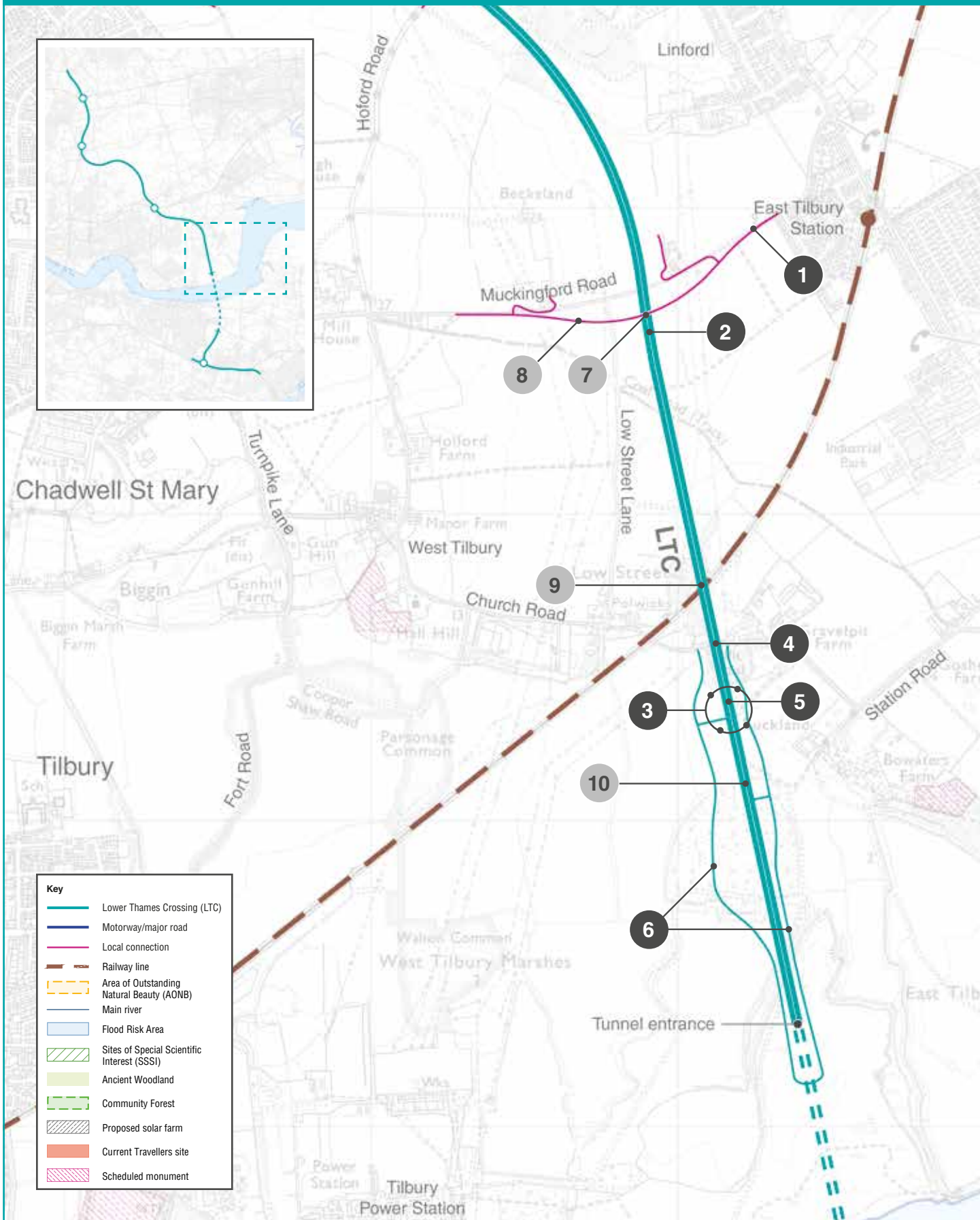
- Two further areas have been added south of the railway line. These would allow a reduction in the amount of excavation required to the north of the railway line, and would reduce the work required to build the flood compensation areas in this location.
- The area identified during statutory consultation, north of the Tilbury Loop railway, has not changed.

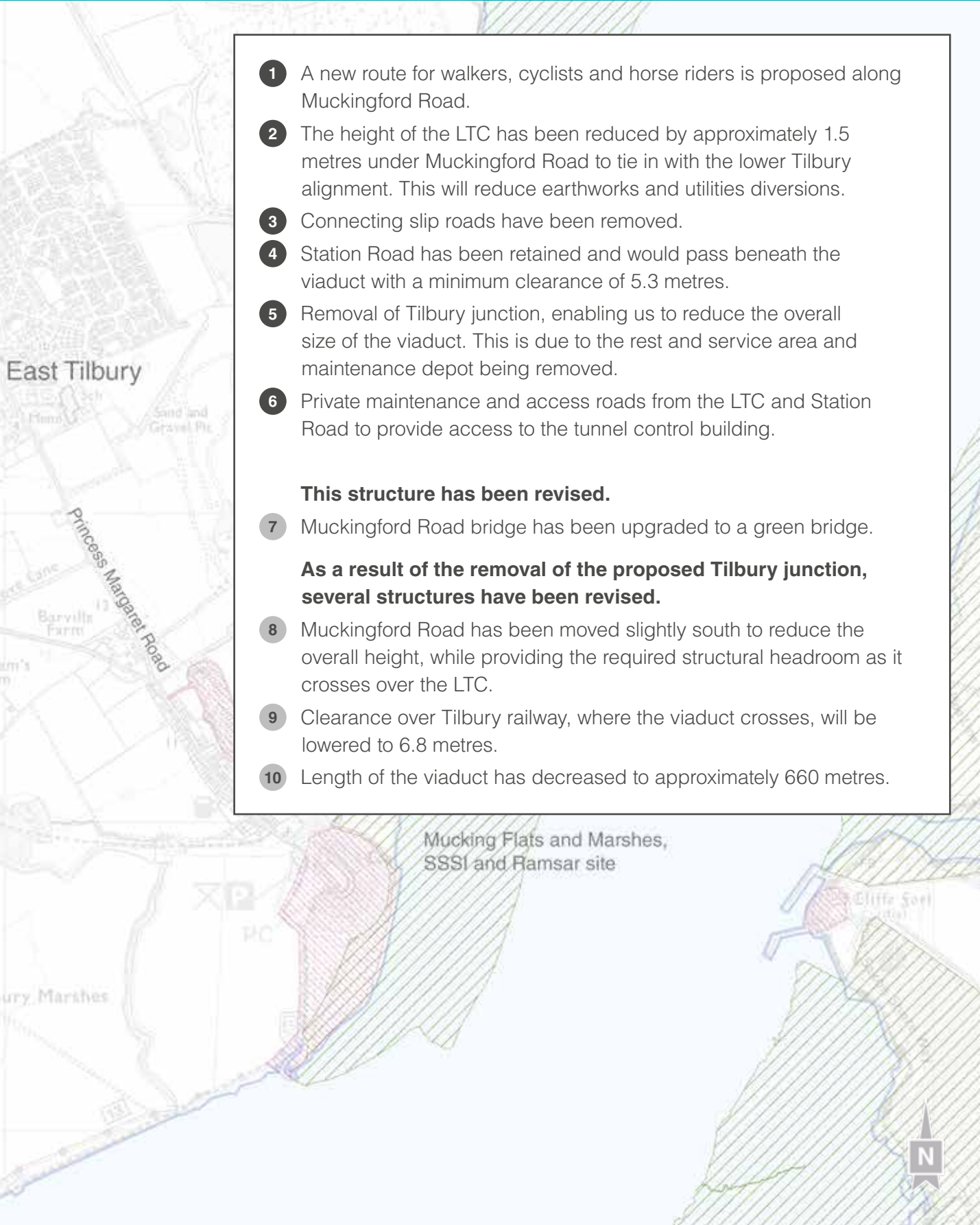


Have your say

To comment on the changes to the route around the previously proposed Tilbury junction answer questions 1c and 1d in the response form.

North of the river in Thurrock and Essex



- 
- 1 A new route for walkers, cyclists and horse riders is proposed along Muckingford Road.
 - 2 The height of the LTC has been reduced by approximately 1.5 metres under Muckingford Road to tie in with the lower Tilbury alignment. This will reduce earthworks and utilities diversions.
 - 3 Connecting slip roads have been removed.
 - 4 Station Road has been retained and would pass beneath the viaduct with a minimum clearance of 5.3 metres.
 - 5 Removal of Tilbury junction, enabling us to reduce the overall size of the viaduct. This is due to the rest and service area and maintenance depot being removed.
 - 6 Private maintenance and access roads from the LTC and Station Road to provide access to the tunnel control building.

This structure has been revised.

- 7 Muckingford Road bridge has been upgraded to a green bridge.

As a result of the removal of the proposed Tilbury junction, several structures have been revised.

- 8 Muckingford Road has been moved slightly south to reduce the overall height, while providing the required structural headroom as it crosses over the LTC.
- 9 Clearance over Tilbury railway, where the viaduct crosses, will be lowered to 6.8 metres.
- 10 Length of the viaduct has decreased to approximately 660 metres.

Tilbury images

Existing view



Figure 5-27. Existing landscape near East Tilbury, looking south

Proposed in 2018 public consultation



Figure 5-28. Statutory consultation – proposed north tunnel entrance approach, looking south



Figure 5-29. Supplementary consultation – proposed north tunnel entrance approach, looking south

Our landscaping proposals have been developed to mitigate the visual impact of the crossing's permanent above-ground infrastructure. The tunnel entrances are a relatively short distance away from each other but the environment and landscape at each site is quite different.

In the north there is flat, open marshland close to the river.

At the northern entrance, we would reflect the existing flat, open landscape by creating new earthwork landforms along the River Thames. The earthworks would provide wide-ranging views out towards the Thames Estuary and be reminiscent of the historic coastal defences found within this stretch of the river. The landforms will use the excavated material from the tunnel, and will be restored for grazing agricultural use, in keeping with the existing land use.

Tilbury images

Existing view



Figure 5-30. Existing landscape near to East Tilbury, looking west

Proposed in 2018 public consultation



Figure 5-31. Previously proposed Tilbury junction and the rest and service area, looking west



Figure 5-32. Existing landscape near Tilbury Power Station, looking north east



Figure 5-33. Supplementary consultation – previously proposed Tilbury junction looking north east from Tilbury Power Station

Tilbury images

Existing view



Figure 5-34. Existing Muckingford Road, looking south-west

Proposed in new 2020 supplementary consultation



Figure 5-35. Supplementary consultation – proposed Muckingford Road over the LTC, looking south-west

Existing view

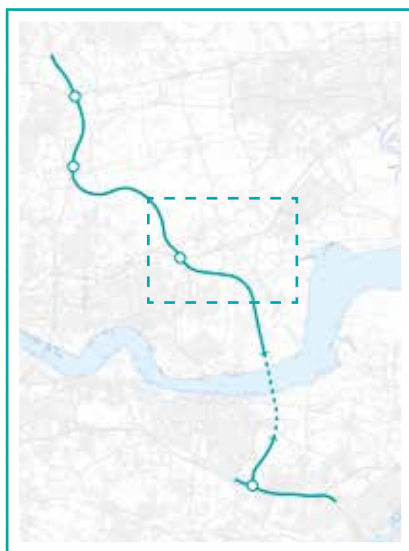


Figure 5-36. Existing view from properties on Station Road, looking north-east

Proposed in new 2020 supplementary consultation



Figure 5-37. Supplementary consultation – proposed Tilbury viaduct from properties on Station Road, looking north-east



A13/A1089 junction

As a result of feedback received during statutory consultation, and further design investigations, we have made changes to the layout of the A13/A1089 junction. The changes we are proposing move roads away from properties and from the area to the south-west side of the junction. They are also designed to improve the safety of motorists passing through the junction and to reduce the impact of construction.

In line with feedback received from some consultees, the changes also help accommodate new routes for walkers, cyclists and horse riders (which is covered in detail in chapter 5) and improve connectivity for emergency vehicles.

Some of the main changes include:

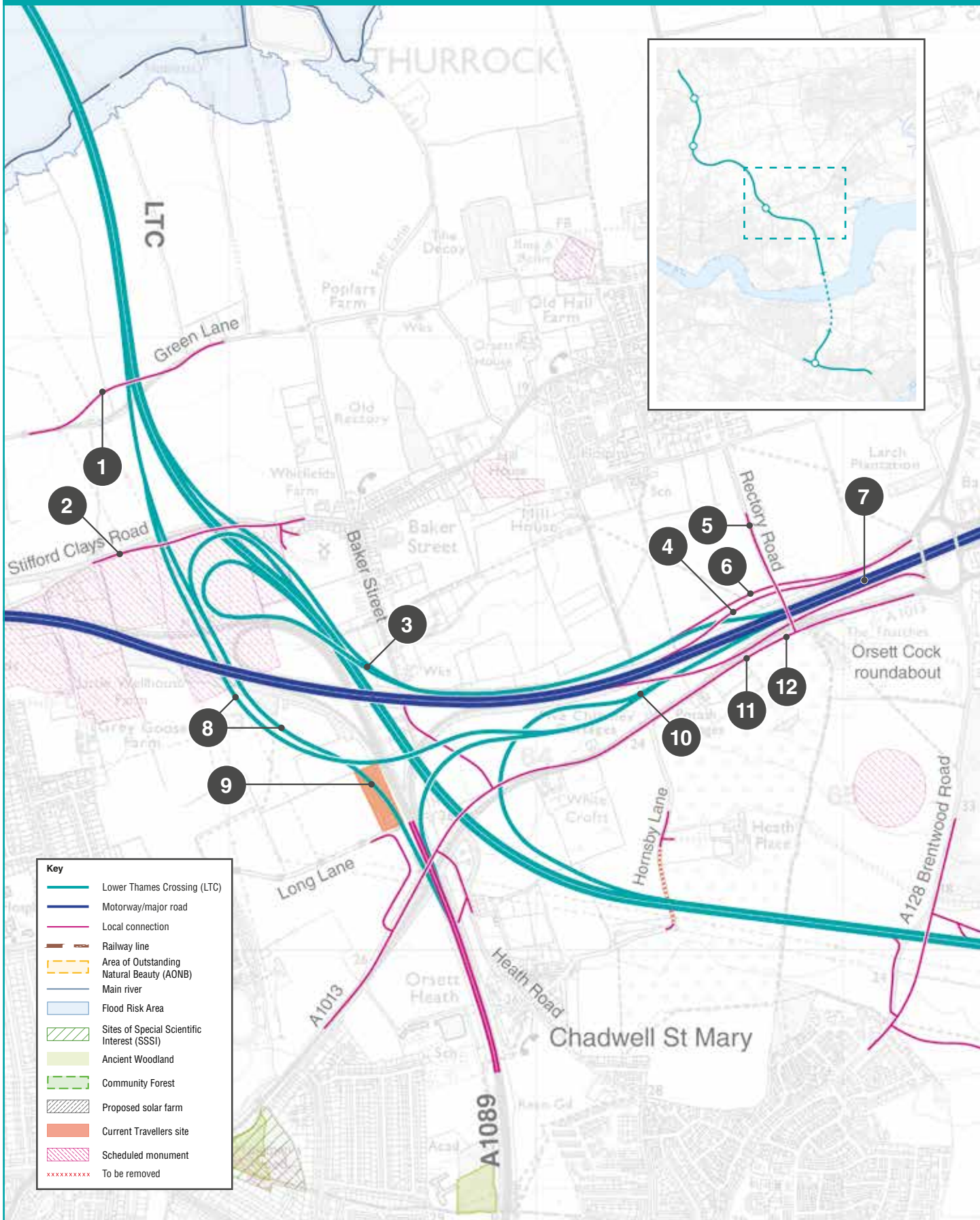
- Adding a local link road north of the A13 for a connection from the LTC to the Orsett Cock junction, to reduce traffic and the number of lanes on the A13 within this section.
- Modifying the location of the connection roads from the A13 westbound to the A1089 southbound, reducing the visual impact and moving the route away from local properties.
- Separating the connection roads from the A13 and A1089 to the LTC to make it easier for drivers to join the route.
- Changing the alignment of the A1013 so it is closer to its existing position.
- Moving the A1089 northbound to LTC northbound slip road further north to reduce the impact on Treetops School.
- Moving the A1013 on the west side of the A1089 to allow the new bridge over the A1089 to be built off the local road network.
- Moving the route to the south of the A13 and east of Chadwell St. Mary approximately 60 metres closer to Linford. This would avoid having to move some overhead cables and pylons.
- Closing part of Hornsby Lane permanently, with areas provided for turning either side of the LTC. Alternative access would be via Heath Road or the A1013. This closure would avoid having to move some overhead lines closer to Chadwell St Mary.
- Removing the Rectory Road diversion shown during statutory consultation so the alignment follows the existing Rectory Road.
- We have identified two potential locations for the relocation of the travellers site. One is adjacent to its current location with access off Long Lane, the other is further to the west along Long Lane opposite the junction with Kerry Road. These locations are shown in the Map Book 1: General Arrangements.



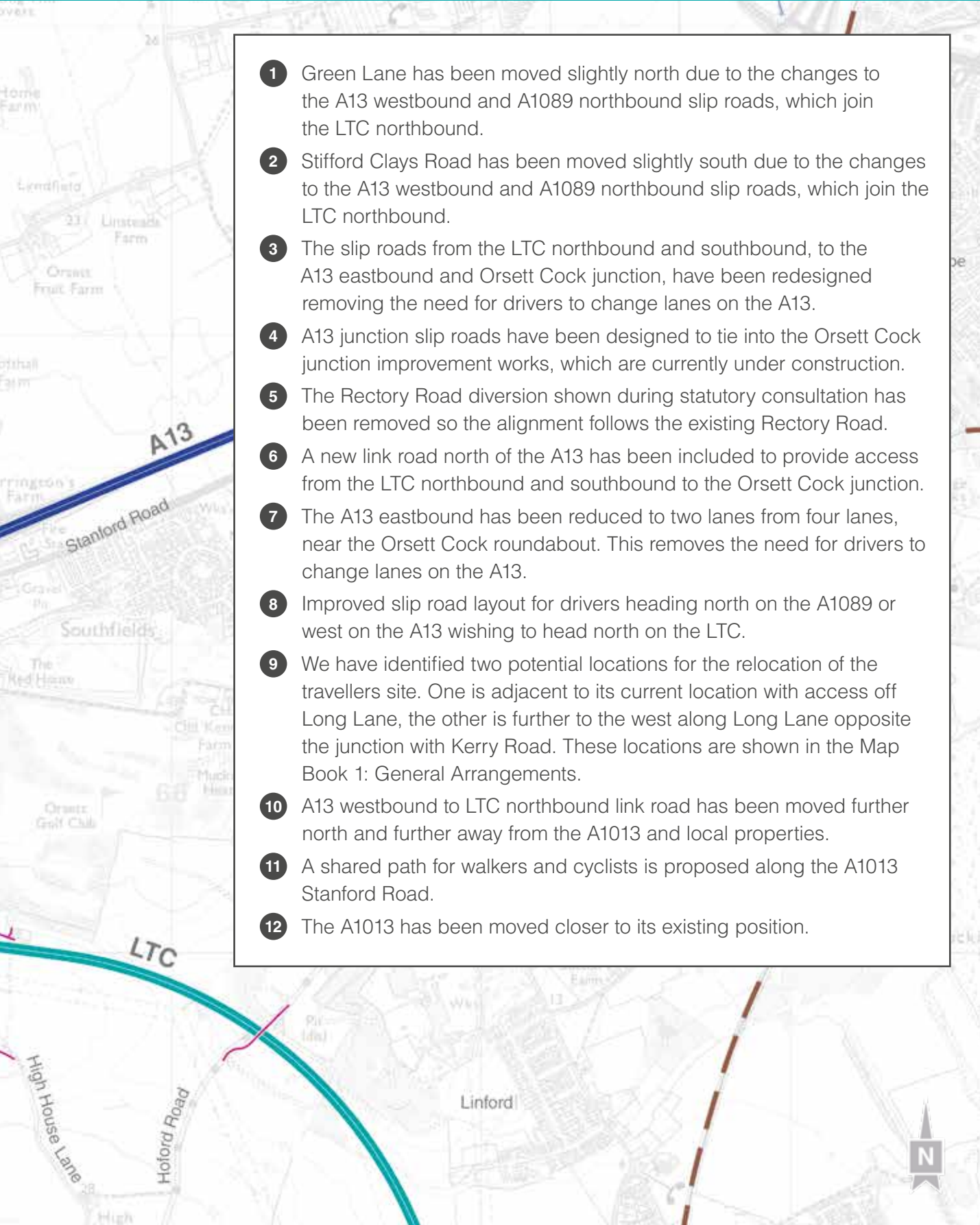
Have your say

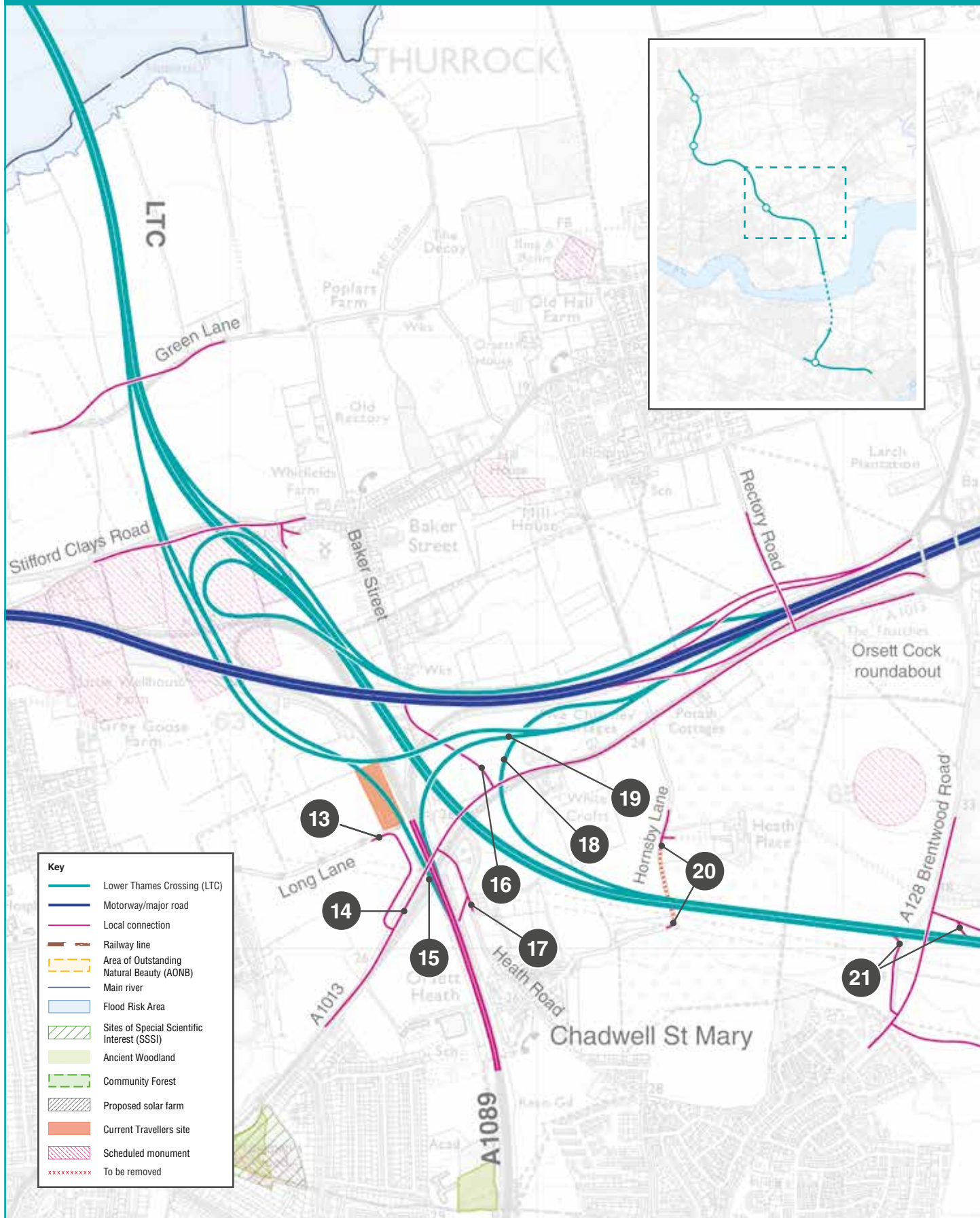
To comment on the changes to the route around the A13/A1089 junction answer questions 1e and 1f in the response form.

North of the river in Thurrock and Essex

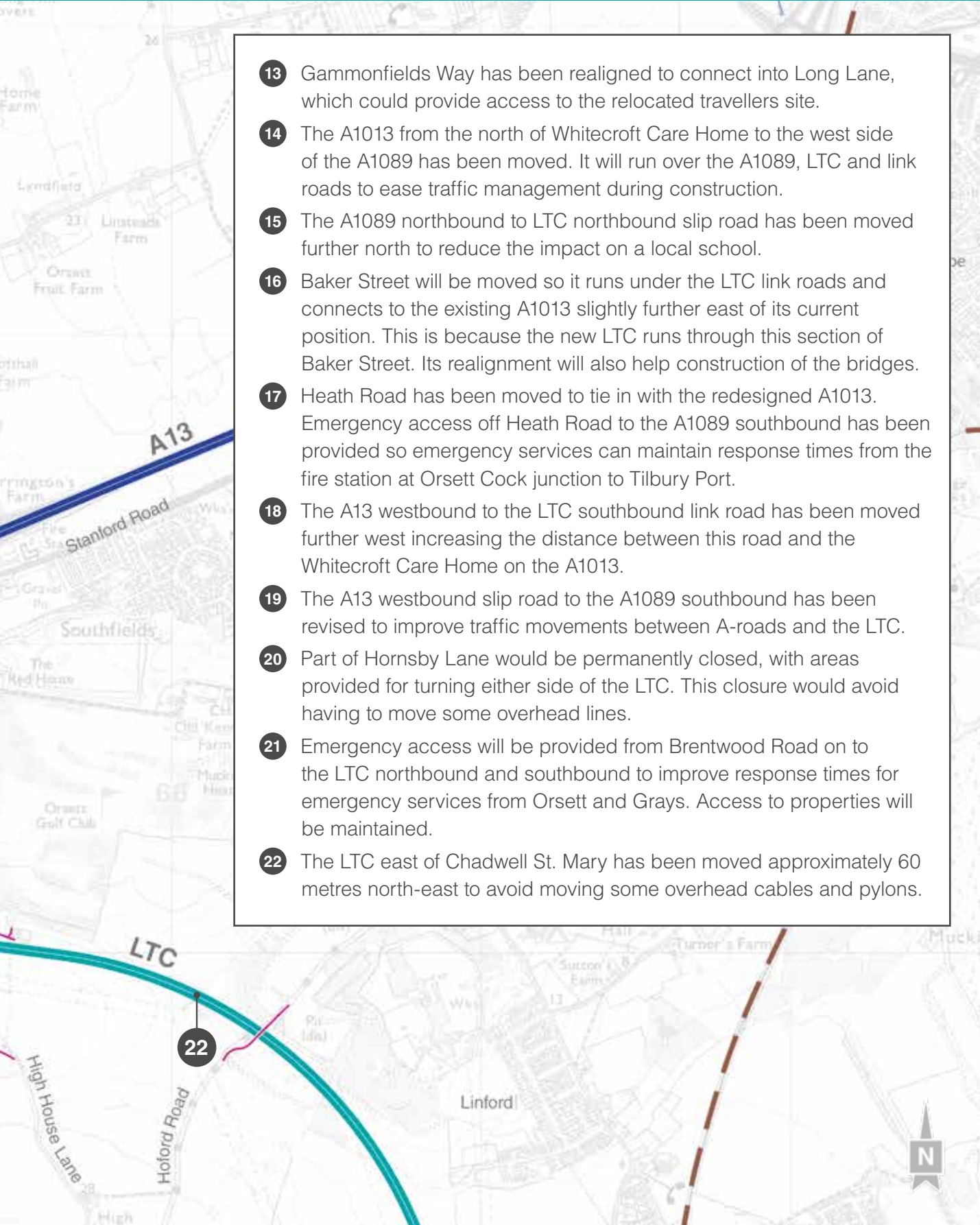


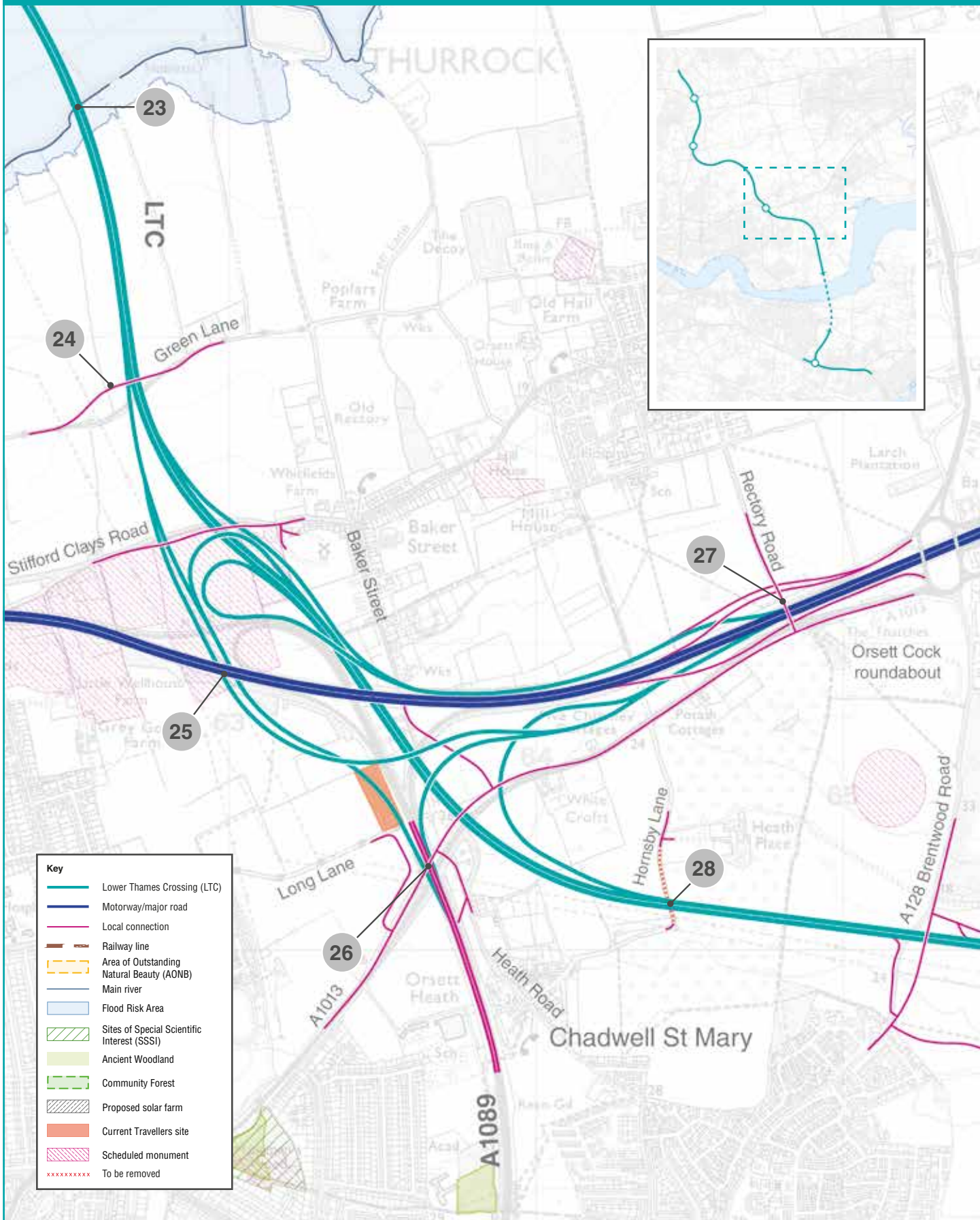
A13/A1089 junction proposals

- 
- A map showing the proposed A13/A1089 junction. The A13 is shown as a blue line running horizontally across the middle. The LTC (Lower Thames Crossing) is shown as a green line curving from the bottom left towards the center. Various roads are labeled, including Stanford Road, High House Lane, Hoford Road, and Linford. A north arrow is located in the bottom right corner of the map area.
- 1 Green Lane has been moved slightly north due to the changes to the A13 westbound and A1089 northbound slip roads, which join the LTC northbound.
 - 2 Stifford Clays Road has been moved slightly south due to the changes to the A13 westbound and A1089 northbound slip roads, which join the LTC northbound.
 - 3 The slip roads from the LTC northbound and southbound, to the A13 eastbound and Orsett Cock junction, have been redesigned removing the need for drivers to change lanes on the A13.
 - 4 A13 junction slip roads have been designed to tie into the Orsett Cock junction improvement works, which are currently under construction.
 - 5 The Rectory Road diversion shown during statutory consultation has been removed so the alignment follows the existing Rectory Road.
 - 6 A new link road north of the A13 has been included to provide access from the LTC northbound and southbound to the Orsett Cock junction.
 - 7 The A13 eastbound has been reduced to two lanes from four lanes, near the Orsett Cock roundabout. This removes the need for drivers to change lanes on the A13.
 - 8 Improved slip road layout for drivers heading north on the A1089 or west on the A13 wishing to head north on the LTC.
 - 9 We have identified two potential locations for the relocation of the travellers site. One is adjacent to its current location with access off Long Lane, the other is further to the west along Long Lane opposite the junction with Kerry Road. These locations are shown in the Map Book 1: General Arrangements.
 - 10 A13 westbound to LTC northbound link road has been moved further north and further away from the A1013 and local properties.
 - 11 A shared path for walkers and cyclists is proposed along the A1013 Stanford Road.
 - 12 The A1013 has been moved closer to its existing position.



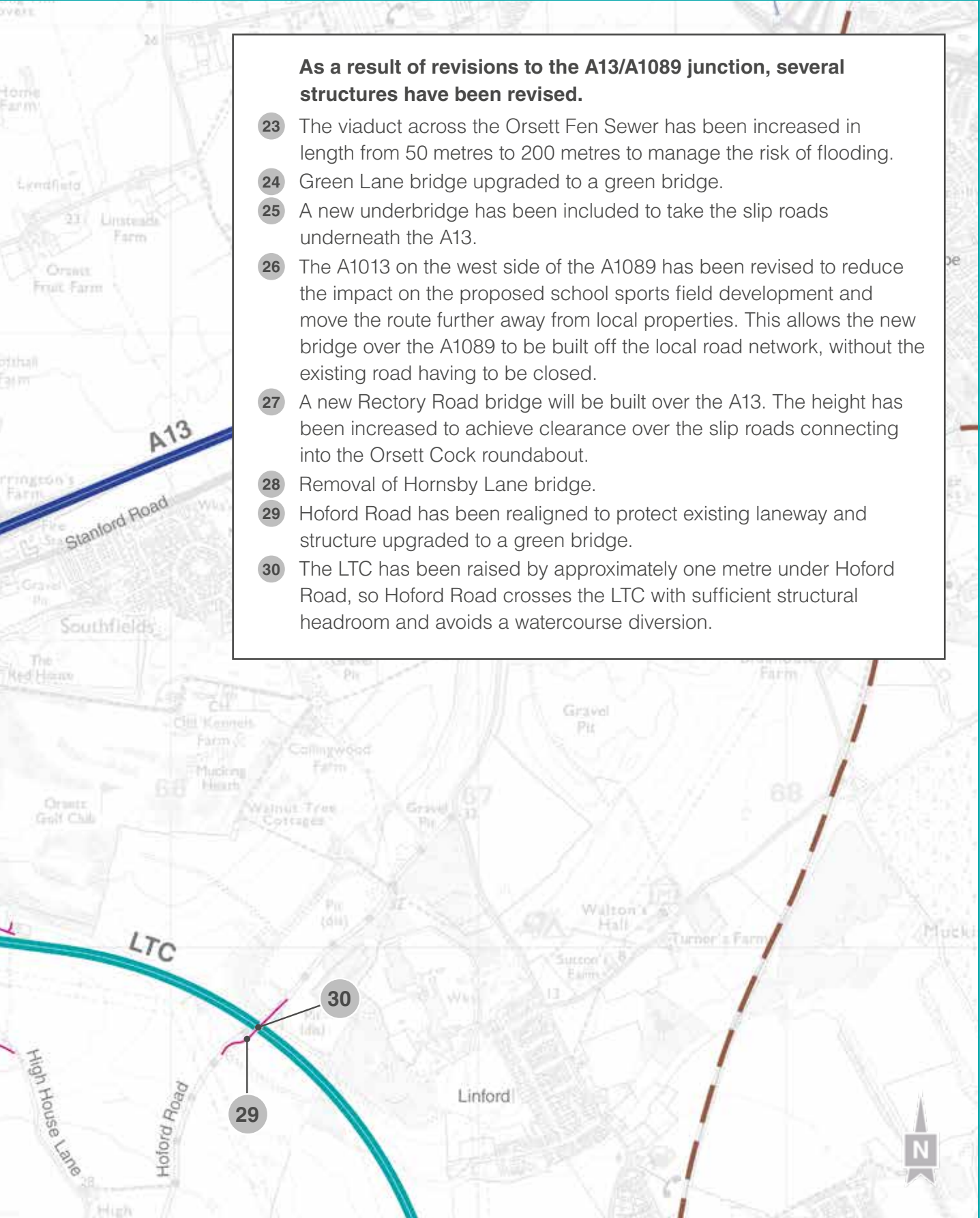
A13/A1089 junction proposals

- 
- A map showing the proposed realignment of the A13 and LTC roads. The A13 is shown as a blue line, and the LTC as a green line. The map includes labels for various roads like Stamford Road, High House Lane, and Hoford Road, and locations like Linford. A north arrow is in the bottom right corner.
- 13 Gammonfields Way has been realigned to connect into Long Lane, which could provide access to the relocated travellers site.
 - 14 The A1013 from the north of Whitecroft Care Home to the west side of the A1089 has been moved. It will run over the A1089, LTC and link roads to ease traffic management during construction.
 - 15 The A1089 northbound to LTC northbound slip road has been moved further north to reduce the impact on a local school.
 - 16 Baker Street will be moved so it runs under the LTC link roads and connects to the existing A1013 slightly further east of its current position. This is because the new LTC runs through this section of Baker Street. Its realignment will also help construction of the bridges.
 - 17 Heath Road has been moved to tie in with the redesigned A1013. Emergency access off Heath Road to the A1089 southbound has been provided so emergency services can maintain response times from the fire station at Orsett Cock junction to Tilbury Port.
 - 18 The A13 westbound to the LTC southbound link road has been moved further west increasing the distance between this road and the Whitecroft Care Home on the A1013.
 - 19 The A13 westbound slip road to the A1089 southbound has been revised to improve traffic movements between A-roads and the LTC.
 - 20 Part of Hornsby Lane would be permanently closed, with areas provided for turning either side of the LTC. This closure would avoid having to move some overhead lines.
 - 21 Emergency access will be provided from Brentwood Road on to the LTC northbound and southbound to improve response times for emergency services from Orsett and Grays. Access to properties will be maintained.
 - 22 The LTC east of Chadwell St. Mary has been moved approximately 60 metres north-east to avoid moving some overhead cables and pylons.



As a result of revisions to the A13/A1089 junction, several structures have been revised.

- 23 The viaduct across the Orsett Fen Sewer has been increased in length from 50 metres to 200 metres to manage the risk of flooding.
- 24 Green Lane bridge upgraded to a green bridge.
- 25 A new underbridge has been included to take the slip roads underneath the A13.
- 26 The A1013 on the west side of the A1089 has been revised to reduce the impact on the proposed school sports field development and move the route further away from local properties. This allows the new bridge over the A1089 to be built off the local road network, without the existing road having to be closed.
- 27 A new Rectory Road bridge will be built over the A13. The height has been increased to achieve clearance over the slip roads connecting into the Orsett Cock roundabout.
- 28 Removal of Hornsby Lane bridge.
- 29 Hoford Road has been realigned to protect existing laneway and structure upgraded to a green bridge.
- 30 The LTC has been raised by approximately one metre under Hoford Road, so Hoford Road crosses the LTC with sufficient structural headroom and avoids a watercourse diversion.



A13/A1089 junction connections

The maps below show connections that can be made from the A13/A1089 junction shown previously.

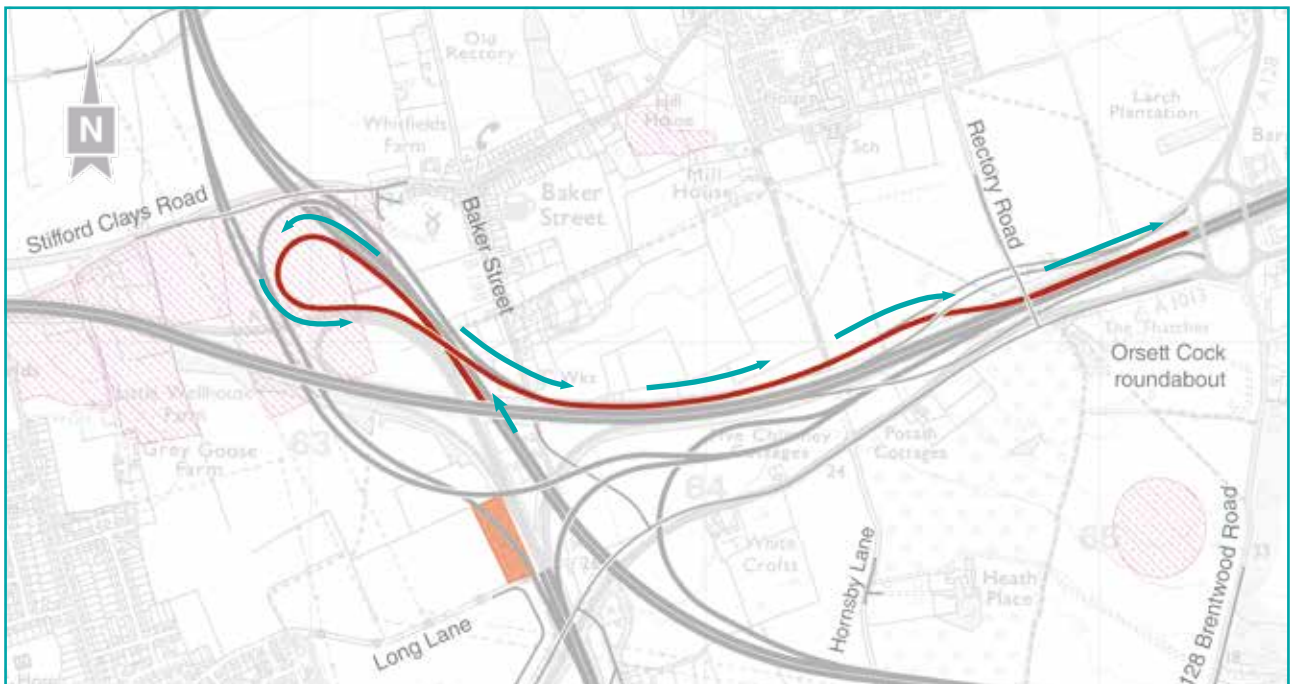


Figure 5-38. **LTC northbound to A13 eastbound.** Leave the LTC northbound and follow the road, looping back to cross over the LTC. Continue on the road, merging with the connection from the LTC southbound, and join the A13 as you approach the Orsett Cock roundabout.

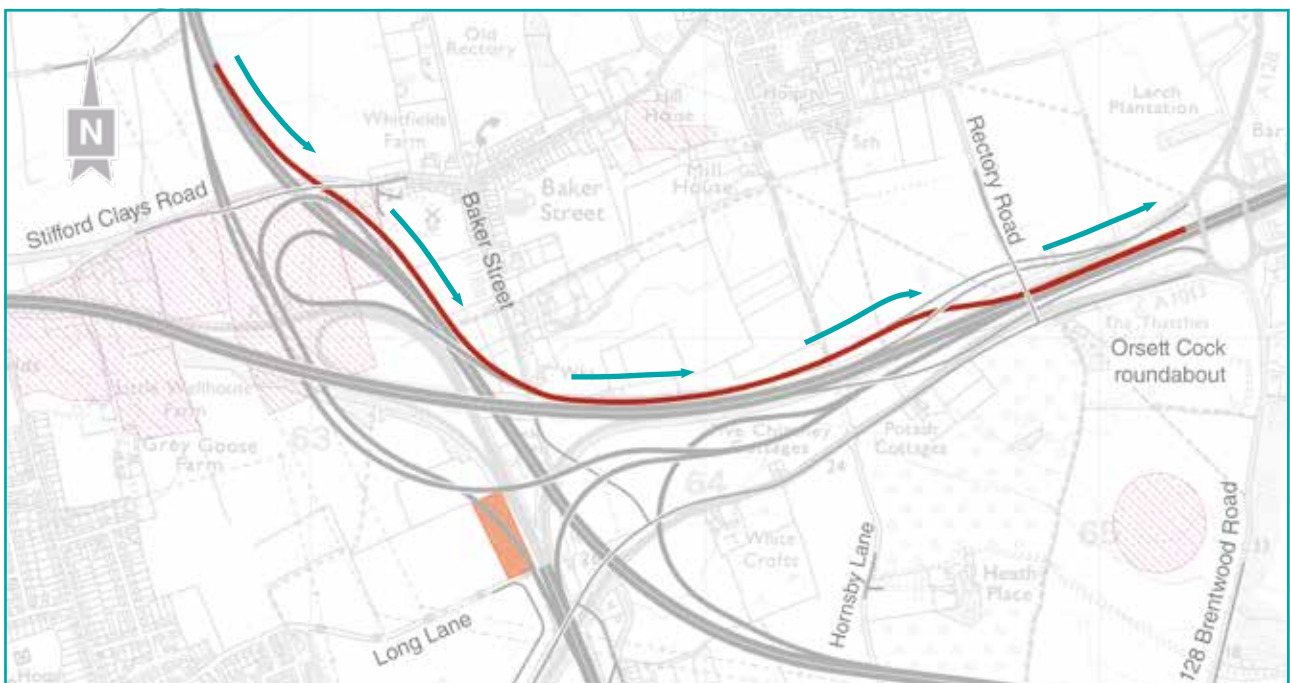


Figure 5-39. **LTC southbound to A13 eastbound.** Leave the LTC southbound and follow the road, travelling under Stifford Clays Road. Merge with the connection from the LTC northbound and join the A13 as you approach the Orsett Cock roundabout.

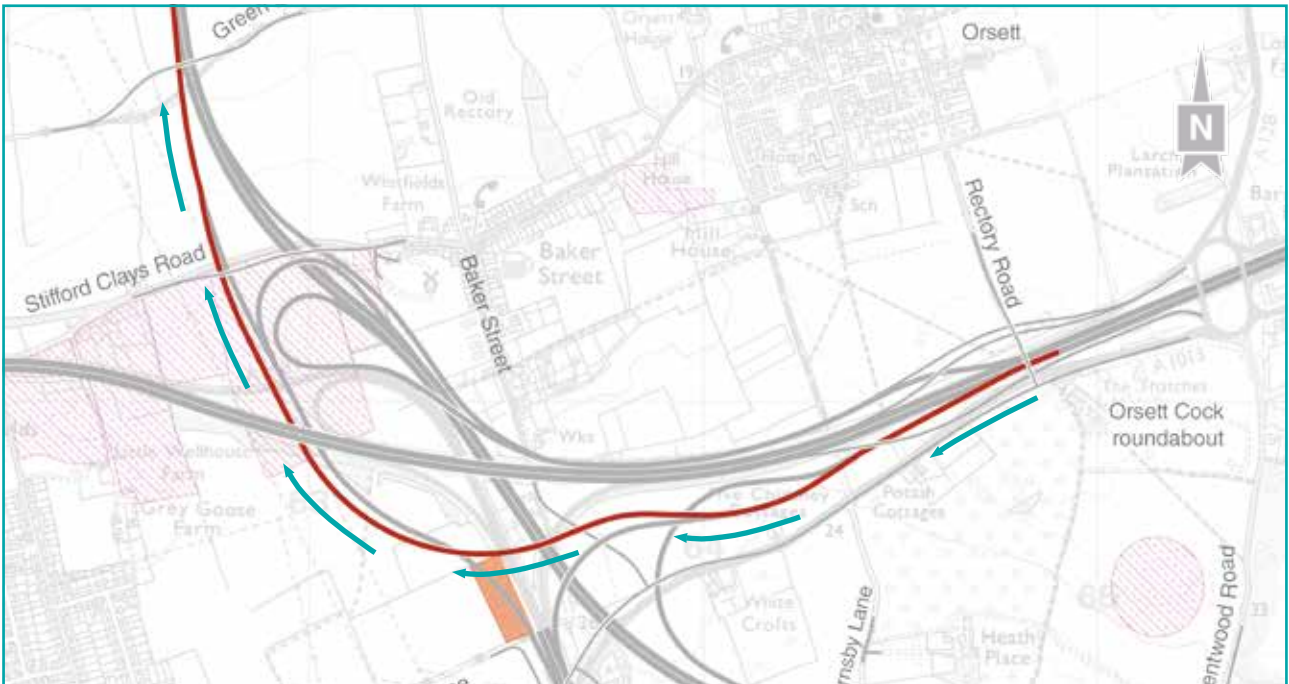


Figure 5-40. **A13 westbound to LTC northbound.** Leave the A13 westbound and follow the road, travelling over the connection between the A13 westbound and LTC southbound. Continue on the road to the west side of the A1089 and merge with the road connecting the A1089 northbound to the LTC northbound. Join the LTC northbound north of Green Lane.

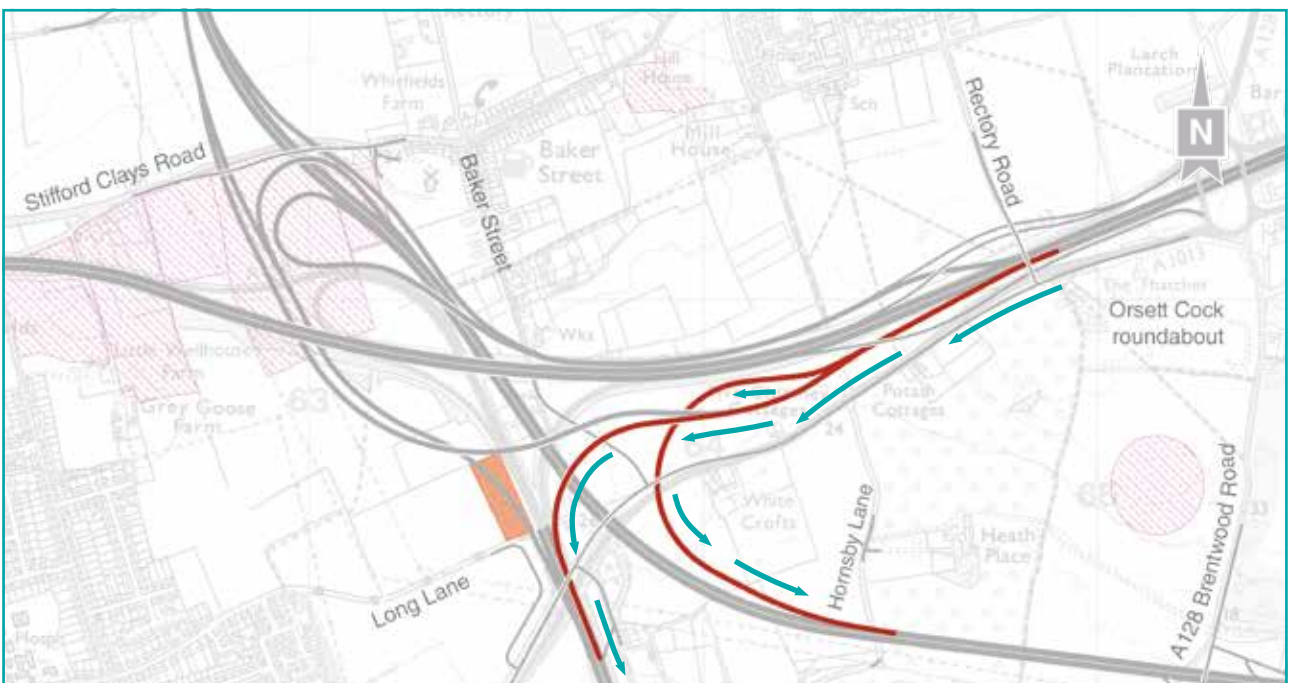


Figure 5-41. **A13 westbound to LTC southbound.** Leave the A13 westbound and follow the road, travelling under the connection between the A13 westbound and LTC northbound. Continue on the road, passing under the A1013, and join the LTC southbound.

A13 westbound to A1089 southbound. Leave the A13 westbound and follow the road, travelling over the connection between the A13 westbound and LTC southbound. Continue on the road, passing over the realigned Baker Street and the LTC, and join the A1089 southbound.

A13/A1089 junction connections



Figure 5-42. **A1089 northbound to LTC southbound.** Leave the A1089 northbound and follow the road, passing under the connection between the A13 westbound to the LTC northbound, the A13 and the connection between the A13 eastbound to the A1089 southbound. Follow the road, looping to the east over the LTC, and join the LTC southbound.

A1089 northbound to LTC northbound. Leave the A1089 northbound and follow the road, passing under the connection between the A13 westbound to the LTC northbound, the A13 and the connection between the A13 eastbound to the A1089 southbound. Follow the road north and merge with the road connecting the A13 westbound to the LTC northbound. Join the LTC northbound north of Green Lane.

A13/A1089 junction connections

The table below shows the connections to and from the A13/A1089 junction.

How to read this table: Find your starting point or location in the left hand column then look along the columns to see which direct connections you can make.

Starting location	Your direct connections				
	LTC northbound	LTC southbound	A1089 southbound	A13 eastbound	A13 westbound
LTC northbound			✗	✓	✗
LTC southbound			✗	✓	✗
A1089 northbound	✓	✓		✓	✓
A13 eastbound	✗	✗	✓		
A13 westbound	✓*	✓*	✓*		

* Not from Orsett Cock roundabout

A13/A1089 junction images

Existing view



Figure 5-43. Existing A13/A1089 junction, looking south

Proposed in 2018 public consultation



Figure 5-44. Statutory consultation – proposed LTC and A13/A1089 junction, looking south



Figure 5-45. Supplementary consultation – proposed LTC and A13/A1089 junction, looking south

A13/A1089 junction images

Existing view



Figure 5-46. Existing A13/A1089 junction at the Orsett Cock roundabout, looking west

Proposed in new 2020 supplementary consultation



Figure 5-47. Supplementary consultation – proposed A13/A1089 junction at the Orsett Cock roundabout, looking west

Existing view



Figure 5-48. Existing Hoford Road, looking south-west

Proposed in new 2020 supplementary consultation

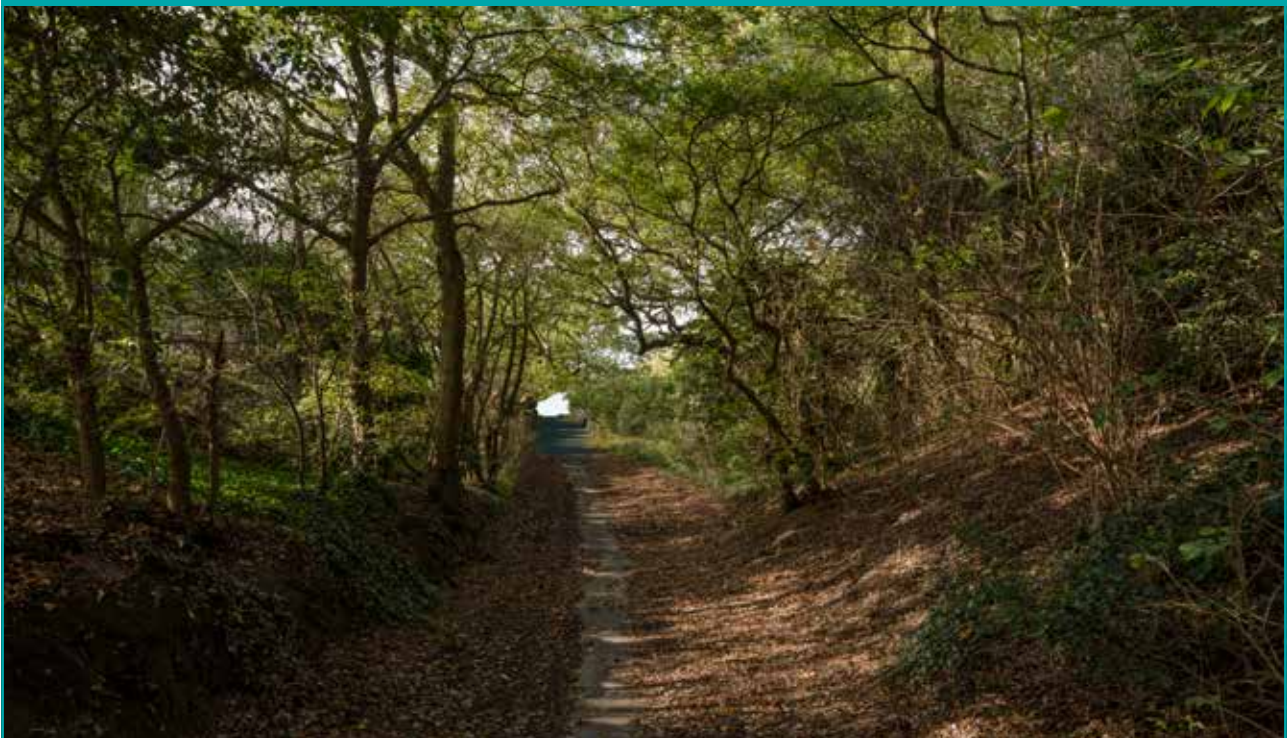
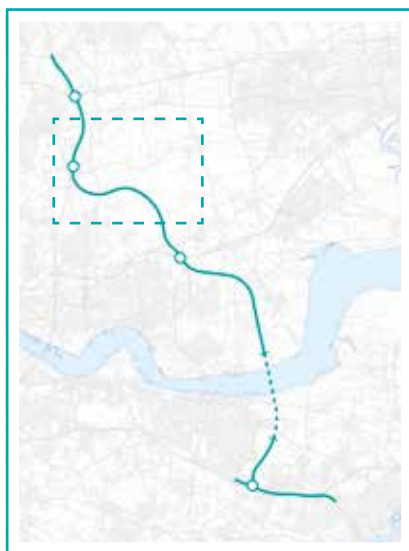


Figure 5-49. Supplementary consultation – proposed Hoford Road green bridge over the LTC, looking south-west



LTC/M25 junction

Revisiting the LTC design between the M25 and the A13 junction has ensured that, in line with issues raised during statutory consultation, the project provides improved value for money and can accommodate enhancements to the walkers, cyclists and horse-riding network. Reducing the number of lanes from the M25 to the A13 junction lessens the overall impact on land and the environment while providing the right level of road capacity for the forecasted traffic demand. Similarly, by realigning the route near Ockendon, we can avoid diverting a major gas main. Developing the design of structures used for the Mardyke crossing reduces the visual impact and volume of flood compensation required in this area.

The main changes we've made in this section of the route are shown below.

M25 to A13 southbound

One lane has been removed southbound between the M25 and A13 junctions. Our traffic modelling predicts that a significant proportion of traffic travelling southbound on the LTC will join from the A13 junction, so fewer vehicles will use the route between the M25 and A13. We have therefore reviewed our plans and reverted to our previous design featuring two lanes southbound between the M25 and A13 junctions.

By making this change, we can reduce the amount of land required for the LTC on this section, lessen our environmental impact and offer better value for money by only providing the capacity required.

A further benefit is that we no longer need to realign Ockendon Road or make changes to the bridge where the road passes over the M25.

Routing through the Mardyke

As the road is in a flood plain it needs to be elevated. We have further developed the design in this area and are proposing changes to the structures crossing the Mardyke River and Golden Bridge Sewer, and the Orsett Fen Sewer. Overall, we have increased the total length of the viaducts in the area by approximately 50 metres. This change will increase the open aspect and it will also reduce the volume of flood compensation required in this area.

The route has also been moved approximately 200 metres south-west to reduce the impact on the environment and gas main/landfill works in the area.

The height of the LTC and North Road

The LTC has been lowered by two metres and, as a result, North Road has also been lowered by two metres. This will reduce the visual impact and help with drainage.

We have also added various improvements for walkers, cyclists and horse riders to enhance connectivity to the wider network. Some detail is provided on the maps here and more information can be found in chapter 5 of this guide.

Due to the design changes in this section, we have modified our proposals for the provision of flood compensation areas:

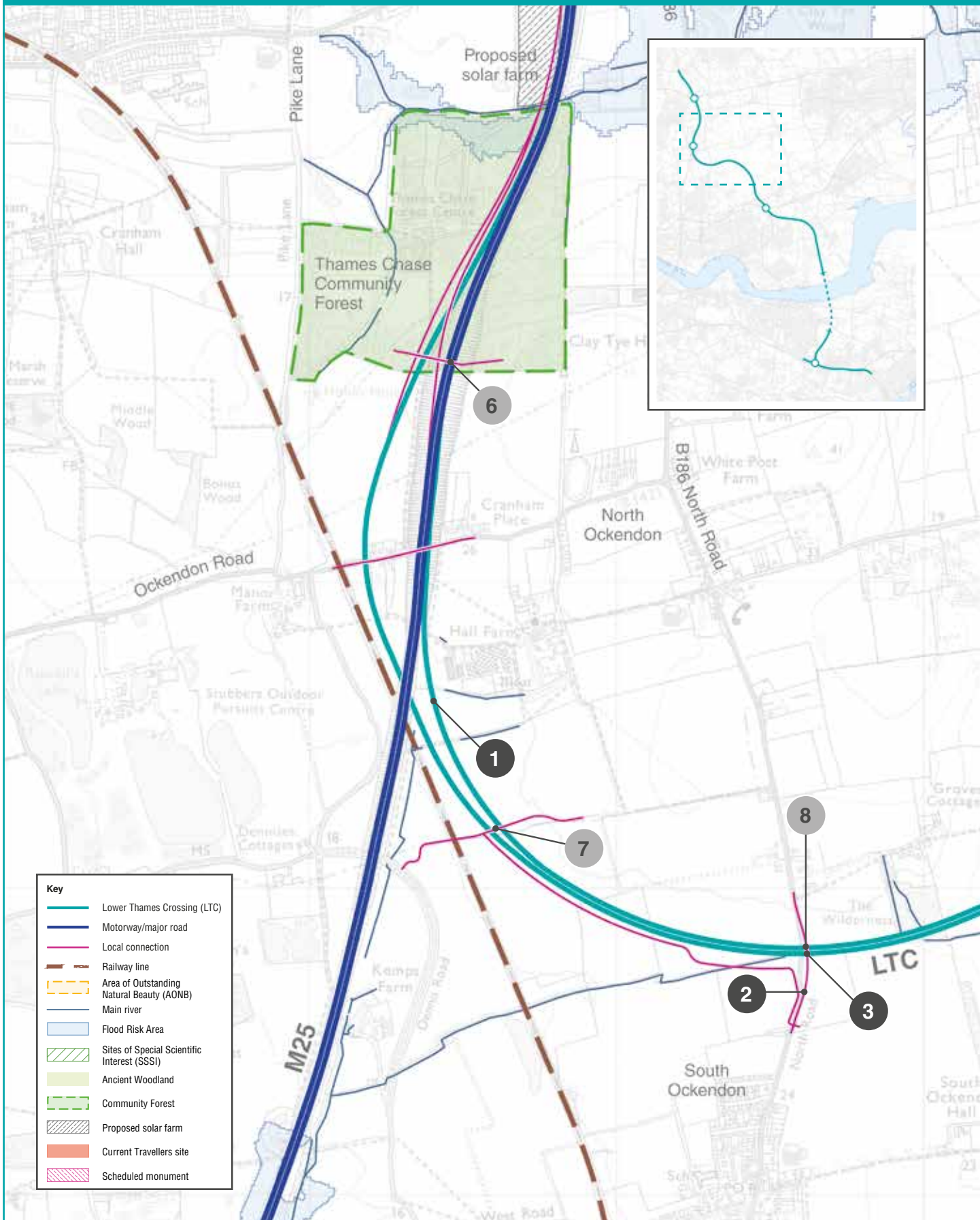
- We have reduced the overall amount of flood compensation areas proposed alongside the Mardyke, close to the M25.
- The two areas identified during statutory consultation near to the Orsett Fen have not changed.



Have your say

To comment on the changes to the route around the LTC and its junction with the M25 answer questions 1g and 1h in the response form.

North of the river in Thurrock and Essex



- 1 One lane has been removed from the M25 to A13 southbound.
- 2 Added a shared path along North Road to provide better access to the wider network of public rights of way.
- 3 Changes to the height of the LTC and North Road to reduce impact on properties.
- 4 Road moved approximately 200 metres south-west.
- 5 The viaduct across the Mardyke River and Golden Bridge Sewer river has been shortened from approximately 450 metres to 350 metres.

As a result of revisions to the LTC/M25 junction, several structures have been revised.

- 6 A new bridge suitable for horse riders to connect the east and west side of Thames Chase Forest over the M25.
- 7 Footpath 252 has been moved south and now consists of two bridges, one to cross the railway line and another to cross over the LTC. The new location ties in more effectively with existing routes for walkers, cyclists and horse riders.
- 8 North Road upgraded to a green bridge and includes shared cycle and footpath facilities.
- 9 Footpath 136 over the LTC has been realigned because the LTC route has moved south-west.



LTC/M25 junction images



Figure 5-50. Existing Mardyke Valley, looking north-east



Figure 5-51. Statutory consultation– proposed LTC viaduct over Mardyke Valley, looking north-east

Proposed in new 2020 supplementary consultation



Figure 5-52. Supplementary consultation – proposed LTC viaduct over Mardyke Valley, looking north-east

LTC/M25 junction images

Existing view



Figure 5-53. Existing landscape, from the Mardyke trail, looking north

Proposed in new 2020 supplementary consultation



Figure 5-54. Supplementary consultation – proposed Mardyke viaduct and wetland creation, from the Mardyke trail, looking north



Figure 5-55. Existing North Road, looking west



Figure 5-56. Supplementary consultation – proposed North Road green bridge over the LTC, looking west

LTC/M25 junction images

Existing view



Figure 5-57. Existing M25 and Ockendon Road, looking north

Proposed in new 2020 supplementary consultation



Figure 5-58. Supplementary consultation – proposed LTC/M25 junction, with new Ockendon Road bridge, looking north



M25 junction 29

Some minor changes have been made to the layout at junction 29 of the M25 to reduce the amount of overhead cable diversions in the area.

The junction

The M25 southbound slip roads have been shortened to approximately 580 metres, which means we no longer need to make changes to the bridge over the M25 near Folkes Lane.

The segregated turning lanes at the junction have been moved closer to the roundabout to reduce the footprint of the project and the impact on utilities.

Rail underbridge

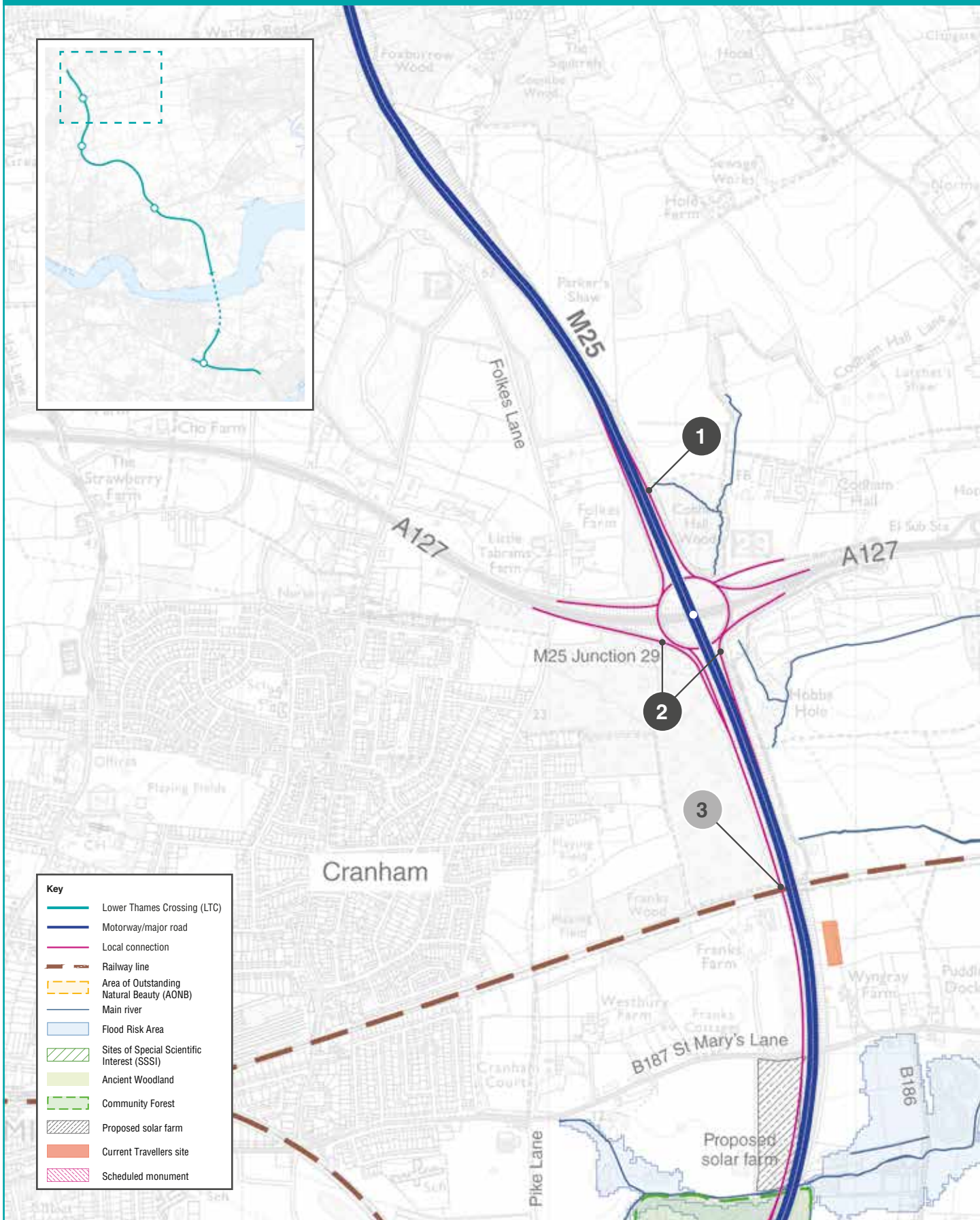
The bridge for the junction 29 link road has been raised by approximately 1.6 metres to match the height of the existing bridge over the Upminster to Shoeburyness railway, which carries M25 traffic. This has created the necessary clearance above the railway line.



Have your say

To comment on the changes to the route around the M25 junction 29 answer questions 1i and 1j in the response form.

North of the river in Thurrock and Essex

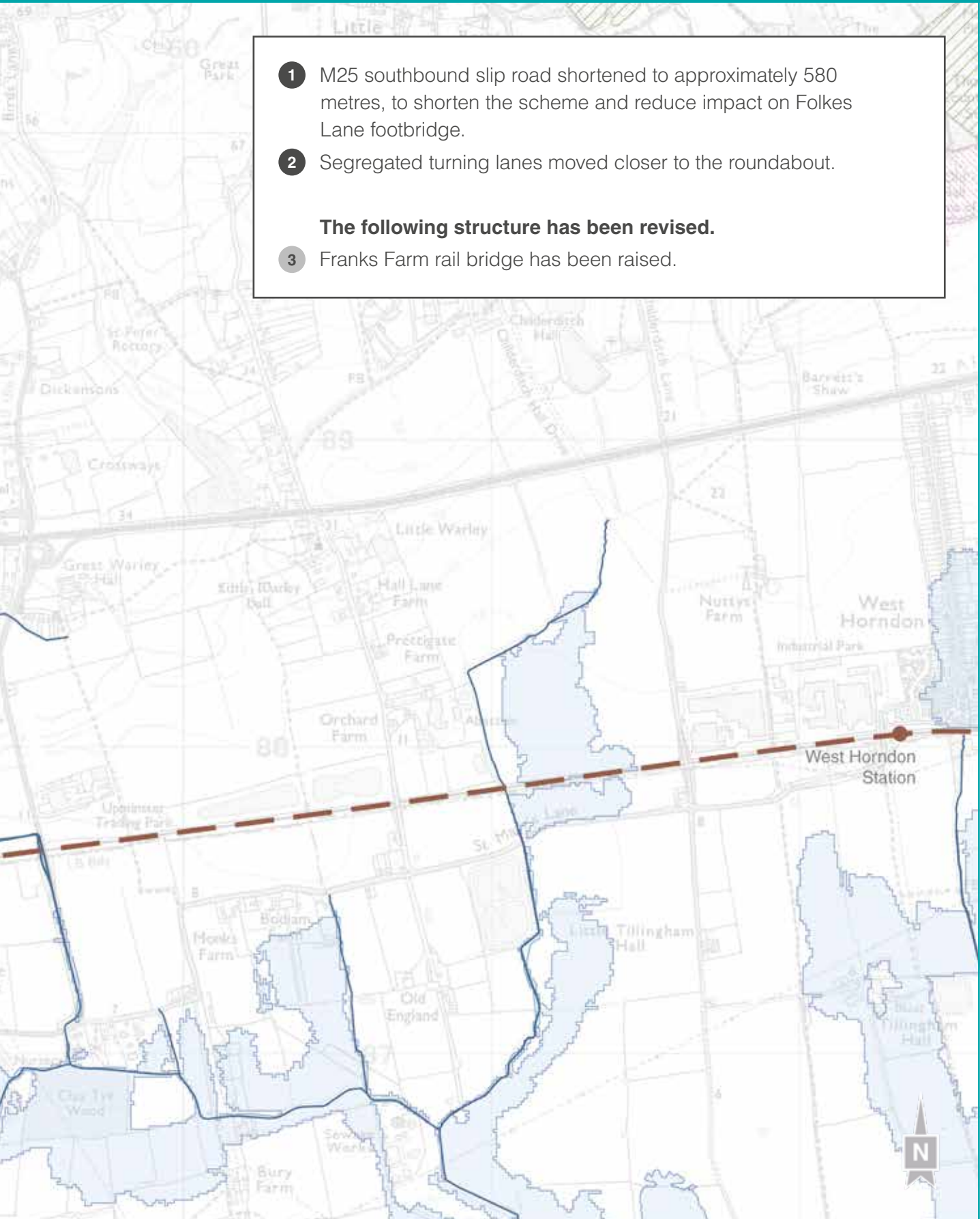


M25 junction 29 proposals

- 1 M25 southbound slip road shortened to approximately 580 metres, to shorten the scheme and reduce impact on Folkes Lane footbridge.
- 2 Segregated turning lanes moved closer to the roundabout.

The following structure has been revised.

- 3 Franks Farm rail bridge has been raised.



M25 junction 29 images

Existing view



Figure 5-59. Existing view of M25 between junction 29 and 30, looking north

Proposed in 2018 public consultation



Figure 5-60. Statutory consultation – proposed M25 between junction 29 and 30, looking north



Figure 5-61. Supplementary consultation – proposed M25 between junction 29 and 30, looking north

4

Property and landowners

We have revised our development boundary to reflect the design changes and to include the additional land we will require to divert utilities and establish new natural habitat areas, including planting trees and vegetation. The development boundary is illustrated on the following pages and outlines the land we currently consider would be required to deliver the project.

At statutory consultation the development boundary comprised 20.08km² and it's now 26.21km². There are approximately 270 residential and business properties within the revised development boundary. Around 190 of these are only affected by works to adjust the existing electricity wires above the properties, so will not need to be purchased for the project. Of the other 80 properties around 40 will require demolition and others will be impacted by construction works or would need changes to how they are accessed.

A comparison of the development boundary presented at statutory consultation and the revised boundary is shown on the following pages. Within this revised development boundary, some of the land along the route of the new road will be required permanently.

Where we are diverting utilities, such as power lines or gas pipelines, we will use the land temporarily and then retain permanent rights over the land for those diversions. Other areas, for example construction sites, will also only be needed temporarily. When work is complete, any land will be reinstated as before and returned to its owner wherever possible.

Find out more

For more information on utilities, please see chapter 8.

The revised development boundary includes replacement land for open space, common and other special category land. The purpose of the replacement land is to replace such special category land that is proposed to be compulsorily acquired or in which permanent rights are sought as part of the proposals. The replacement land can be seen in Map Book 1: General Arrangements.

We have a duty to contact everyone who lives in, or owns, land or property in the revised development boundary. We have a dedicated land and property team who are active in the community and are happy to discuss with any landowner their concerns and explain any rights they may have.

Information about the Statutory Blight process and when compensation may be available can be found in the Highways England publications listed below. To access them, go to **www.lowerthamescrossing.co.uk** and select 'In my area'. If you are not able to view them online, get in touch using the contact details at the back of this guide and we will send you the information.

Your Property and Blight

Information for property owners within the development boundary.

Your Property and Discretionary Purchase

Information for those who live outside the development boundary but may need to sell their property.

Your Property and Compulsory Purchase

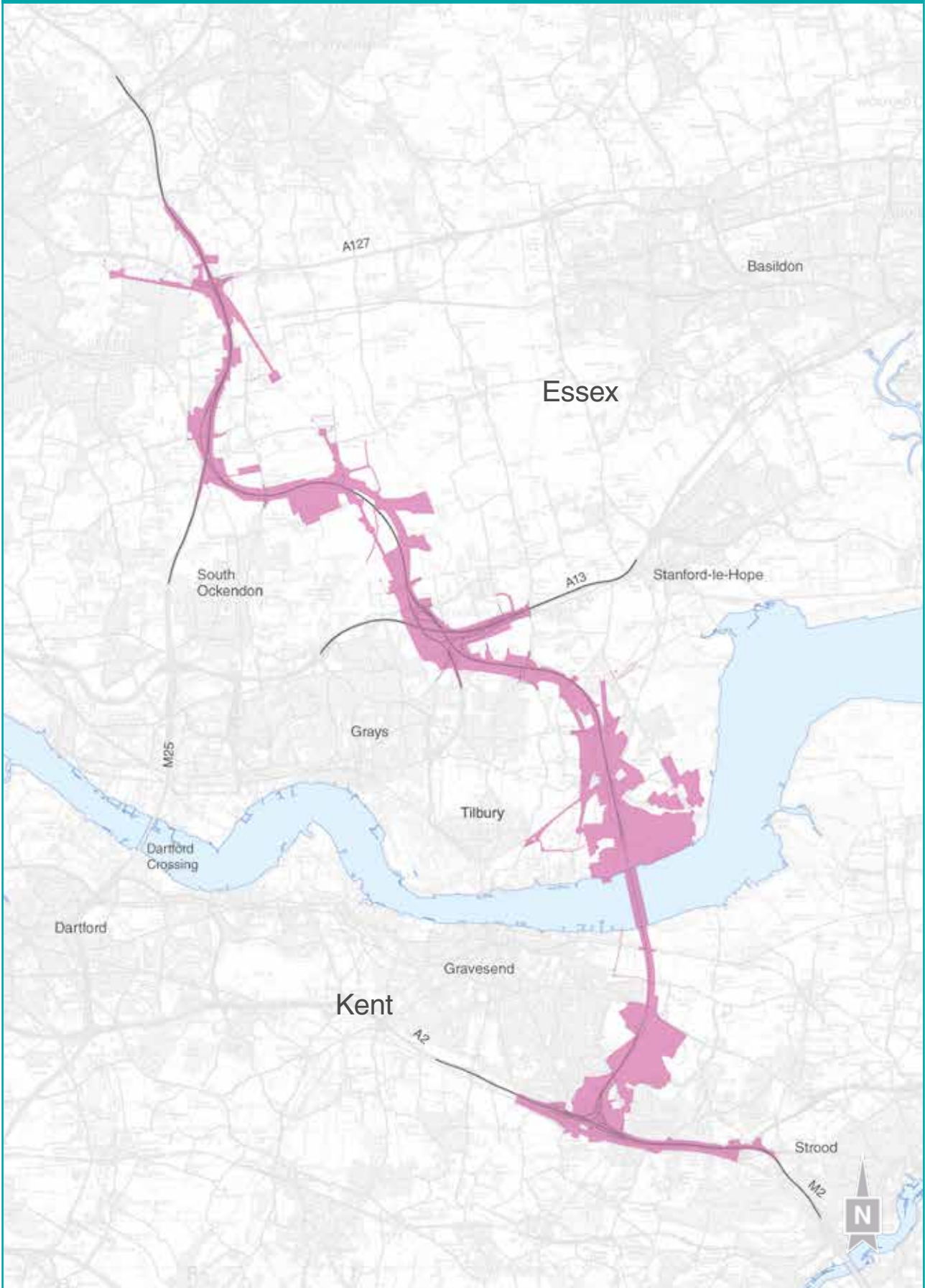
How compulsory purchase works.



Have your say

To comment on the revised development boundary, answer question 2a and 2b in the response form.

Statutory consultation 2018 development boundary



Revised development boundary



5

Walkers, cyclists and horse riders

We've developed a detailed set of proposals for maintaining, improving and upgrading the walking, cycling and horse-riding network

At statutory consultation, we explained our intention to, where possible, maintain and improve the walking, cycling and horse-riding network in the area affected by the Lower Thames Crossing. Since then, we have carefully considered the feedback received, and have engaged further with local authorities and other stakeholders.

We have also carried out additional analysis, looking at potential improvements to routes for walkers, cyclists and horse riders, as well as access to public transport.

This has helped us to develop a detailed set of proposals for maintaining, improving and upgrading the walking, cycling and horse-riding network in the vicinity of the project.

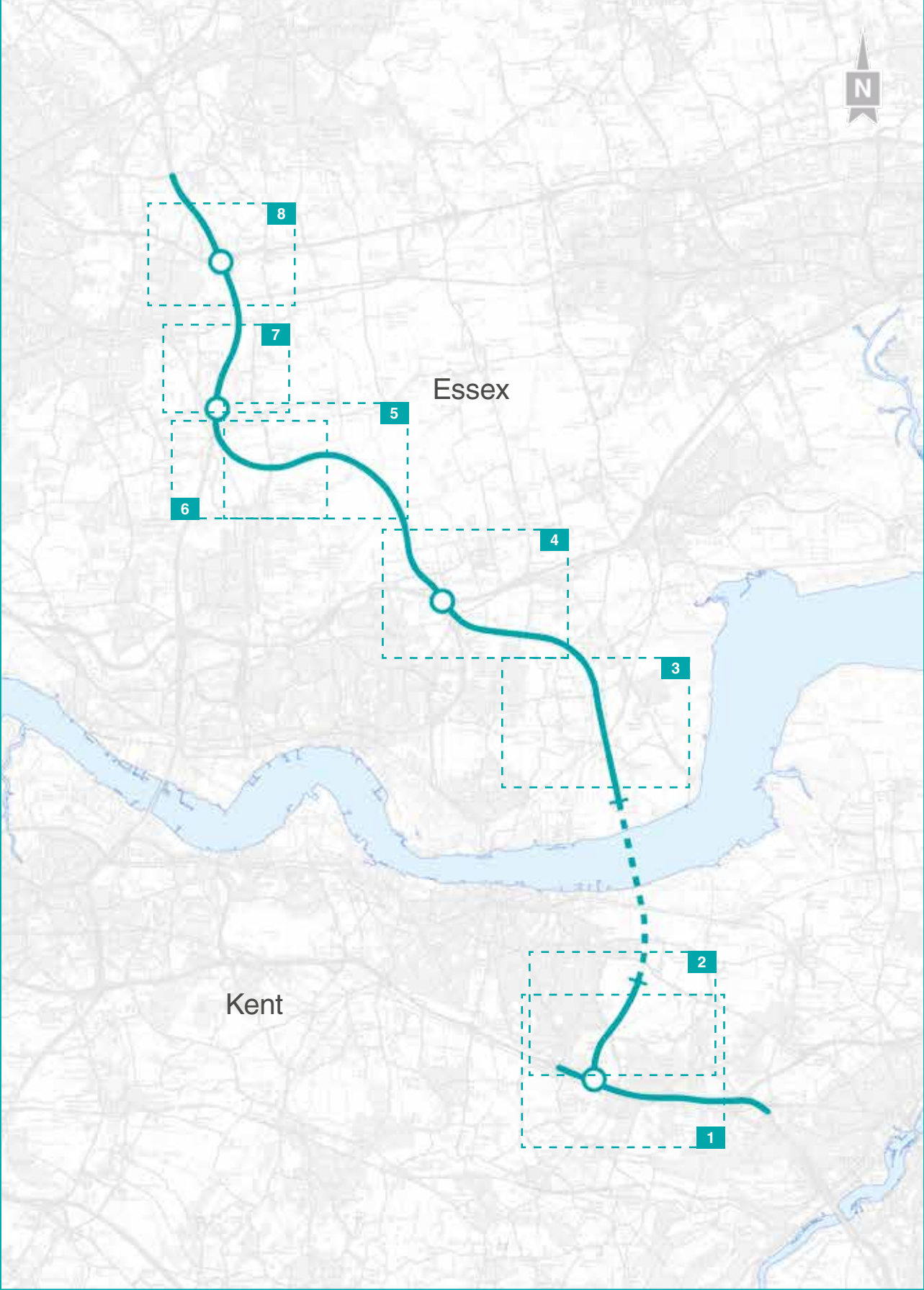
This chapter includes maps showing our proposals and how they link with the existing network to provide opportunities to access other areas.

For the purpose of describing our updated proposals, we have split the route into eight sections:

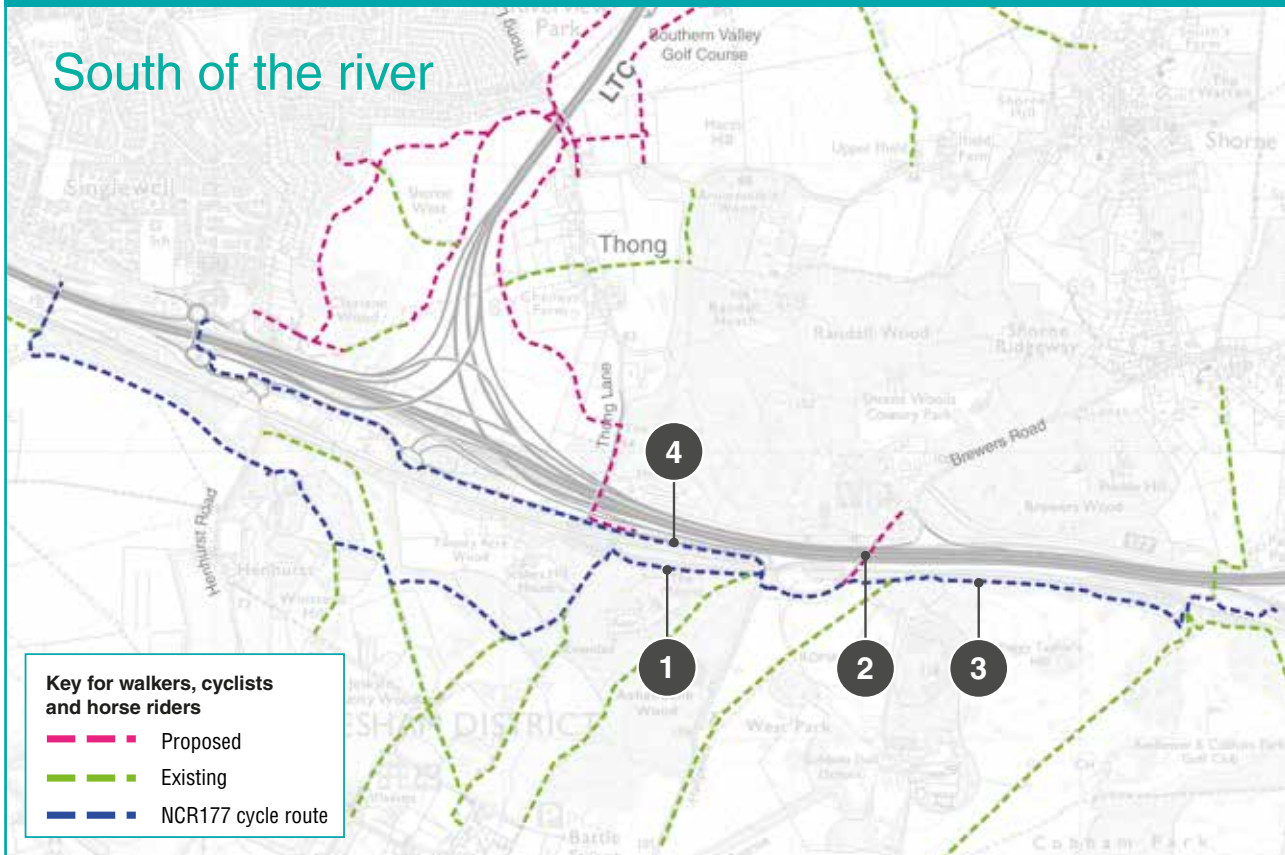
1. Realignment of National Cycling Route (NCR) 177.
2. Recreational routes around the southern tunnel entrance.
3. Improvements to Muckingford Road.
4. Improvements around the A13/A1089 junction.
5. Improvements around Orsett Fen and Ockendon.
6. Improvements to North Road crossing.
7. Thames Chase Community Forest proposals.
8. M25 junction 29.

NOTE: Throughout this chapter, we will refer to the Lower Thames Crossing as 'LTC'.

Walkers, cyclists and horse riders: overview



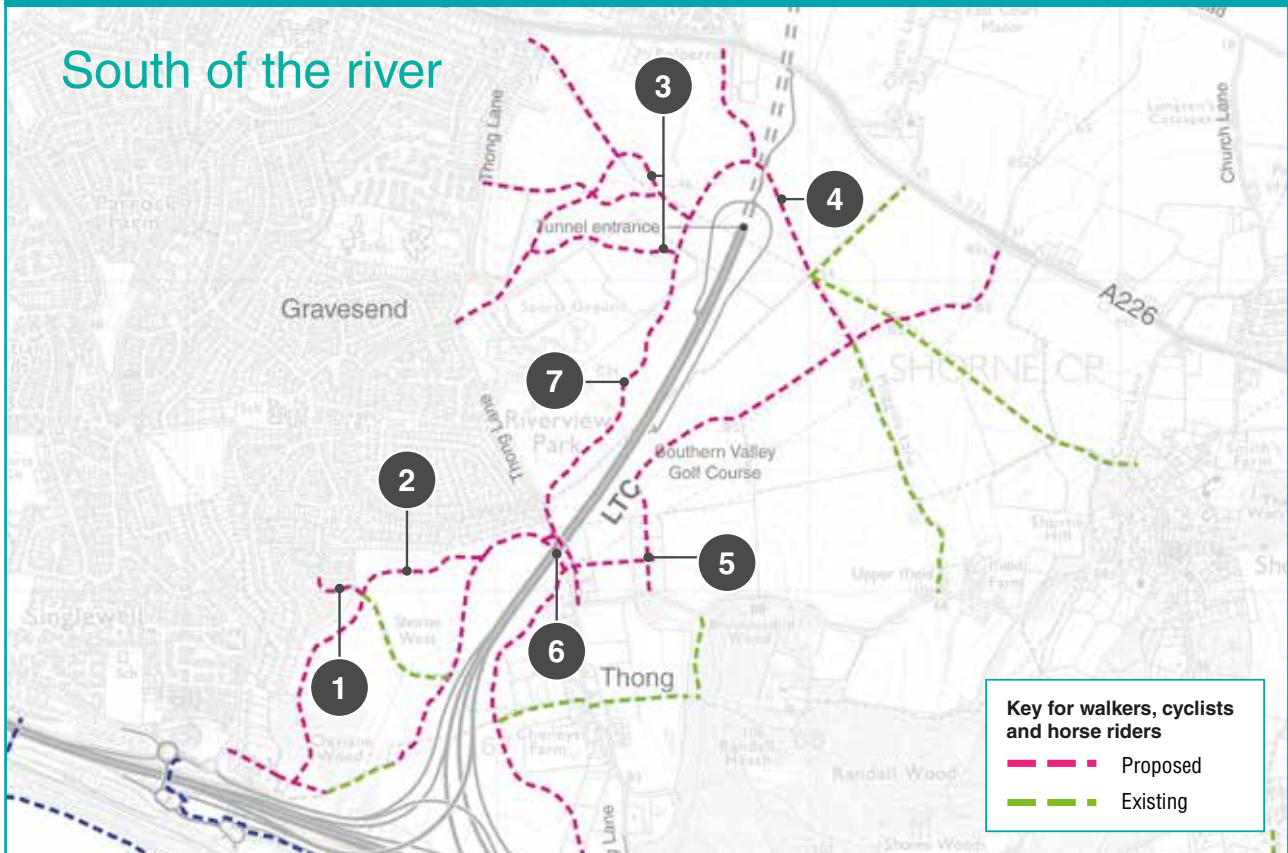
1 Realignment of NCR 177



We are proposing changes to the NCR 177 and in the surrounding area south of the A2 and Thong. This will improve the routes for people walking, cycling or horse riding.

- 1 Recreational route from Brewers roundabout, through Jeskyns to Hares bridge.
- 2 New shared path for pedestrians, cyclists and equestrians on Brewers Road bridge.
- 3 Upgrade to existing footpaths and upgraded to shared paths, south of HS1.
- 4 Once we've built the M2/A2 junction, an additional cycle route next to the A2 link road from Brewers roundabout to Gravesend East would be added.

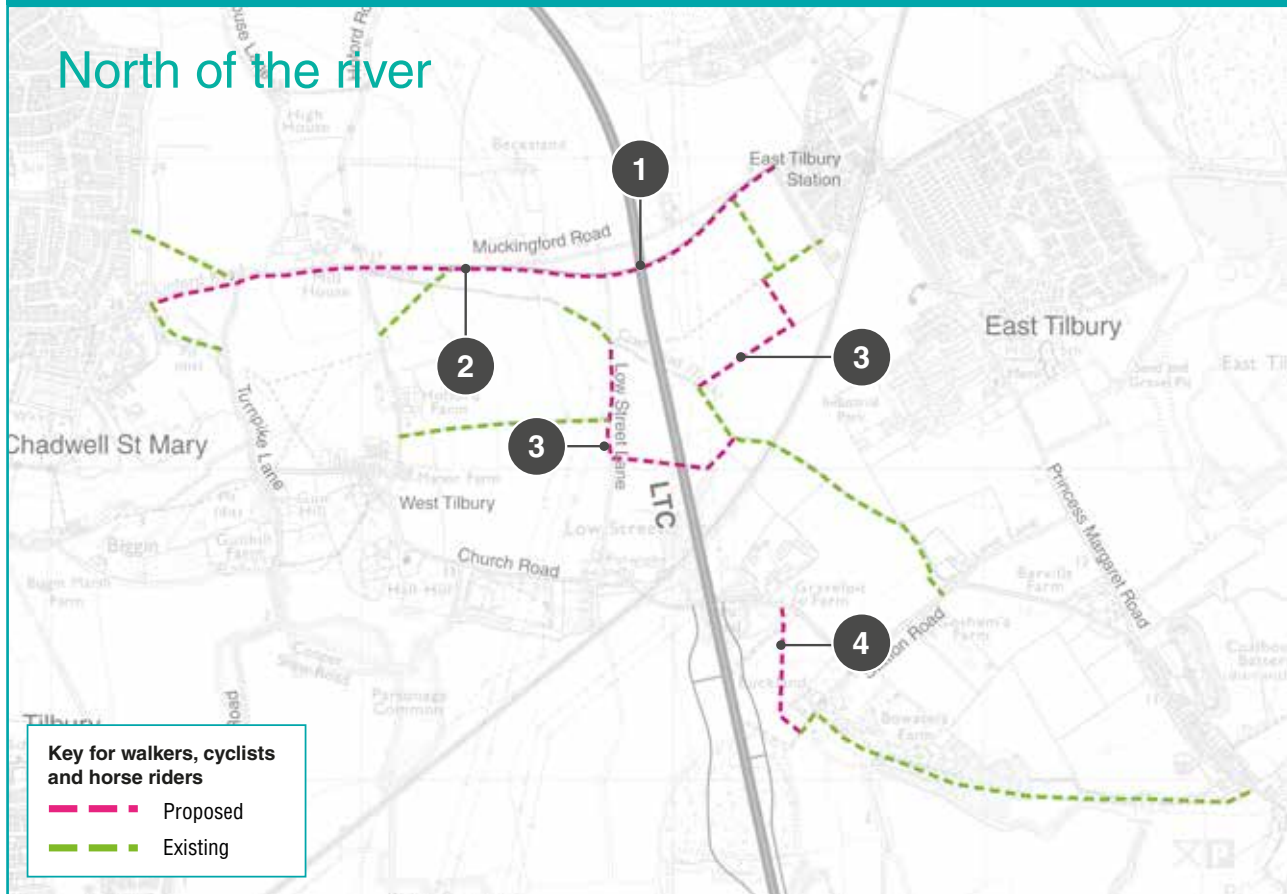
2 Recreational routes around the southern tunnel



We have made further improvements to walking, cycling and horse rider routes in this area.

- 1 Connection from Riverview Park into the public rights of way network is maintained.
- 2 New shared path for cyclists and pedestrians connecting to west of Thong Lane.
- 3 New paths connecting to Thong Lane.
- 4 NG8 diverted around the southern tunnel entrance (at statutory consultation, NG7 previously crossed over the road to the entrance).
- 5 New shared path to provide easier access into Brummelhill Wood and connect with existing routes into Shorne.
- 6 Thong Lane bridge over the LTC would be widened to provide a shared path (for pedestrians, cyclists and horse riders) and improve the connection between Gravesend and Shorne.
- 7 Footpath NG8 diverted to avoid tunnel approach.

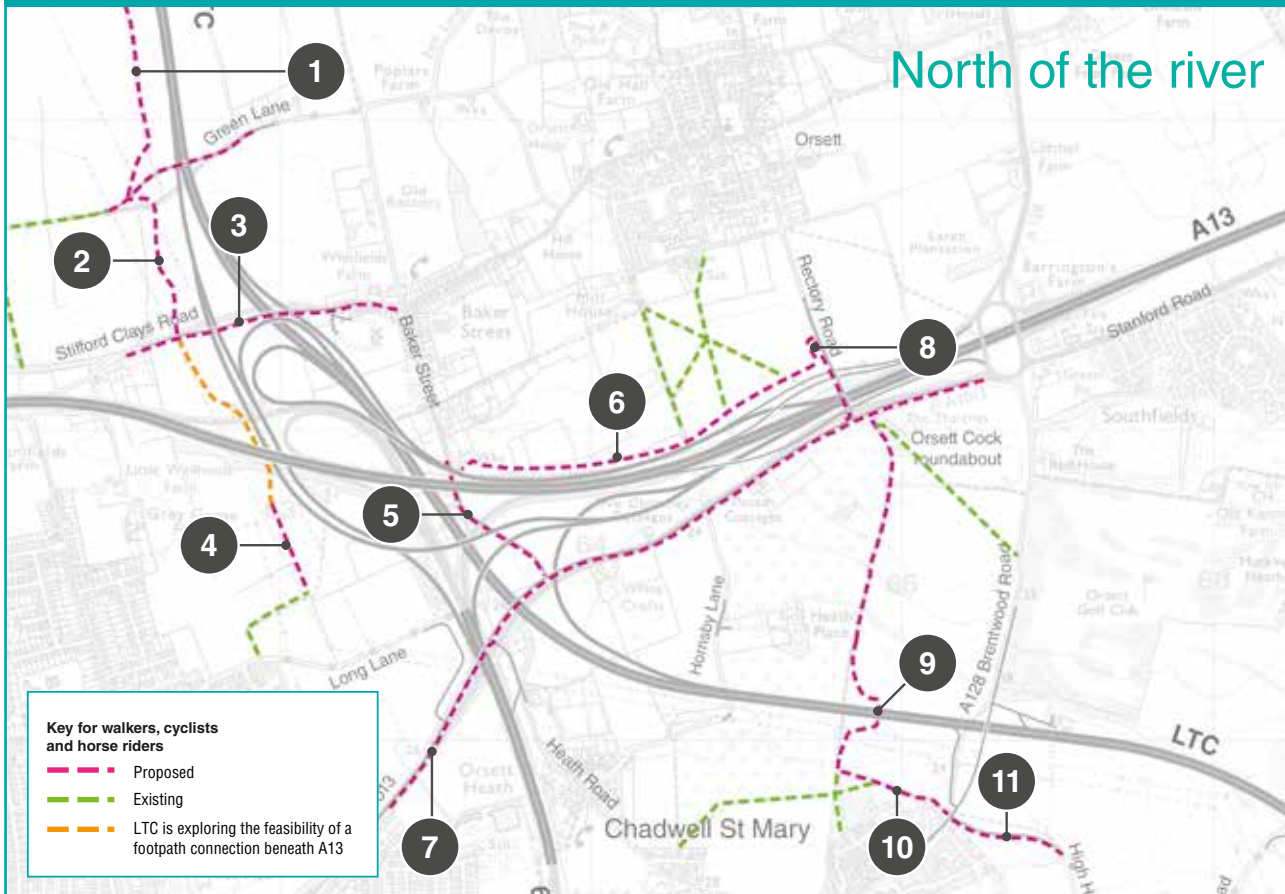
3 Improvements to Muckingford Road



We are proposing a shared path that offers a route for walkers and cyclists. It would improve connections to Chadwell St Mary from Linford and East Tilbury.

- 1 Widened proposed green bridge to provide a new shared path.
- 2 Shared path adjacent to Muckingford Road and Linford Road.
- 3 Existing paths impacted by the LTC and diverted to maintain a connection passing under the viaduct.
- 4 FP200 diverted due to a new embankment on the LTC route.

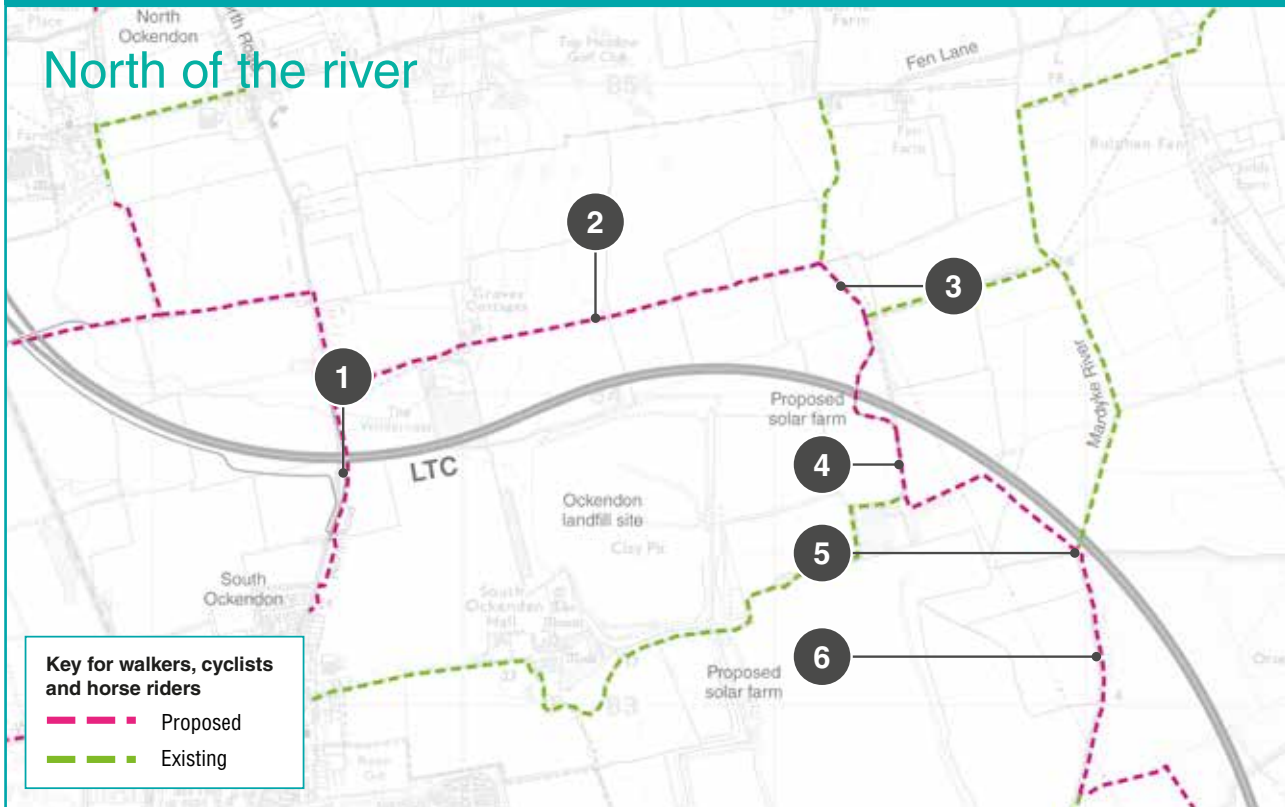
4 Improvements around the A13/A1089 junction



We are proposing various changes around the junction, such as widening proposed bridges to provide shared paths and creating additional shared paths to connect areas around the junction.

- 1 Shared path from bridleway (BR219) to Green Lane.
- 2 Shared path provided from Green Lane to Stifford Clays Road.
- 3 New shared path along Stifford Clays Road, ending before Whitfield Farmhouse, that connects to the Baker Street area and an existing cycle track on Stifford Clays Road.
- 4 FP97 diverted due to new junction layout.
- 5 New cycle path along Baker Street (N.71).
- 6 Existing bridleways, diverted away from A13 and extended to Rectory Road
- 7 Existing shared path on the A1013 would be widened to improve the connection between Orsett Cock roundabout with Little Thurrock.
- 8 Rectory Road bridge would be widened to provide a separate bridleway and shared cycle/pedestrian path with a new Pegasus crossing.
- 9 Bridge upgraded to equestrian standard providing a link from Rectory Road to High House Lane.
- 10 Upgraded to bridleway.
- 11 Section of FP78 realigned and upgraded to bridleway.

5 Improvements around Orsett Fen and Ockendon

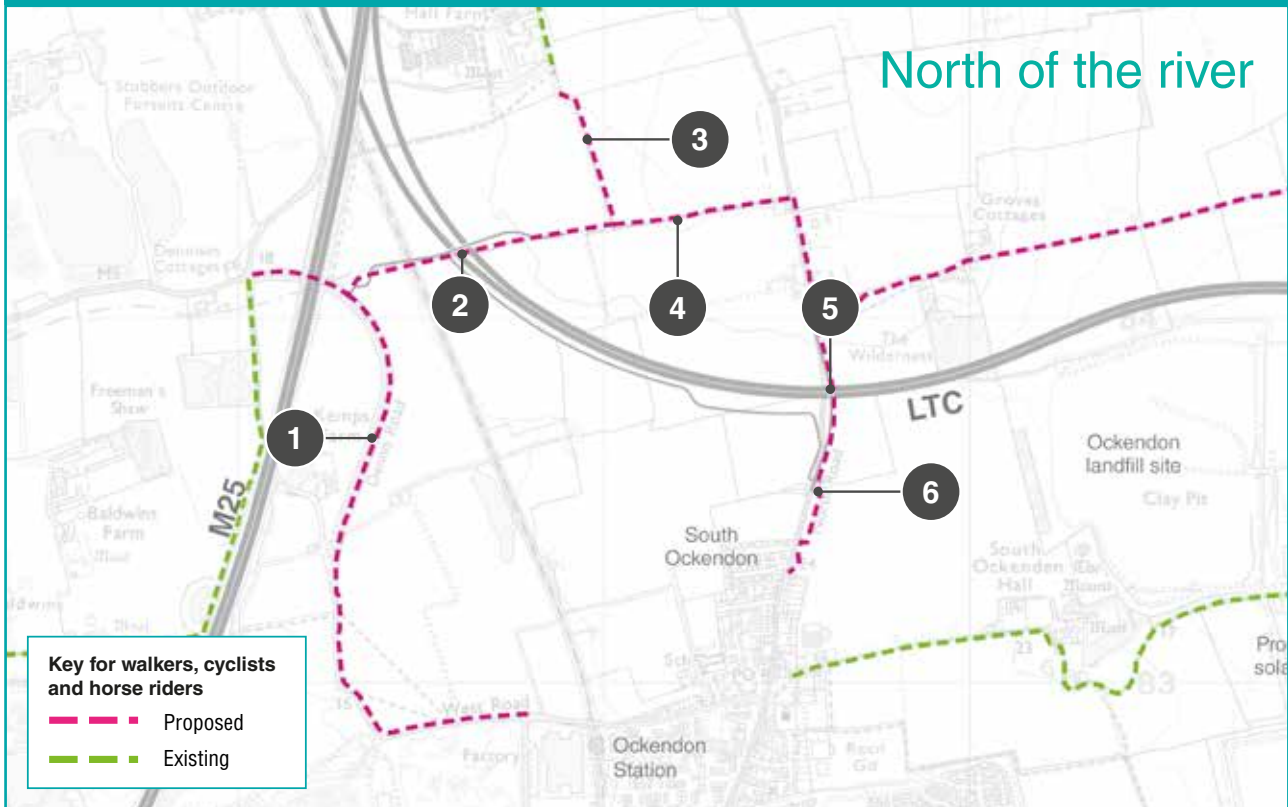


We are proposing various improvements and upgrades to existing paths for walkers, cyclists and horse riders.

Our changes also provide new connections between the Baker Street area and the Mardyke, and through to Thames Chase Forest Centre and Little Belhus Park.

- 1 North Road bridge over the LTC has been widened to provide a shared path.
- 2 FP135 – some sections have been resurfaced and designated as a bridleway connecting to North Road.
- 3 Farm track between FP135 and FP136 changed to a bridleway.
- 4 FP136 – improved surface and redesignated as a bridleway.
- 5 New bridge would provide links to a shared path connecting to BR219.
- 6 Section of BR219 – surface improved.

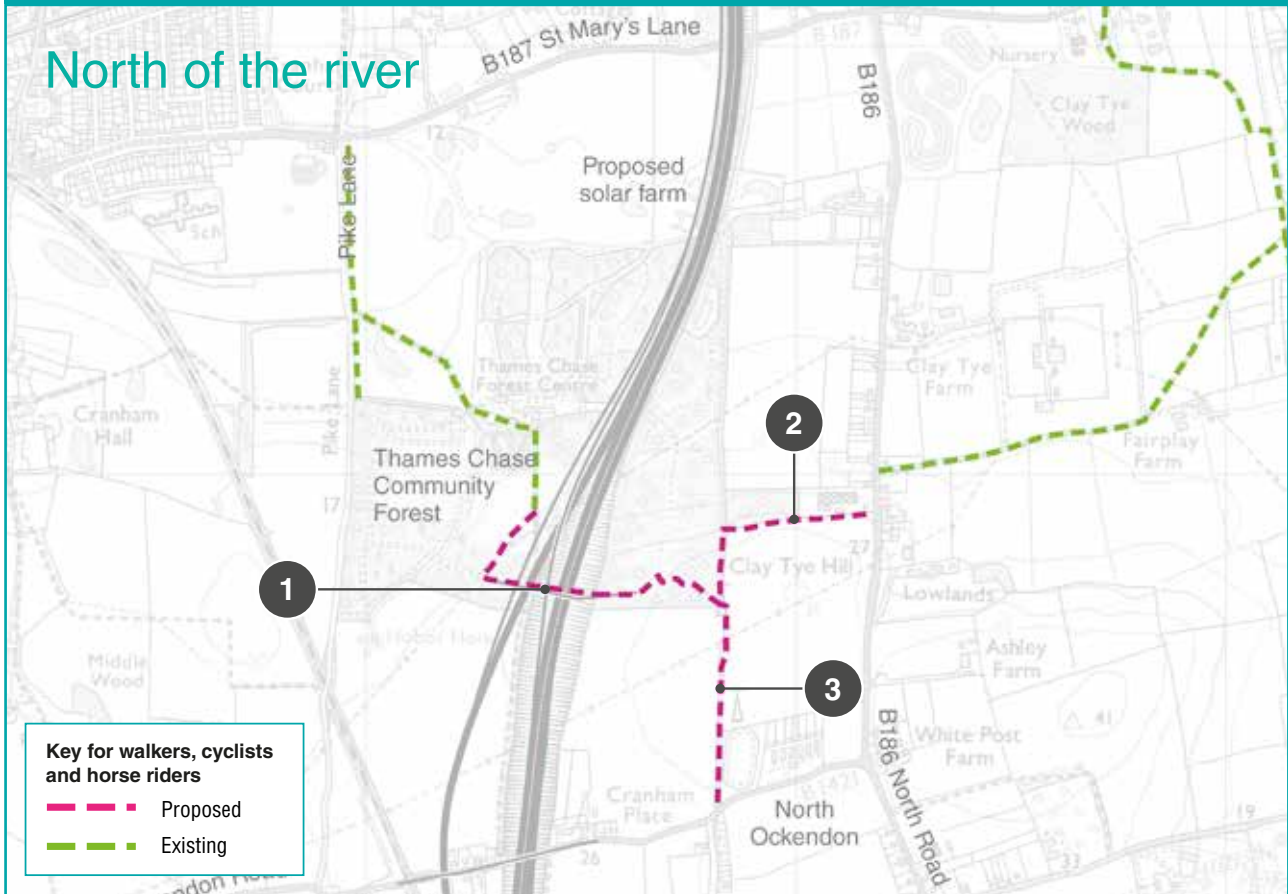
6 Improvements to the North Road crossing



We have proposed a new shared path for pedestrians and cyclists (N.35) along North Road to provide a connection between North and South Ockendon. This also connects to FP135 in the east, allowing links across the Mardyke. The proposals in this section provide better connections and improved recreational facilities for those living west of the M25 into Fenn land.

- 1 New shared path adjacent to Dennis Road and Dennises Lane:
 - a. Provides a connection from FP252, to Little Belhus Country Park (an area recently restored for public recreational use) and South Ockendon. This provides a route for walkers, cyclists and horse riders.
 - b. Provides a connection to FP259, which leads to Belhus Park.
- 2 FP252 – the bridge has been moved south to provide an east-west connection and the footpath has been converted to a shared path, which spans across two bridges. This links into Dennis Road.
- 3 FP254 – resurfaced and re-designated to a bridleway.
- 4 FP151 – resurfaced and re-designated to a bridleway (connecting St. Mary Magdalene Church).
- 5 Proposed new green bridge over the LTC will be widened to provide facilities for cyclists and horse riders between North and South Ockendon.
- 6 New shared path along North Road connecting South Ockendon with FP151.

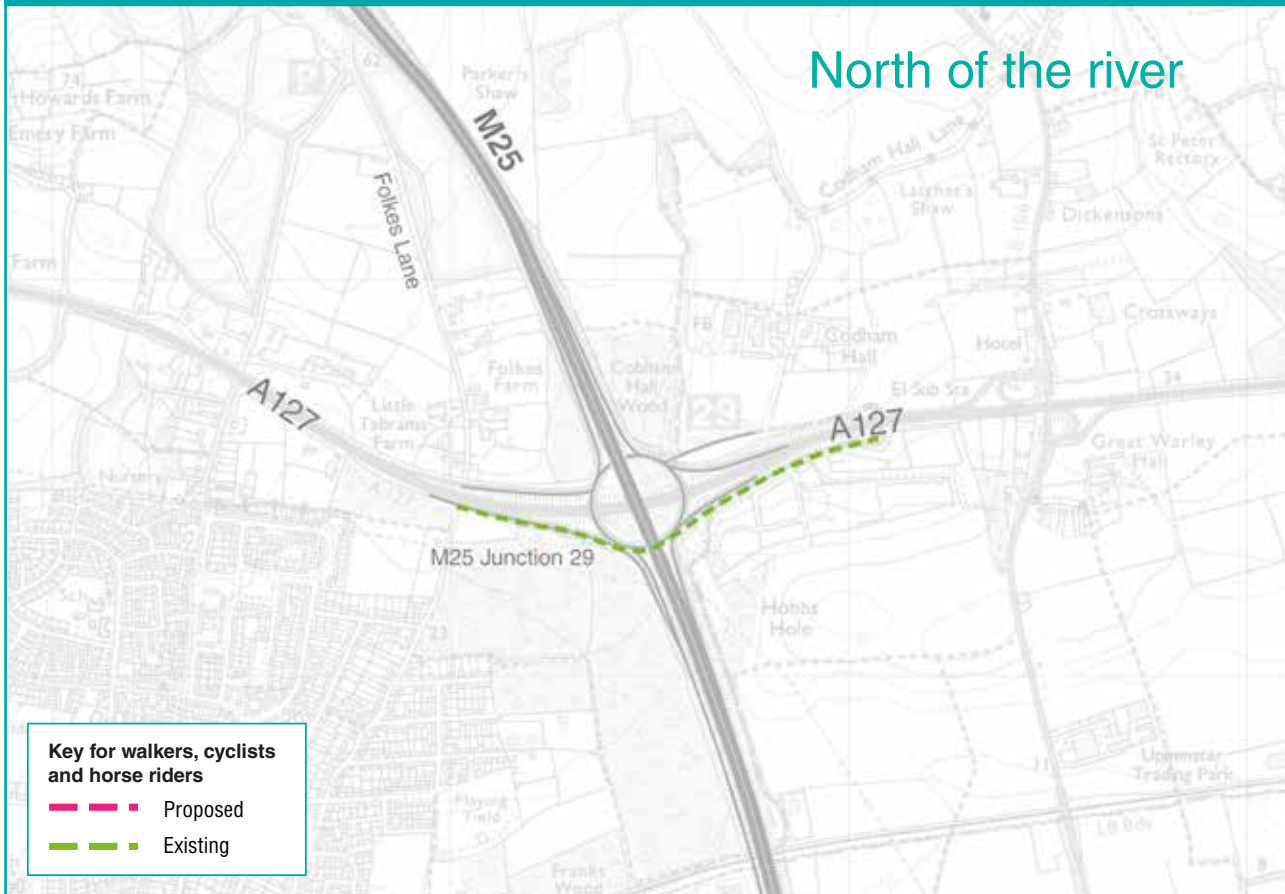
7 Thames Chase Community Forest proposals



Improvements in the vicinity of Thames Chase Community Forest Centre including a new connection across this community open space.

- 1 New equestrian-standard bridge across the M25 links the east and west of the forest centre site.
- 2 New shared path that links East Thames Chase to Clay Tye Road. This provides a connection to the existing FP232.
- 3 Existing maintenance track from Ockendon Road north into Thames Chase has been upgraded to a bridleway. This has been provided because the existing path south of Thames Chase, connecting to Ockendon Road, is impacted because of the LTC.

8 M25 junction 29



An existing path next to the south side of the A127 is impacted due to the addition of left-turn slip lanes. The existing crossing points to the south of the junction cannot be maintained due to the slip lanes. We are currently exploring solutions to maintain this connection as part of Highways England's regional strategy for this area.



Have your say

To comment on our proposals for walkers, cyclists and horse riders, answer question 3a and 3b in the response form.

Environmental impacts

As part of our statutory consultation in 2018, we produced a Preliminary Environmental Information Report (PEIR).

This provided the public, statutory consultees and other stakeholders with preliminary information about the project's likely significant environmental effects, and the measures being considered to avoid or minimise them.

Environmental impacts associated with the project changes

We are now proposing a number of changes to the project, which are outlined in chapter 3 and in the Utilities Update. This includes proposed alterations to the design of the route and its junctions, as well as diversion of utilities. We are also proposing related changes to the development boundary.

The Environmental Impacts Update document, which can be found in the locations listed below, explains the environmental effects associated with the proposed changes, compared with those considered in the 2018 PEIR.

In the Environmental Impacts Update document, the expected effects on the following aspects of the environment are considered for the proposed changes (where applicable), during both construction and operation:

- Air quality
- Biodiversity (terrestrial and marine)
- Climate
- Cultural heritage
- Geology and soils
- Landscape
- Materials
- Noise and vibration
- People and communities
- Road drainage and water environment

The Environmental Impacts Update document explains what we are doing to reduce impacts (mitigation measures) and why.

Air quality, noise and vibration

The Environmental Impacts Update document also provides more information on air quality, noise and vibration in relation to the specific changes to the scheme, during construction and operation, and how we are looking to mitigate these impacts.

In addition to the changes relating to route design and utility diversions, the updated traffic modelling has revealed some changes to the traffic flows on roads across the study area, the details of which can be found in the Traffic Modelling Update. Furthermore, the air quality modelling inputs, including scheme monitoring data and the vehicle emission factors and pollution background maps provided by the Department for Environment, Food and Rural Affairs, have been updated since the PEIR was undertaken. We are working to understand the effects of these changes and ensure the project complies with the National Policy Statement for National Networks.

Green bridges

At statutory consultation we were proposing to provide five green bridges (Brewers Road over A2, Thong Lane over A2, reinstate the route for walkers, cyclists and horse riders over/under LTC/A2 junction, Thong Lane over LTC, and Green Lane over LTC). As a result of changes to the route, as well as further information from ecological surveys, an additional three green bridges are now proposed for the scheme in the north (Muckingford Road over LTC, Holford Road over LTC, North Road over LTC) these additional green bridges also incorporate pedestrian/equestrian and cycle routes.



Have your say

To comment on the environmental impacts and how we plan to reduce them, answer question 4a and 4b in the response form.

Due to changes in the design of the LTC/M2/A2 junction and the movement of the southern tunnel entrance, the proposed route for walkers, cyclists and horse riders over/under LTC/A2 junction has been removed. As a consequence, the Thong Lane bridge over LTC has been further improved and widened to 84 meters to accommodate the realigned public rights of way. This would also improve the link between areas of woodland and replacement tree planting as part of the wider landscape design, as well as providing access to the areas of replacement open space. As with other changes where a difference in the environmental effects have been identified these are described in the Environmental Impacts Update document.

Next steps

Further assessments and the development of detailed measures to reduce environmental effects are ongoing as part of our Environmental Impact Assessment (EIA). These will be reported in the Environmental Statement (ES), which will also be informed by the Project's consideration of consultation responses, and further survey and design work. The ES will be submitted as part of the DCO application later this year.

We are continuing to work with stakeholders and statutory consultees to develop our design, so we can maximise the benefits and minimise environmental impacts.

The Environmental Impacts Update and Utilities Update documents can be found:

- Online at www.lowerthamescrossing.co.uk/consultation-2020
- At deposit locations*
- At our consultation events*

* A list of these can be found at www.lowerthamescrossing.co.uk/consultation-2020

Building the Lower Thames Crossing

This chapter provides an update on how we are proposing to build the Lower Thames Crossing. The predicted impacts of our construction activity and how we propose to mitigate these are based on the information we currently have available.

To set out how we would manage construction of the project, we will develop a Code of Construction Practice (CoCP), in conjunction with statutory consultees and local authorities. This will include provisions aimed at minimising disruption to communities, mitigating impacts on the wider environment, and our approach to managing construction traffic.

The provisions of the CoCP will be based on the findings of the Environmental Impact Assessment, which will be documented in our Environmental Statement (ES). Both the CoCP and ES will be submitted as part of our DCO application.

If the project is approved and progresses to construction, the contractors we appoint will need to prepare and submit for approval their own Construction Environmental Management Plans (CEMPs). These will ensure the contractors' work is delivered in line with the CoCP.

During construction, we will give affected residents, businesses and road users advance notice of planned works and provide regular updates on project progress. We will also keep disruption to a minimum on public rights of way used by walkers, cyclists and horse riders. We will do this by limiting full route closures and providing alternative routes. Wherever a right of way is affected, we will provide a nearby alternative.

Wherever possible we will protect – and look for opportunities to enhance – the local environment and improve biodiversity.

For a summary of the environmental impacts of building the Lower Thames Crossing, please see chapter 6 and our Environmental Impacts Update document.

Construction hours

Once we start on site, the new roads and tunnel would be constructed concurrently.

To maximise the amount of daylight hours during construction, we are increasing our assumed core working hours from those presented during statutory consultation. We are planning to carry out most of the work between 7am and 7pm on weekdays (excluding bank holidays), and between 7am and 4pm on Saturdays. During the summer, to take advantage of the extended daylight hours and good weather conditions, we would undertake earthworks between 7am and 10pm. Our crews may work for up to an hour before and after to prepare and close the site.

From time to time we may have to carry out maintenance work on Sundays. We will liaise closely with highways teams from the local authorities in each affected area to identify the best working times for each site, so these may vary.

As with any project of this scale, some work would have to take place at night and on weekends. For example, where possible we would work on existing roads overnight to reduce disruption to drivers during the day.

Operation of the tunnel boring machines and associated activities for tunnel construction will take place 24-hours-a-day throughout. This would be confined to the tunnel entrances and within the tunnel, and we would put in place noise and light mitigation.

Tunnelling work

It is likely to take around six years to build the tunnel and the road within the tunnel. We are not changing the plans presented in the statutory consultation for how we propose to construct the tunnel under the River Thames.

Ground preparation works

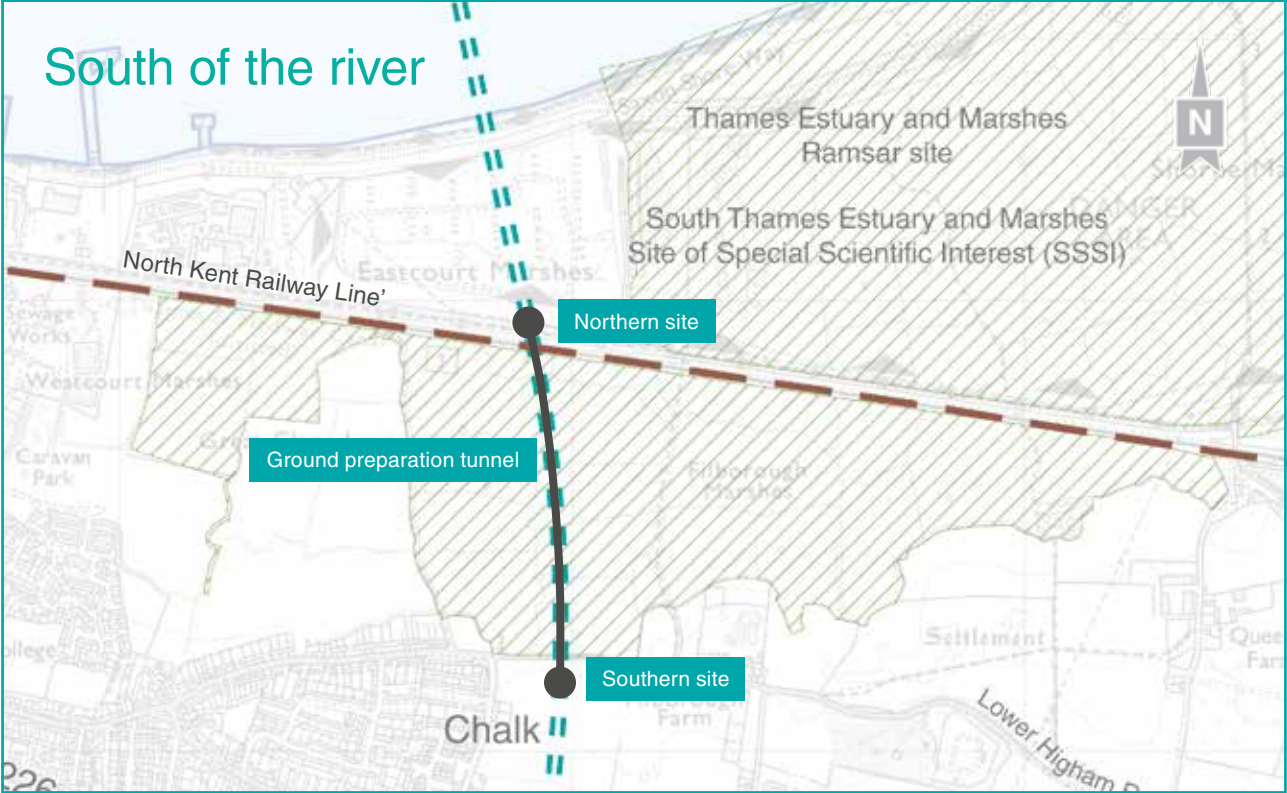
The local ground conditions mean we expect a number of ground treatment measures would be required as part of the Lower Thames Crossing tunnel works. These will strengthen specific areas of the ground or help control groundwater flows.

During construction we would aim to keep road closures to a minimum.

To treat the ground beneath the Thames Estuary and Marshes Ramsar site and Special Protection Area, we are proposing to build a ground preparation tunnel that is 5.8 metres in diameter (see diagram opposite). It would be located above and in between the northbound and southbound tunnels. This is subject to the contractor's proposals.

This construction activity would take place south of the river. It would start from a shaft located south of Lower Higham Road, and travel to a shaft located north of the North Kent Railway Line. Once the works are completed, both the shafts and ground preparation tunnel would be backfilled, and the ground reinstated to its original condition. The potential environmental effects of the new tunnel have been noted in our Environmental Impacts Update.

Ground preparation tunnel



Cross-section of ground preparation tunnel

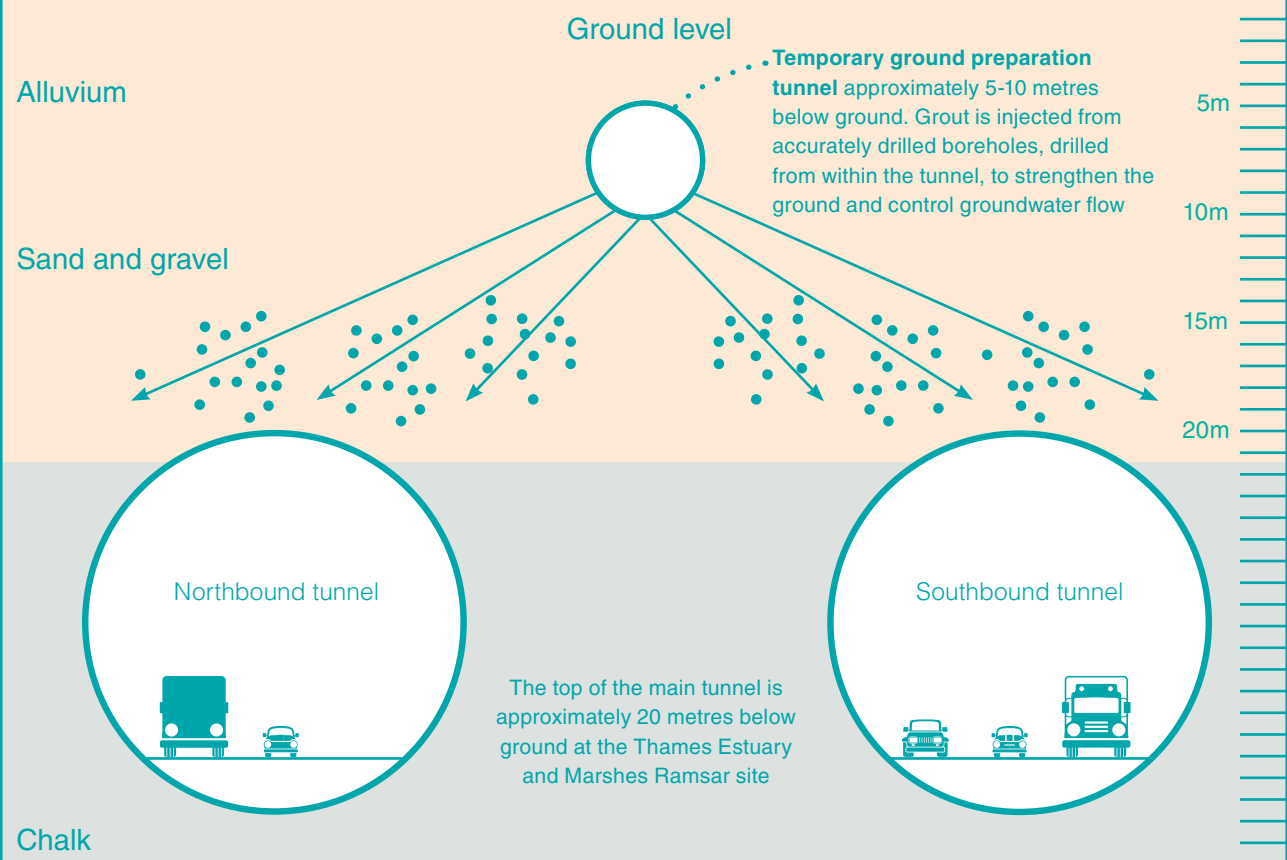


Diagram not to scale

Building the roads

As described during statutory consultation, we plan to build the new roads, junctions, bridges and underpasses at the same time as the tunnelling work.

The new road would connect the M2/A2 in Kent with the M25 south of junction 29 in Essex, crossing the A13 north of Chadwell St Mary. To connect the existing roads, as well as the A1089, we would construct new junctions and would have to carry out some work on these roads as well.

To facilitate the construction of the Lower Thames Crossing, where required, we would modify some of the existing side roads and infrastructure along the route.

How we would use other public roads

During construction, we would aim to keep road closures to a minimum. Where roads are affected by closures and diversions, temporary traffic lights or lane restrictions, we would ensure road users know in advance, so they can plan their journeys accordingly. Later in this chapter, we have outlined the routes our heavy goods vehicles (HGVs) are likely to take to transport material to and from our construction sites. Below we have detailed the average number of HGV journeys per month for each of our five construction areas, with each HGV journey comprising one trip to the site and another away from it.

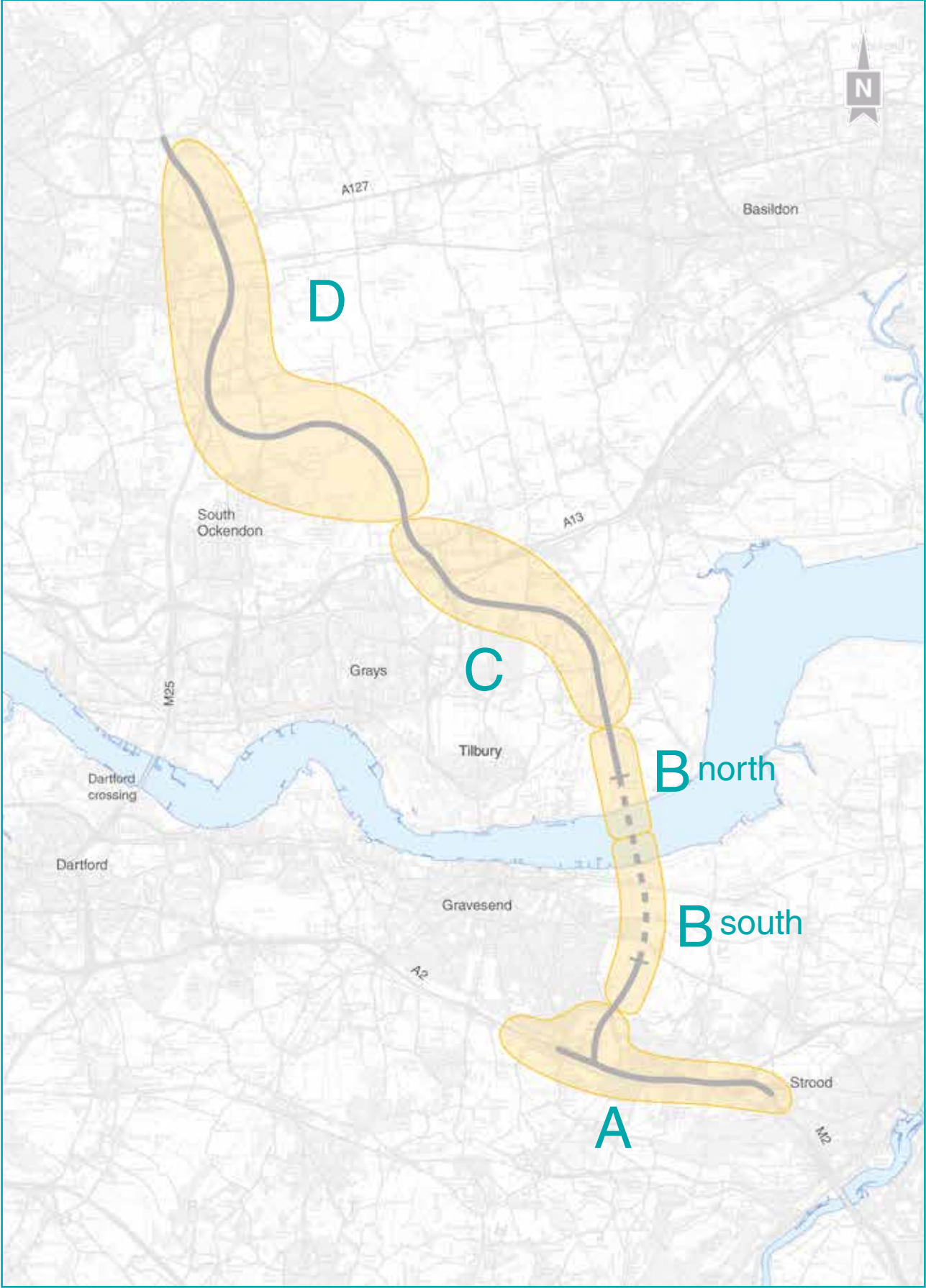
Following engagement with local highway authorities and our ongoing assessments, we have amended the routes that construction traffic would use to travel to the sites. We have aimed to identify those that are most practicable and that minimise the impact on local roads and communities. Where there are no roads to the construction site, we would build temporary access roads that connect to the existing network.

Roads to the construction sites

The Lower Thames Crossing is split into five construction areas labelled A-D. As we now have a greater understanding of our construction requirements and the potential routes construction vehicles will use to access the sites, we have been able to update the information available during our statutory consultation.

We also have more information on how we can use and reuse material on our construction sites more efficiently, which will

Location of our construction areas



reduce the need for material deliveries and vehicle movements. Where material has to be transported from elsewhere, we better understand the capabilities of the local supply chain and expect most of this to be supplied from nearby locations. We are also continuing to explore opportunities for alternative modes of transport, such as river barges, to transport materials and waste to and from our construction sites.

We have provided revised figures for the potential number of HGV movements in the table below, with a brief description of why this information has changed on the following pages.

Construction area	Average number of HGV journeys/month displayed during statutory consultation 2018	Average number of HGV journeys/month – based on updated information
Area A	4,700	2,900
Area B south	1,100	800
Area B north	4,500	5,300
Area C	5,200	2,100
Area D	2,000	2,200
Total	17,500	13,300

Area A: We have been able to significantly cut the number of potential HGV journeys by assessing how material can be reused on our construction site to create embankments and landscaping that would help mitigate the impacts of the road.

Area B South: Moving the tunnel entrance further south has enabled us to reduce the number of HGV journeys. The maps on the following pages show the routes that construction vehicles are likely to use. The map for Areas A and B South shows a construction area over the tunnel route; no part of this is an above ground structure and would not impact on the sensitive ecological area between the southern tunnel entrance and the river.

Area B North: The potential number of HGV journeys has increased as the design of the project in this area has been updated and more information has become available. We are exploring opportunities to reduce the number by transporting material via the river.



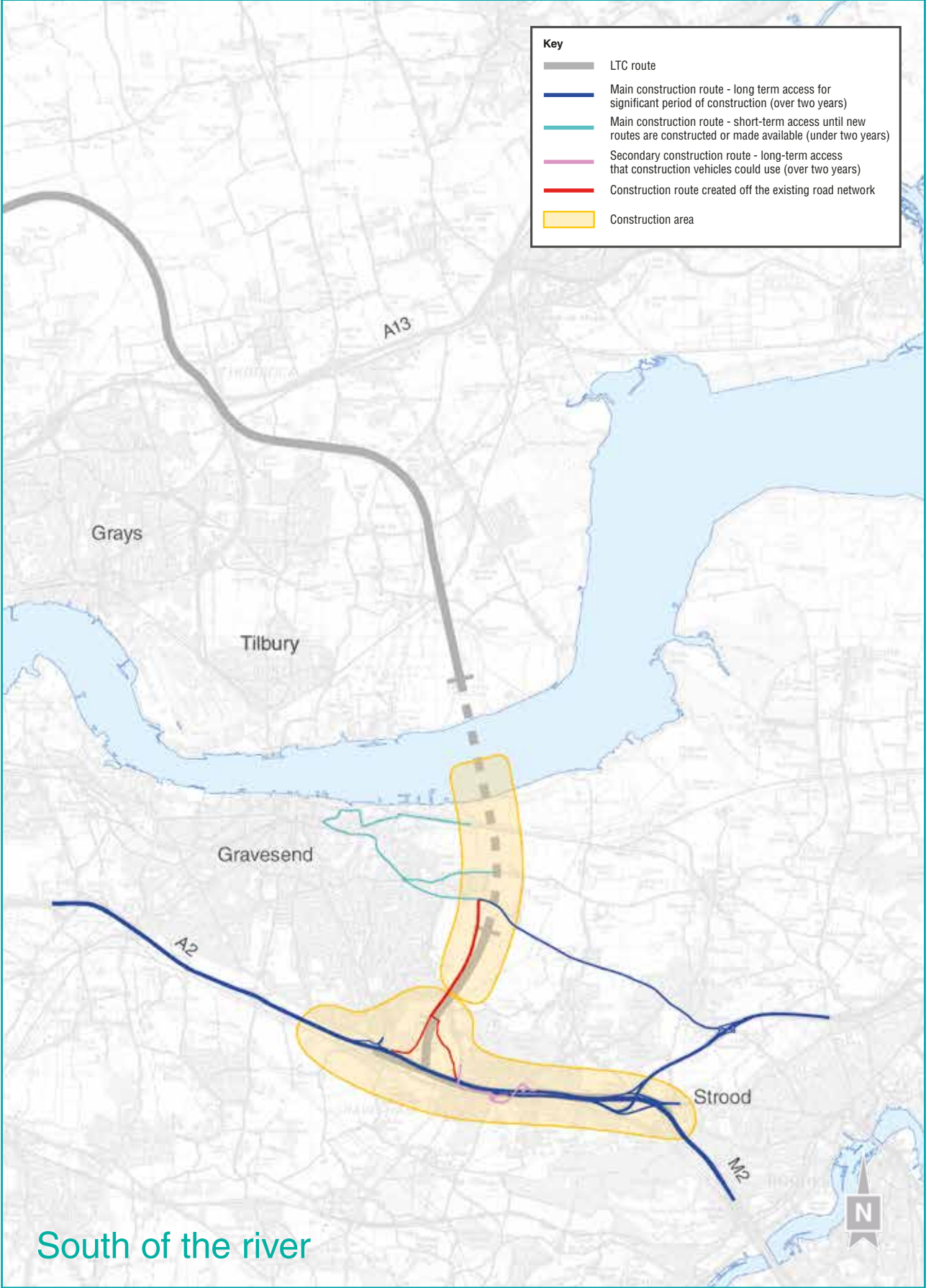
Area C: Following further design developments in this area, we have been able to make a better assessment on how material will be reused. This has enabled us to significantly reduce the number of HGV journeys on the road network.

Area D: Following further design developments in this area, we now have a better understanding of how material is required to be used for construction. There is an increase in material needed for this construction area, which has caused a slight increase in the potential number of HGV journeys on the road network.

The maps on the following pages show the construction areas and the routes that construction vehicles are likely to use.

Each road has been marked in a different colour, depending on whether it is a main or secondary route, and the long or short-term access requirements. These are based on our current plans and are subject to change as a result of our ongoing dialogue with local highway authorities.

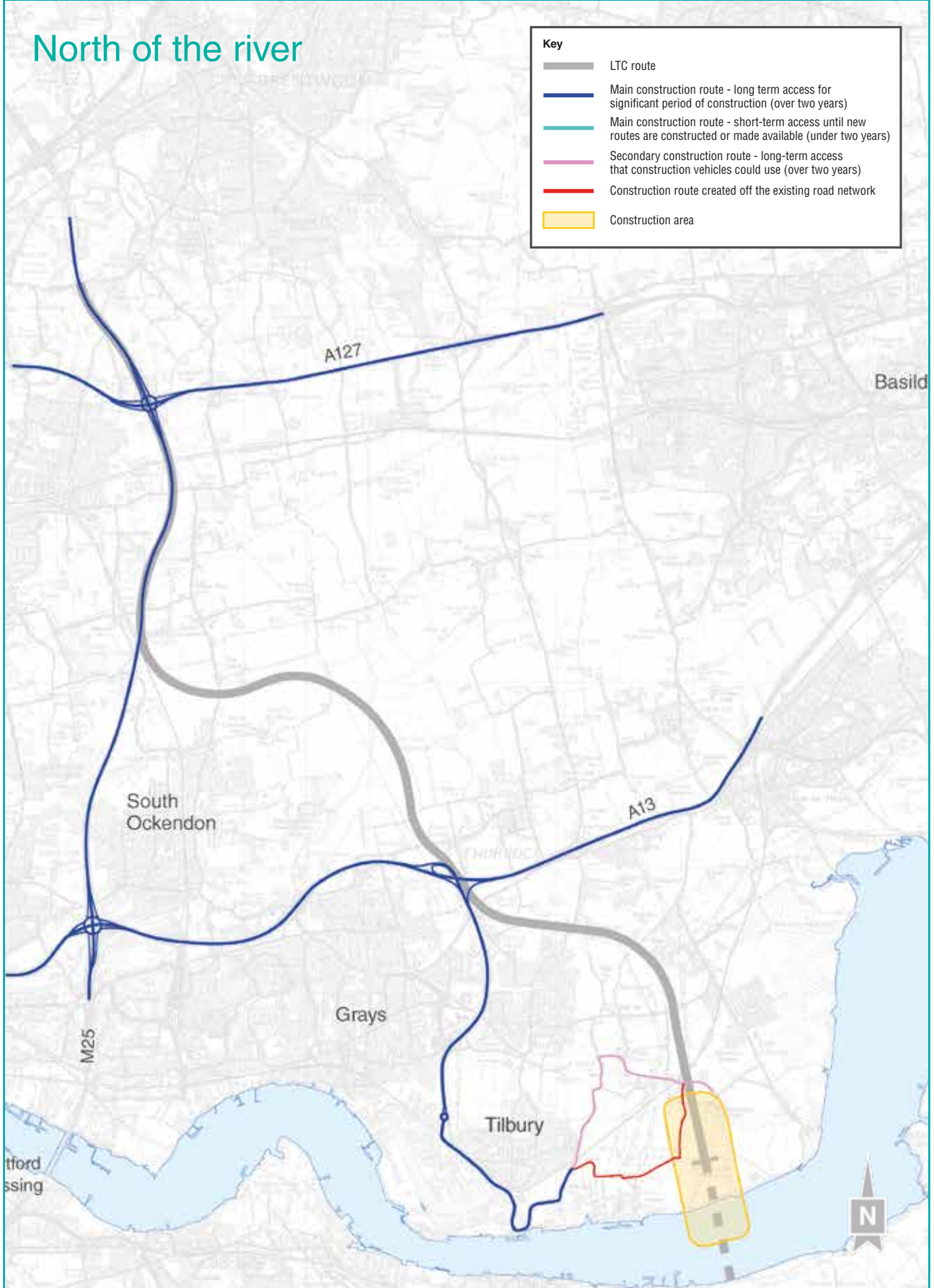
Routes to service construction Areas A and B South



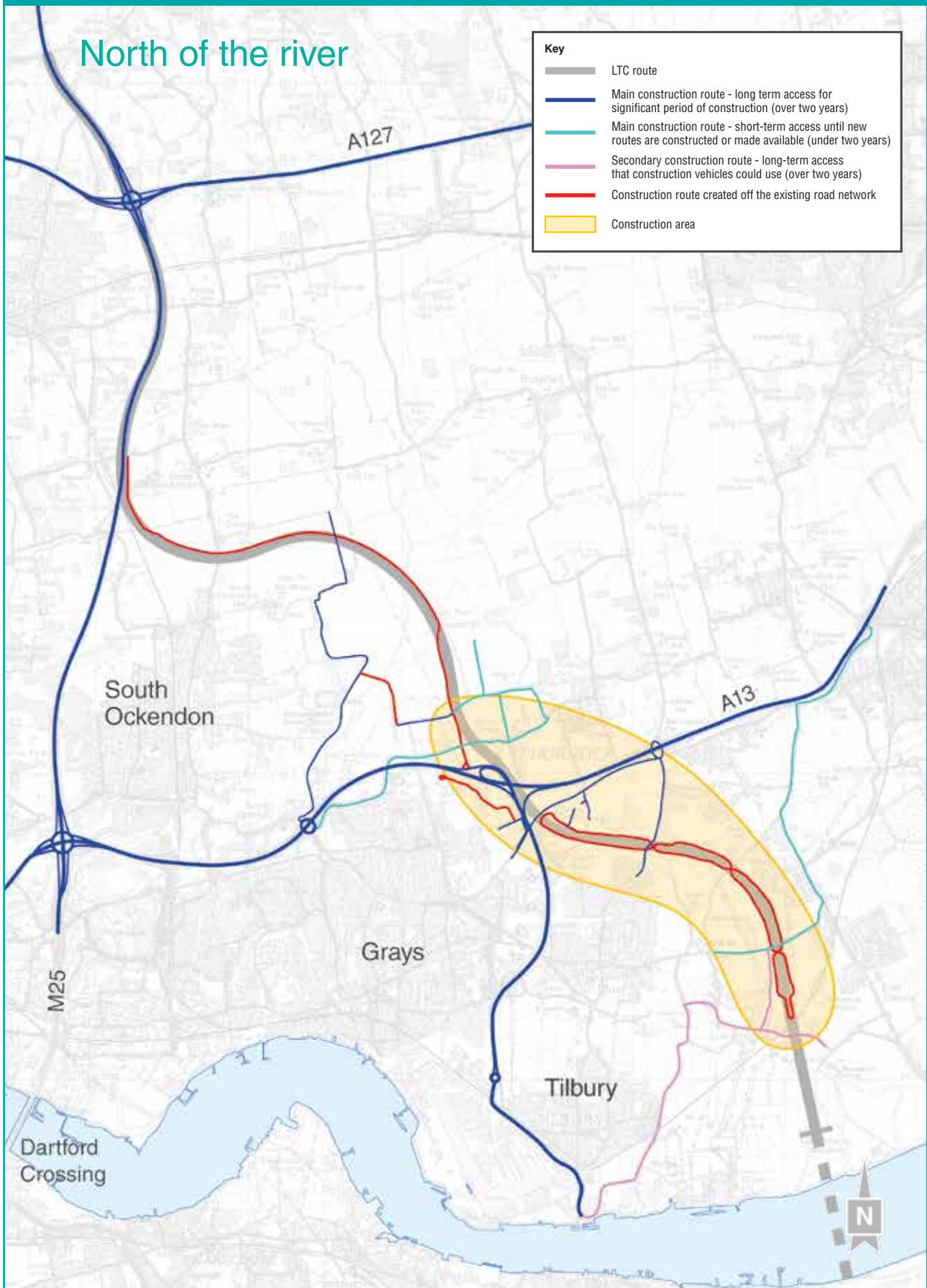
South of the river

Routes to service construction Area B North

North of the river

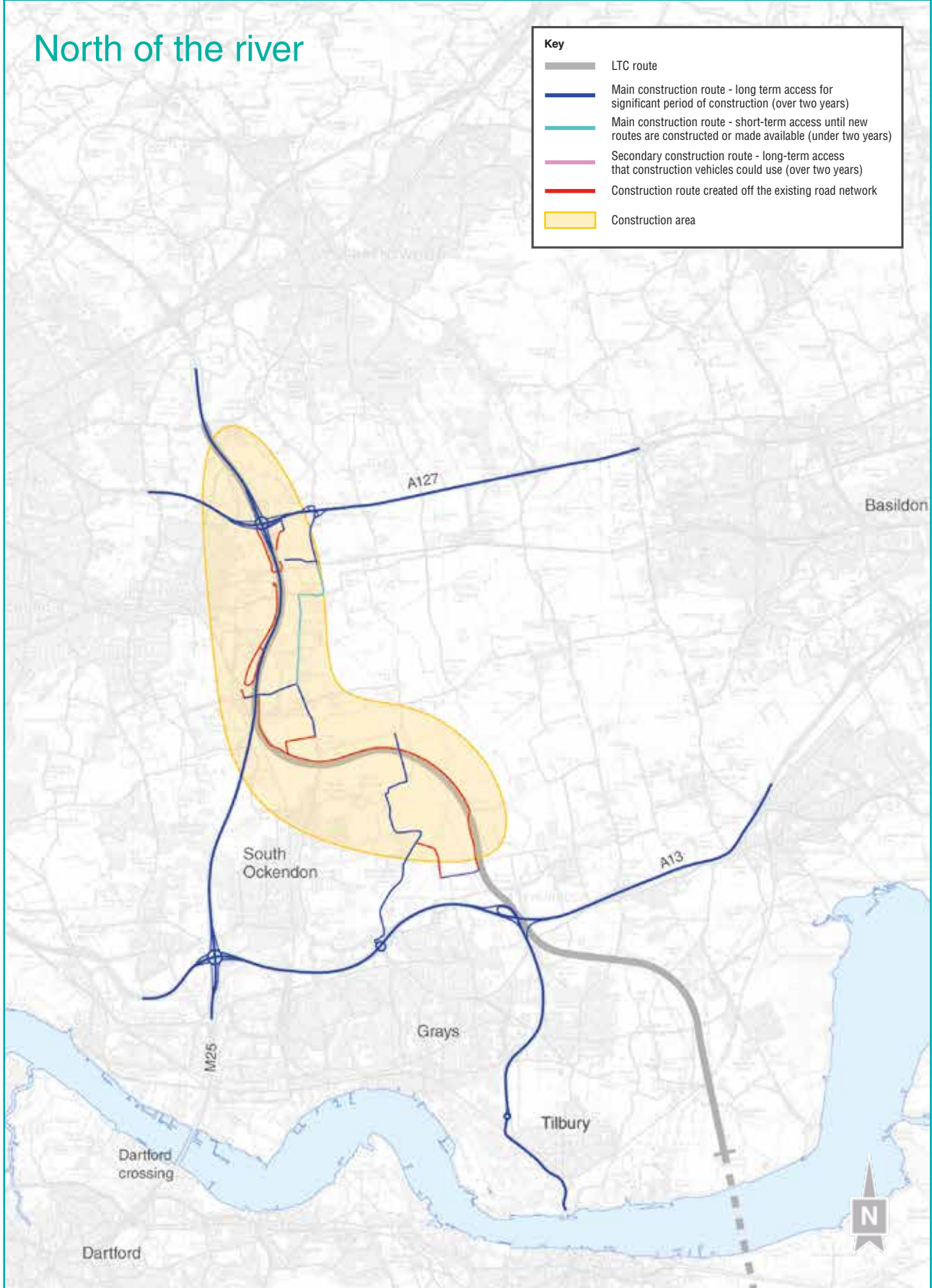


Routes to service construction Area C



Routes to service construction Area D

North of the river



Construction impacts on local roads

As described at statutory consultation, most of the construction materials would be transported to the construction sites by road, which would have some impact on the road network and its users. Since then, we have refined our routes to the construction sites, continued our assessments and made further design changes. This has given us a greater understanding of how we are likely to use the local and Strategic Road Network.

Construction could affect local roads through temporary closures, diversions, traffic lights and/or lane restrictions. Should the project receive consent and progress to construction, we will provide advance notice of disruption, so people can look for alternative routes or travel arrangements.

At this stage, we can provide high-level information about the planned construction on specific roads, and have outlined this in the table on the following pages. On all roads we would ensure access is maintained to properties through the use of traffic management and/or by providing diversion routes.

We previously assessed the impacts of construction on local roads and presented this during statutory consultation. The information in the table on the next page is an amended evaluation that incorporates the traffic impacts of construction. The predicted possible impacts have been classified as follows:

High: Disruption associated with construction activities, which could include a high volume of construction vehicles, and/or possible long-term closures (months to years) with diversion routes provided.

Medium: Potential for some disruption associated with construction activities, which could include increased use by construction vehicles, and/or medium-term closures (weeks to months) with diversion routes provided.

Low: Minimal disruption associated with construction activities, with a low number of construction vehicles relative to road capacity, and/or roads to remain open with potential for short-term weekend/night-time closures or lane restrictions.

Note: During construction, where the Lower Thames Crossing crosses a local road, there may be some traffic management required, for instance traffic lights, to enable construction vehicles to cross safely.

Please note:

Roads impacted by the utilities works are not included in the table on the following pages. There is however the possibility that there will also be road diversions, closures and restrictions associated with the utility works. The full extent of this information would be submitted as part of our DCO application.



In its first year of operation, more than 30 million vehicles are forecast to use the Lower Thames Crossing

Road affected	Planned construction	Possible impact predicted at statutory consultation 2018	Possible impact of current proposals
Brewers Road	Replacement of the bridge carrying Brewers Road over the M2. This is a long-term closure with considerable construction activity on the bridge crossing the M2.	High	High
Thong Lane	Replacement of the bridge carrying Thong Lane over the A2, plus a new bridge carrying Thong Lane over the LTC. This is not a main construction route but there is potential for weekend/night closures.	Low	Low
A2 (near the LTC junction)	New bridge and underpass at the LTC junction with the A2. There will be considerable work on and around the A2. There will be weekend/night closures, mainly with narrow lane traffic management and reduced speed limits. There will be no long-term or full closures.	Medium	Medium
Station Road	New viaduct to carry the LTC over Station Road. There will be limited construction vehicles using Station Road.	Low	Low
Muckingford Road	New bridge to carry Muckingford Road over the LTC. Short-term weekend/night closures and a requirement for short-term construction route access.	Low	Low
Hoford Road	New bridge to carry Hoford Road over the LTC. Short-term weekend/night closures.	Low	Low
Brentwood Road	New bridge to carry Brentwood Road over the LTC. The road will be used for construction access, mainly between the LTC and the Orsett Cock roundabout. There will be very limited HGV journeys south of the LTC, beyond High House Lane.	Low	Low
Hornsby Lane	We have removed the bridge to carry Hornsby Lane over the LTC, which was displayed during statutory consultation. We will permanently close the road and there will be no access over the LTC. During construction there will be a low number of construction vehicles using the road.	Low	High
Heath Road	Closure of Heath Road owing to A1013 works and creating emergency access. Closures limited to weekend/nights.	Low	Low
A1013	New bridges to carry the A1013 over the LTC, A13 and A1089. Short-term weekend/night closures and the road will be used for access to construction working areas.	Medium	Medium
A1089	New viaduct and bridges at the LTC junction with the A13 and A1089. Weekend closures are likely to be required. The A1089 would be used as a main construction route.	Medium	Medium
Baker Street	New viaduct and bridges at the LTC junction with the A13 and A1089. The realignment of the road will require a long-term closure.	Low	High

Road affected	Planned construction	Possible impact predicted at statutory consultation 2018	Possible impact of current proposals
A13	New bridges at the LTC junction with the A13 and A1089. There will be considerable work around the A13 and short-term weekend/night closures. The A13 will be used by a number of construction vehicles.	Medium	Medium
Rectory Road	Replacement of the bridge carrying Rectory Road over the A13 in the same location. A long-term closure is therefore required, but access to the hospital will be maintained at all times via Prince Charles Avenue.	Low	High
Stifford Clays Road	New bridges to carry Stifford Clays Road over the LTC and slip roads. The road will be used as a route to access our construction sites just north of the A13 on a short-term basis, until temporary construction routes are created. Design changes at the A13 junction meant we could no longer access these directly off the A13. There is potential for weekend/night closures.	Low	Medium
Green Lane	New bridge to carry Green Lane over the LTC. Our access routes to construction sites have changed due to design development around the A13. Green Lane is now being used as a main access to our construction sites, and there is potential for a long-term closure.	Low	High
B186 Warley Street, Clay Tye & North Road	New bridge to carry the B186 North Road over the LTC. Roads will be used for short-term access to the construction site.	Medium	Medium
M25 (at the LTC junction)	New structure to take the LTC under the M25. There will be considerable construction activity in the area but no planned closures.	High	Medium
Ockendon Road	New bridge to carry Ockendon Road over the LTC and M25. Long-term closure will be required to facilitate the bridge over the M25 and slip road.	Medium	High
St. Mary's Lane	Replacement of the structure taking St. Mary's Lane under the M25. There will be construction activity associated with building the new underbridge. The road is a short-term access route to the construction site, and there is potential for short term closures.	Low	Low
M25 junction 29	Widening of the Codham Hall viaduct carrying the M25 over the A127. The road will be used by a large number of construction vehicles and we expect to narrow the lanes to reduce road user speed during construction.	High	Medium
A127	Widening of the Codham Hall viaduct carrying the M25 over the A127. We expect to use lane closures/narrow the road to facilitate widening the viaduct.	Low	Medium

Construction sites

A number of construction sites are needed to build the Lower Thames Crossing. They have been positioned along the route based on our construction requirements and provide access for our workforce and material deliveries.

At our five main sites, you would be likely to see temporary buildings and storage areas, including offices, space for equipment and materials, parking and staff welfare facilities. Our secondary sites are smaller sites, which will typically include welfare facilities, materials and equipment. Some sites would have a bespoke set-up depending on the work involved, such as the tunnel construction area at the northern and southern entrance sites, our two largest construction sites.

At the northern entrance site, we would construct a temporary substation to provide power for the tunnel boring machines. It would also power a water treatment facility, a separation facility to process the excavated material and other facilities to support tunnel construction. A new permanent substation would also be located in the service area next to the northern tunnel entrance to provide permanent power to the northern side of the tunnel.

There would be fewer facilities to support tunnel construction at the southern entrance site. As we expect to begin our tunnelling north of the river, most of the infrastructure would be located at the northern entrance site. South of the river, there would be some office and welfare facilities for our construction workers visible. Construction work associated with the earthworks operation around the tunnel entrance would also be visible. We are currently working with the utility companies to assess locations for an electricity substation within the temporary construction site in this area.

The majority of our construction sites will be reinstated and returned to their original use after construction is completed. However, some permanent above-ground infrastructure would remain at the northern and southern entrance to the tunnel.

A tunnel service building would be constructed at each entrance site to service the tunnel through its life cycle, and to ensure that it can be operated and maintained safely. These buildings would accommodate technical, operational and welfare facilities for our construction workers.



We now have a greater understanding of how we are likely to use the road network

New job opportunities would be created during construction, which would boost the local and regional economies.

New job opportunities would be created during construction, which would boost both the local and regional economies. For our construction workers, we are currently assessing housing availability in the surrounding areas and reviewing how much temporary accommodation we would need. We expect to house some of the workforce within our construction sites and are looking to provide some of this accommodation at the northern entrance site.

The details of workforce accommodation will be agreed between Highways England and the construction contractor.

Due to the volumes of material that will be excavated near the southern tunnel entrance, we will be creating temporary stock piles within the construction sites to store some of the material. These will be transported off site once construction is finished to reduce the impact on the road network.

The five main construction sites are in yellow on this map, while our smaller, secondary sites are displayed in pink. In some cases, the location of these has changed or been reshaped as a result of statutory consultation feedback.

The information below outlines how the main construction sites differ from those displayed during statutory consultation:

- 1 Has not changed from statutory consultation
- 2 Reshaped to avoid an archaeological site
- 3 More efficient design requiring less land
- 4 Moved further south with the south tunnel entrance, and extended west to provide additional space for temporary material stockpiling
- 5 Has not changed from statutory consultation

Other sites of note:

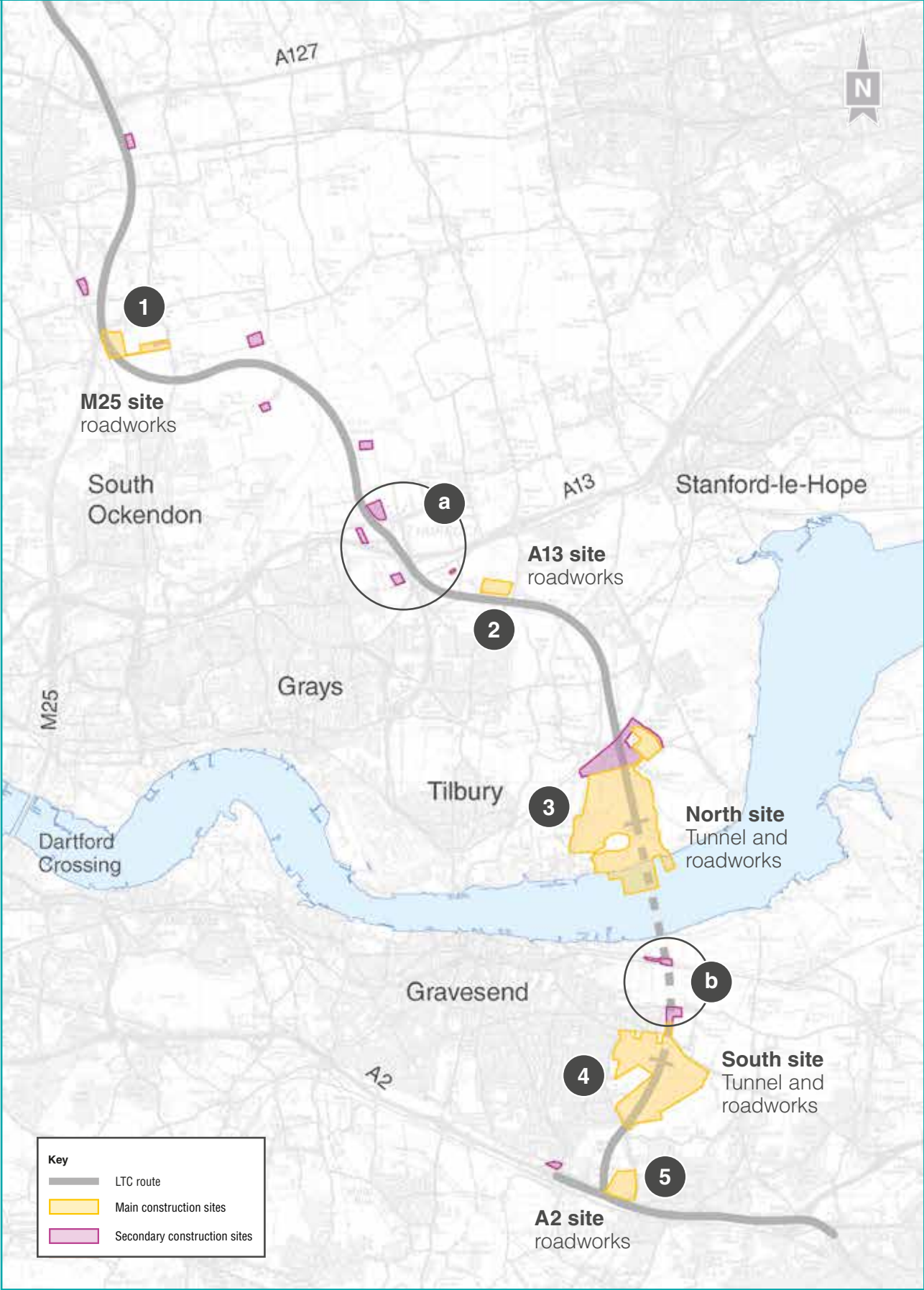
- a These sites close to the A13 have been refined following feedback from statutory consultation to reduce the impact on nearby properties
- b These are extensions of the south entrance site, which will be used to mitigate works associated with the ground preparation tunnel



Have your say

To comment on our updated proposals for building the Lower Thames Crossing, please answer question 5a and 5b in the response form.

Construction sites



Utilities

Along the proposed Lower Thames Crossing there are a number of existing utilities including overhead electricity cables, gas pipes, water pipes, sewers, fibre-optic and telecoms cables/overhead cables. To build the Lower Thames Crossing safely, protect existing supplies and enable future maintenance, utility diversions would be required.

Works would also be required to connect utilities such as communications, water, electricity and waste water to construction sites along the route, as well as to the service buildings located at the southern and northern tunnel entrances.

Our current proposals

Since our statutory consultation in 2018, we have continued to work with the utility companies and other stakeholders to progress our plans and to ensure the Lower Thames Crossing can be built safely and with minimum disruption.

Our current proposals for utility diversions and installation, both above and below ground, are outlined in the Utilities Update document. This document can be found in the locations listed under Next steps.

In the Utilities Update we explain our current proposals for each of the following areas:

- A2 junction and corridor
- Southern tunnel entrance
- Tilbury
- A13 junction (east)
- A13 junction (west)
- Ockendon
- LTC/M25 junction
- M25 junction 29

The Update also includes diagrams showing the proposed utility diversions and proposed positioning of overhead electricity cables (including relocation of pylons) and where we would look to install utilities for the construction and operation of the Lower Thames Crossing.

As we continue to develop our proposals we are also focusing on:

- reducing working areas
- minimising the environmental impact
- minimising the amount and duration of traffic management
- using the same corridors to combine multiple utilities
- minimising separation between pipes and cables
- improving use of stockpiling and storage areas

Mitigating the impacts of works

Where local residents and businesses may be affected by works, we would liaise closely with them to minimise any potential disruption. We are already talking with landowners and occupiers who may be significantly affected and will continue to work with them as plans progress.

To reduce disruption for road users and the local community, we would look to use trenchless technology to install utilities beneath railways, watercourses and major roads. Trenchless techniques are often used for utility works that need to cross beneath railway lines, roads and watercourses. These methods require few trenches or none as they involve either drilling or pulling pipes and cables below the road, railway line or watercourse. For more information please see the Utilities Update document.

Where this is not possible, and we need to work alongside roads, we would aim to keep any closures to a minimum. Where roads are affected by short-term closures and diversions, temporary traffic lights or lane restrictions, we would ensure people know in advance so they can plan their travel accordingly.

Some local footpaths may be affected and we are working with the relevant local authorities to assess potential diversions. We aim to keep disruption to a minimum and limit full route closures and provide alternative routes. Wherever a right of way is affected, we would provide a nearby alternative.

While we have tried to minimise the impacts on sensitive areas, some of the proposals for utilities include works in woodland,

some of which is ancient woodland, local parks and open spaces, the Kent Downs Area of Outstanding Natural Beauty (AONB) and the Shorne and Ashenbank Woods Site of Special Scientific Interest (SSSI). This is to avoid residential areas and ensure customer supply is maintained. It does mean however that some woodland may need to be removed in certain areas and we are looking at ways to maximise replanting opportunities at these locations as much as possible.

The utilities diversions we are currently proposing around the A2 have increased the impacts on woodland and environmentally protected areas. We are seeking to address this as we continue to develop our designs. We will continue to work closely with the utilities companies to refine diversion routes where we can, with the aim of avoiding or significantly reducing these impacts ahead of our DCO submission.

Details regarding the potential environmental impacts of the utility diversions, and our mitigation proposals, can be found in our Environmental Impacts Update. See Next steps for the locations of where this document can be found.

Next steps

As well as taking into account responses to this consultation, we will continue to engage with the utility companies, key stakeholders and landowners regarding our proposals. Any refinements to the proposed utility works, the land required and utility alignments will be reflected in our DCO application.



Have your say

To comment on our utilities proposal, answer question 6a and 6b in the response form.

The Utilities Update and Environmental Impacts Update documents can be found at:

- our deposit locations*
- our consultation events*

* A list of these can be found at

www.lowerthamescrossing.co.uk/consultation-2020



Using the Lower Thames Crossing

Once open, the Lower Thames Crossing would provide more reliable journeys across the river between Kent, Thurrock and Essex. It would improve connections to the busy ports in the South East and better manage high volumes of HGV traffic across the river.

We use traffic modelling to predict how many vehicles will use each part of the road network and the time it will take people to complete their journey, both with and without the crossing. Our traffic model takes into account information such as population, fuel pricing and changes to income.

The crossing will provide more reliable journeys across the river.

Since our statutory consultation, we have updated elements of our traffic model as part of our ongoing work to prepare for our DCO application. This has included:

- Updating the list of other road schemes that are likely to be built on the road network, whether the Lower Thames Crossing is built or not.
- Revising the number of HGVs likely to be on the road network, using more recently published data.
- Updating the size and location of proposed housing and other developments (these are set out in more detail in the Traffic Modelling Update).
- Making alterations to reflect the design changes made to the project (these are set out in more detail in chapter 3).
- Updating the modelled years.



These updates mean our traffic model can predict future traffic conditions using better information and in line with the latest government guidance. The following information uses data from our updated traffic model.

Reliable journeys

In its first year of operation, more than 30 million vehicles are forecast to use the Lower Thames Crossing. This would relieve congestion at the Dartford Crossing by reducing the number of vehicles there by 22 per cent.

The Lower Thames Crossing would have enough capacity to allow fast, reliable journey times well into the future. By 2042, we predict the new route would carry more than 36 million vehicles a year (around 100,000 vehicles a day).

It would reduce journey times across the Thames. For example, when the road opens, morning peak time journeys over the Dartford Crossing between M25 junctions 2 and 31 would be cut from 12 minutes on average to just seven minutes.

Traffic forecasts

The maps on the following pages show the forecast change in traffic in the year of opening as a result of the new crossing. A decrease in traffic is shown as light blue to purple and an increase in traffic is shown as yellow to red. The new crossing is shown as red as it does not currently exist.

In our traffic modelling we examine three time periods; the am peak (7-8am), the pm peak (5-6pm) and inter-peak, which is a typical hour in the middle of the day.

Overall, the impact on traffic is similar during these three modelling periods, with the changes more pronounced and covering a wider area during the morning and evening peaks. However, as with any major new road scheme, traffic flows are forecast to be affected over a wide area.

On some roads, such as the A2 west of its junction with the new crossing, the A13 west of its junction with the new crossing, the Dartford Crossing and the M25 in Thurrock, fewer vehicles will use these routes when the new crossing opens.



Have your say

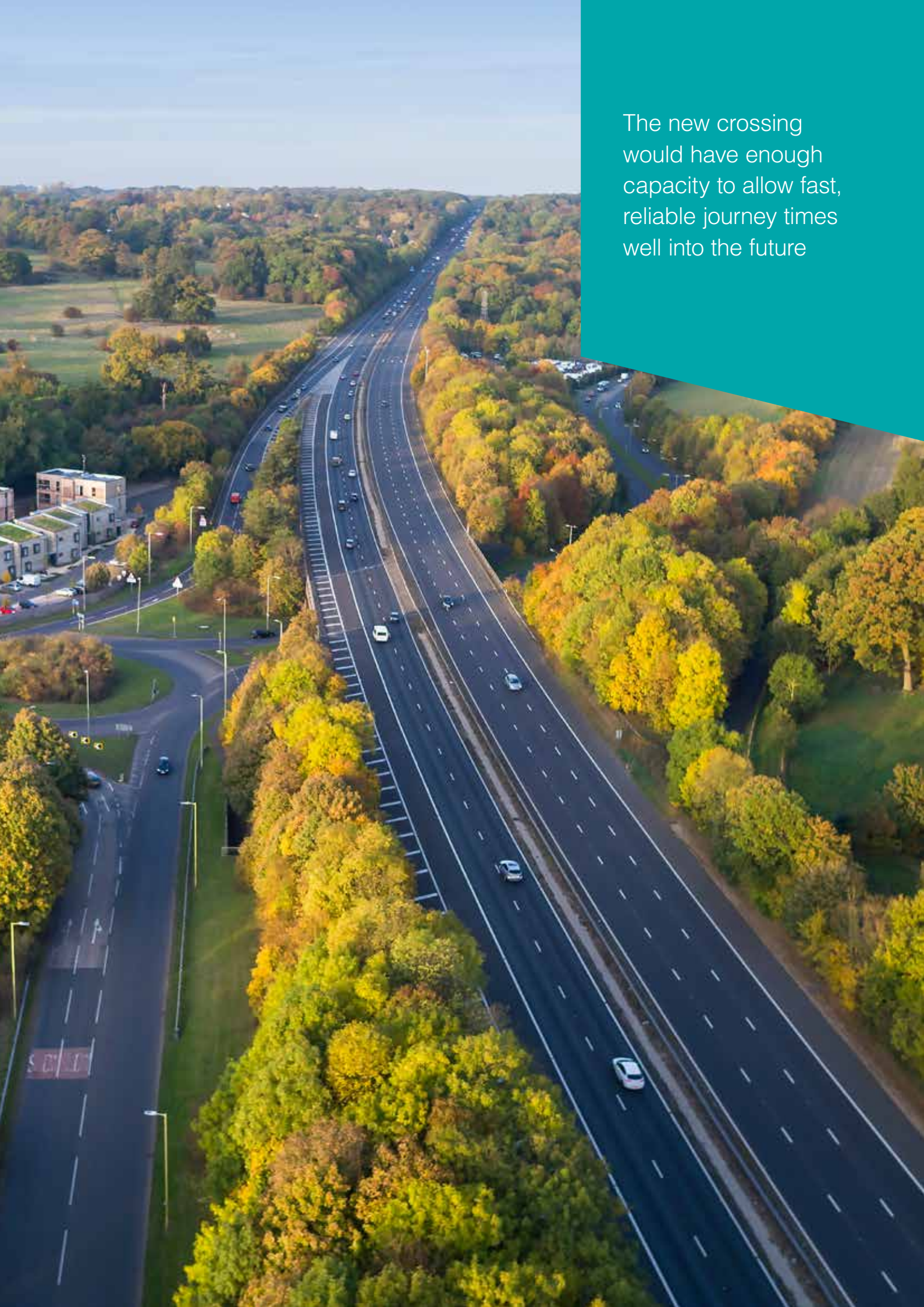
To comment on the affect of the Lower Thames Crossing on traffic conditions in the surrounding road network, please answer questions 7a and 7b in the response form.

Roads on the approach to the new crossing, including the M2, A228, A229, the A13 east of its junction with the new crossing, the A2 east of Gravesend and some sections of the M25, will experience an increase in traffic as travel across the River Thames becomes easier and more reliable.

Congested areas of the Strategic Road Network will be monitored and assessed to determine whether further interventions are required as part of Highways England's route-based strategies. On the local road network, we are working closely with the relevant local highway authorities to help them better understand the effect of the Lower Thames Crossing.

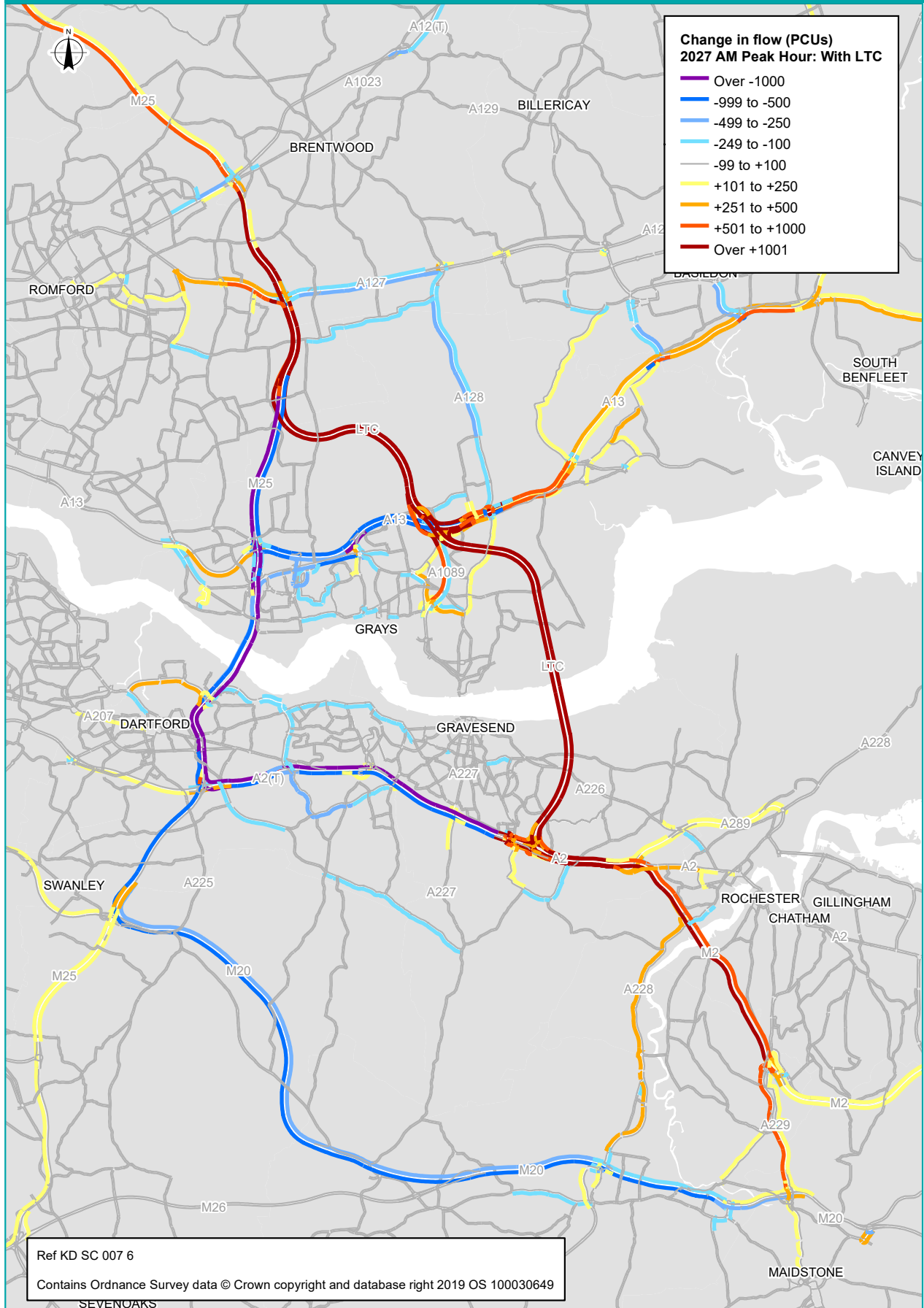
Find out more

To find out more about how these forecasts are made, and more detail about our traffic modelling, see the Traffic Modelling Update.

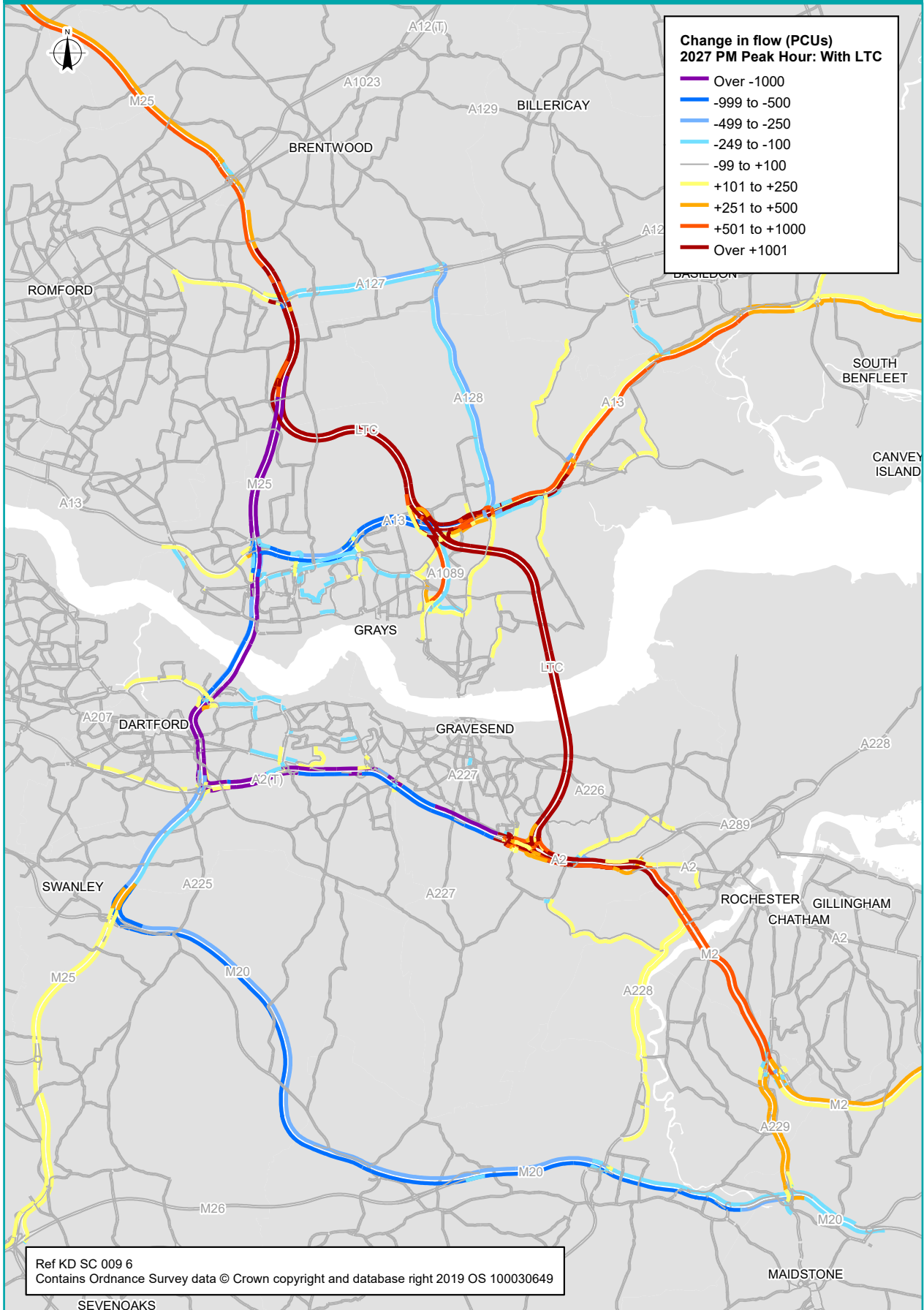


The new crossing would have enough capacity to allow fast, reliable journey times well into the future

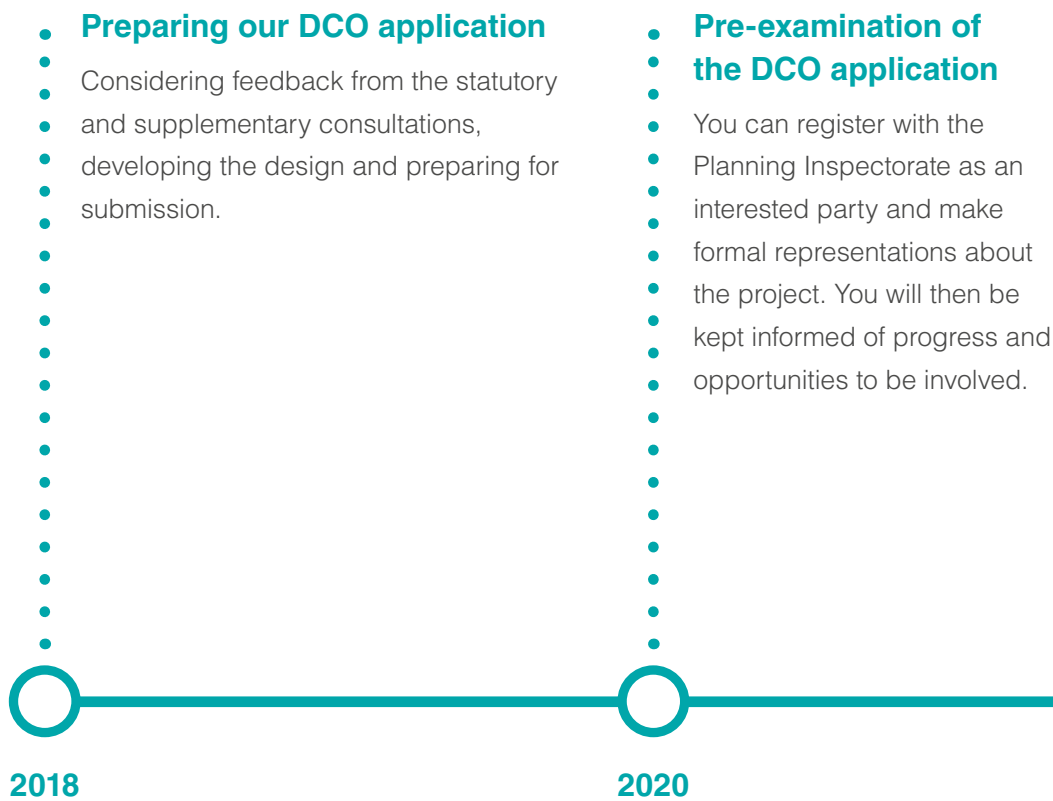
Change in traffic flow as a result of LTC – 7am to 8am



Change in traffic flow as a result of LTC – 5pm to 6pm



The Lower Thames Crossing timeline



The DCO process

The Lower Thames Crossing proposal is classified as a Nationally Significant Infrastructure Project. This means that the Planning Inspectorate, on behalf of the Secretary of State for Transport, will consider our application to build and operate the Lower Thames Crossing.

The Planning Inspectorate will make a recommendation to the Secretary of State. If our application is approved, we will be awarded a DCO. This gives us permission to build. Since presenting our proposals for statutory consultation, we have made considerable progress in developing the Lower Thames Crossing

project. We have been refining the design, updating our traffic model and carrying out extensive environmental and geotechnical surveys, all while continuing to engage with our stakeholders.

Our original target of submitting the DCO application in 2019 has been rescheduled because of the volume and

The Planning Inspectorate is responsible for examining the application for development consent. For more information on its role, the process and how to get involved, visit: www.infrastructure.planninginspectorate.gov.uk

DCO examination

The Planning Inspectorate has six months to examine our application. This is called the DCO examination period. During examination, representatives of relevant organisations and members of the public can make representation including the presentation of supporting evidence. Careful consideration is given by the Examining Authority to all the representations of all interested parties during the examination process. Registered parties can send written comments to the Planning Inspectorate and can ask to speak at a public hearing.

Recommendation

The Planning Inspectorate will make a recommendation to the Secretary of State for Transport within three months of the end of the examination period.

Decision (late 2021)

The Secretary of State then has three months to issue a decision. If approved, construction could begin soon after.

Opening

The Lower Thames Crossing opens to traffic.



2021



2027-28*

quality of responses we received to our statutory consultation in 2018. We have considered these in detail and, as a result of the feedback, have made a number of design changes that we are seeking views on during this supplementary consultation.

Following supplementary consultation, we will consider the feedback received before finalising our design, and our environmental and traffic assessments. We will prepare the suite of DCO application documents for a new submission target date of summer 2020. This timeline provides an estimate of how long the process may take.

* We are using a date range of 2027 to 2028 to account for the natural uncertainty in developing a project of this size and scale. As we gather more information from consultation, our ground investigations and engagement with the supply chain, we will gain more certainty.

How to have your say

Please take this opportunity to give us your views on the changes we have made to our proposals for the crossing.

You can find all the information about the consultation and events, and download a response form, at

www.lowerthamescrossing.co.uk/consultation-2020.

Alternatively, you can pick one up from:

- Consultation events
- Information points
- Deposit locations

You can also ask us to send you a form by:

- Emailing us at info@lowerthamescrossing.co.uk
- Calling us on 0300 123 5000

Send your completed response form using one of the communication channels below. These are all free to use. We cannot guarantee that responses sent by any other means will be included in our analysis and reporting.



Online

Fill in the online survey at

www.lowerthamescrossing.co.uk/consultation-2020



Post

Send your response form or comments to:

FREEPOST LTC CONSULTATION

The Freepost address is the only text needed on the envelope and no stamp is required.



Email

Comments or electronic copies of the response form should be emailed to **LTC.CONSULTATION@TRAVERSE.LTD**



Public information events

Fill in and submit the response form at our public information events.



Scan me

Use your phone to scan this QR code to go straight to the consultation.

Data privacy notice

We are committed to protecting your personal information.

Whenever you provide such information we are legally obliged to use it in line with all applicable laws concerning the protection of personal data, including the General Data Protection Regulation (GDPR).

How will Highways England use the information we collect about you?

We will use your personal data collected via this consultation for a number of purposes, including:

- to analyse your feedback to the consultation
- to produce a summary report, based on our analysis of responses (individuals will not be identified in our consultation report)
- to write to you with updates about the results of the consultation and other developments
- to keep up-to-date records of our communications with individuals and organisations

Any personal information you include in this form will be handled and used by (or made available to) the following recipients to record, analyse and report on the feedback we receive:

- Highways England
- Traverse (which has been contracted by us to analyse feedback to the consultation)
- The Planning Inspectorate (which will consider our application for permission to build the Lower Thames Crossing)
- The Secretary of State (who will take the decision on our application)
- Our legal advisers
- Consultants working on the Lower Thames Crossing project

It is also possible that trusted third party providers, for example construction companies, may later use the contact details provided in your responses to communicate with you.

Find out more

Under the terms of the GDPR you have certain rights over how your personal data is retained and used by Highways England. For more information, see our full data privacy statement: **www.highwaysengland.co.uk/privacy**

Find out more

To have your say, find out more and access our Map Books the latest Traffic Modelling Update, the Environmental Impacts Update and the Utilities Update, go to **www.lowerthamescrossing.co.uk/consultation-2020**

You can also stay in touch via
Twitter and Facebook – @lowerthames

All of the documents from our 2018 statutory consultation are available online at
www.lowerthamescrossing.co.uk/haveyoursay



Have your say

Please submit your response by
23:59 on 25 March 2020.

If you need help accessing this or any other Highways England information, please call **0300 123 5000** and we will help you.

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