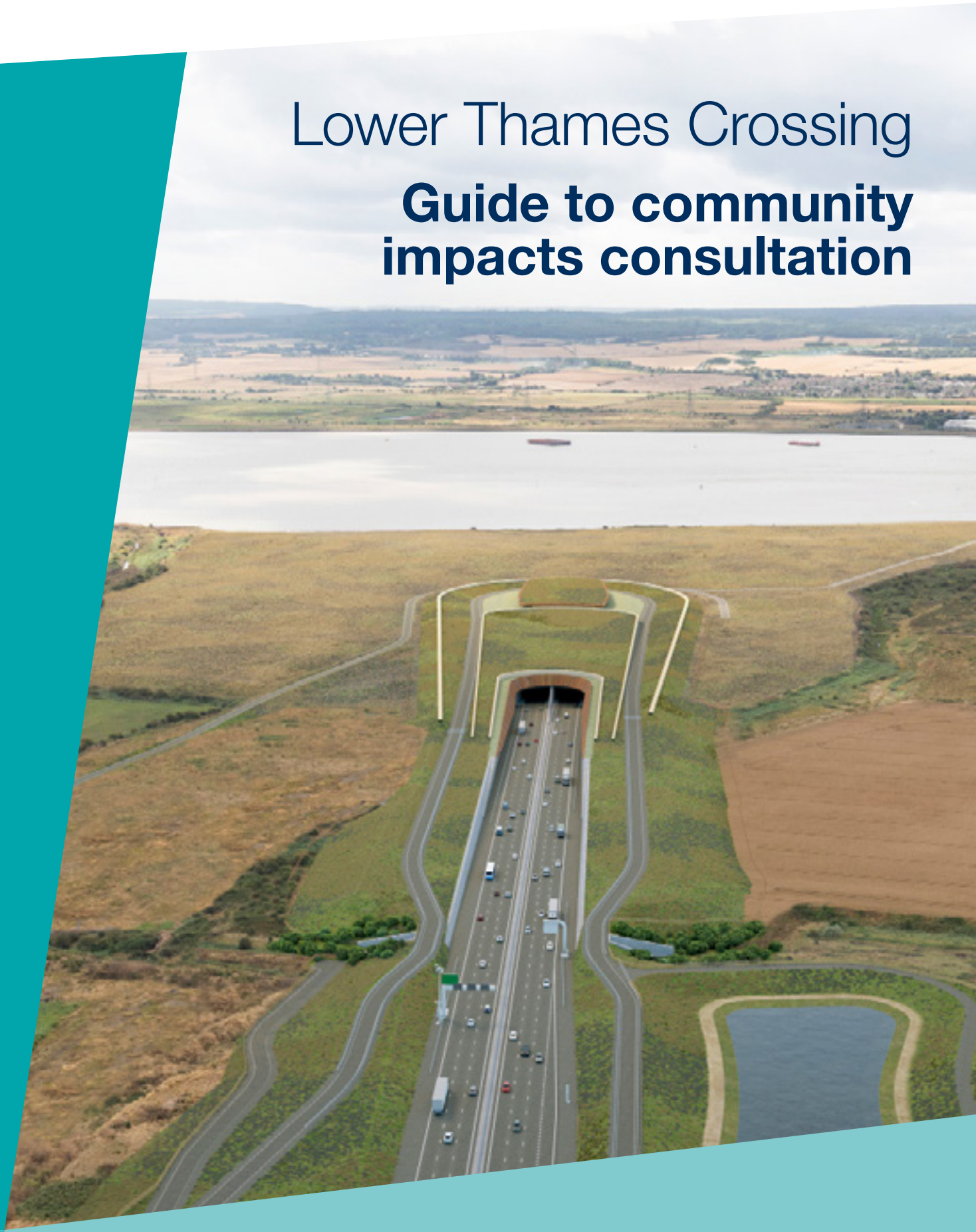
highways england

Lower Thames Crossing

Guide to community impacts consultation



July 2021

About this guide

We want to get all aspects of the design, construction and operation of the Lower Thames Crossing right. Your views are vital in helping us to do this and shape the project.

Following our statutory consultation in 2018, and our non-statutory supplementary and design refinement consultations in 2020, we are now holding a non-statutory community impacts consultation. This is your opportunity to have your say on our latest proposals.

This guide provides an update and summary of the impacts of our proposals on the community and environment, and how we plan to mitigate them. It also explains how you can give us your feedback and find out more.

Highways England

We are 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.

Contents

Throughout this guide, we have highlighted the other documents that give more detail about our consultation. These are on our website at www.highwaysengland.co.uk/ltcconsultation

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Foreword

Our roads connect us. They are a critical part of our post-COVID economic recovery and our low-carbon future.

Matt Palmer, Lower Thames Crossing Executive Director

"Our ambition is to leave communities and the environment better off than when we arrived"

The Lower Thames Crossing is one of the most ambitious projects of its kind and part of the largest investment in the UK's strategic road network in a generation.

When it opens, it will almost double road capacity between Kent, Thurrock, Essex and Havering, providing much-needed relief to the millions of people who use the Dartford Crossing every year.

But it is more than a road. If given the green light, the project can play a vital role in our nation's economic recovery, connecting communities and bringing people closer to jobs.

We know that building a major piece of infrastructure will impact local people but Highways England is committed to creating a positive green legacy. This includes our proposals to provide two new open space sites that would provide wider benefits to the community, along with improvements to walking and cycling facilities.

Shaping our project

After submitting a Development Consent Order (DCO) application to the Planning Inspectorate in October 2020 and receiving their feedback, we withdrew our application in November 2020. We are now carrying out a further community impacts consultation from 14 July to 8 September 2021, to provide more detail about the project and how it would affect local communities and the environment, during its construction and after it opens.

Since 2016, we have carried out the most comprehensive consultation programme of any UK road project, with a record-breaking 90,000 responses. As well as engaging with local authorities and other stakeholders, we have used this feedback to refine our designs. Your comments have been at the heart of our decision making – from the location and route, to the skills and training on offer.

We have made some significant improvements to the project's design over the past few years. For example, we have future-proofed the road by increasing the number of lanes from two to three in most places. Also, to reduce its visual impact, 80 per cent of the new road is now in a cutting, false cutting or tunnel.

Your feedback is critical in helping to shape our project and maximise the benefits for local communities.

Have your say

This consultation is an opportunity for you to provide feedback on our proposals, including:

- the latest construction and operational impacts, and our efforts to reduce these. We are also providing this information at a local level, so people can understand the impacts and what we are doing to reduce them
- the proposed changes to the project since our design refinement consultation
- how responses received at each of our previous consultations have informed the development of the project

Once again, your views will be vital in helping us to develop the project and our 'How to have your say' chapter explains how you can do this.

When we submit our DCO application later this year, we will include a Consultation Report that explains how we have listened to feedback received from all our consultations, and how it has informed our proposals.

You have been instrumental in shaping the project so far and I want to thank you. Together, we can improve journeys, unlock economic growth and provide opportunities for new jobs and skills. Ultimately, we're creating a lasting legacy for future generations.

Many thanks.

Matt Palmer, Lower Thames Crossing Executive Director

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Community impacts consultation

Since 2016, we have worked closely with local communities and stakeholder organisations to shape the project. This consultation is the latest stage in its development.

This chapter provides an overview of this consultation and the Lower Thames Crossing project. It also outlines the process for obtaining development consent.

The story so far

Since the 2016 options consultation, we have carried out:

- three further public consultations
- traffic modelling and environmental and economic studies
- on-site investigations
- continuous engagement with stakeholders

We have listened closely to all the issues raised during previous consultations and engagement, and this has helped us refine the project's design and our approach to construction and operation.

We're holding this community impacts consultation to gather feedback on our plans to build and operate the Lower Thames Crossing, including its impacts on local communities and the environment, and our proposals to mitigate these. We would also like your views on changes to the project since our design refinement consultation and on how we have addressed issues and suggestions received at each of our previous consultations.

Have your say

Your feedback is important. It will help us to further refine and finalise our proposals for our development consent application.

Figure 2-1 Overview map of the Lower Thames Crossing

What is the Lower Thames Crossing?

Highways England is proposing a new road and tunnel, the A122 Lower Thames Crossing. It would connect to the A2 and M2 in Kent, passing through a tunnel under the River Thames, before linking to the A13 in Thurrock and junction 29 of the M25 in the London Borough of Havering, north of the Thames.

The project's objectives

We have worked with the Department for Transport to agree the following objectives for the new road:

- 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

Legacy and benefits

The Lower Thames Crossing would provide a number of benefits to local communities and the environment. It would reduce congestion at the Dartford Crossing, support economic growth locally, regionally and nationally, and provide additional capacity and more reliable journeys across the River Thames. Further information on the benefits that the Lower Thames Crossing would bring can be found in the consultation documents.

These benefits include:

- bringing people closer to jobs, and businesses closer to their customers and suppliers
- involving 22,000 people with the project during construction, including hundreds of apprentices and graduates
- offering free training for businesses to give them the skills needed to work on this project, and the many schemes in this area and across the UK
- enhancing habitats for wildlife
- creating a network of green spaces that leave a lasting legacy for local communities
- two new landscaped parks, one each side of the river by our tunnel entrances, giving local communities panoramic views of the Thames
- replanting six square metres of new woodland for every square metre of Ancient Woodland lost
- creating 46km of new, realigned or improved footpaths, cycleways and bridleways
- building seven green bridges that would connect new pathways

Applying for development consent

Following our design refinement consultation last summer, we submitted a DCO application to the Planning Inspectorate in October 2020. However, based on early feedback, we withdrew the application in November 2020.

As with all projects of this type and scale, the Lower Thames Crossing is a Nationally Significant Infrastructure Project (NSIP). This means we will need permission to build and operate the new road through a DCO.

We would be moving a number of utilities to avoid the new route. Four of these diversions (three underground gas pipelines and one overhead electricity line) are NSIPs in their own right and will form part of our DCO application.

Our DCO application will be examined by the Planning Inspectorate, the Government's independent planning authority. It will report its findings to the Secretary of State for Transport, who will ultimately decide whether to grant or refuse consent for the project.

We plan to submit our application later in 2021. If our DCO is granted, we intend to start construction of the new road in 2024. Our target road opening is 2029/30, but for the purposes of construction and traffic modelling the road opening date is assumed to be 2029 throughout this consultation.

An overview of the materials in the consultation

As well as this guide, we are publishing a range of materials to help you understand our proposals. These include:

Construction update

An overview of the principles and methods that would be used to build the new road and tunnel, and changes to existing utilities infrastructure. It also details the measures proposed to mitigate potential adverse effects.

Operations update

Information on the new road, junctions, the tunnel, utilities, environmental design and green infrastructure. It also includes changes we've made since the last consultation, some updates to our traffic forecasts and how this would impact the environment.

Ward impact summaries

An overview of the changes and impacts the new road may have near you during its construction and operation. This covers topics such as changes to traffic, noise and air quality.

You said, we did

A summary of responses received during our three previous consultations and how these have been used to further refine the project's design.

Maps

A series of maps to help show the project during construction and when open to traffic. There will also be an interactive map on our consultation website.

Draft DCO application documents

As well as the documents listed above, we are also consulting on draft versions of a number of other technical documents, which set out how we, and our appointed contractors, would build and operate the new road. These are:

- Development Consent Order schedule 2 & explanatory note
- Outline site waste management plan
- Outline Traffic Management Plan for Construction
- Materials handling plan
- Register of Environmental Actions and Commitments
- Code of Construction Practice
- Design principles
- Wider network impacts – management & monitoring plan
- Outline landscape & ecology management plan
- Framework travel plan

These documents are available on our website at www.highwaysengland.co.uk/ltcconsultation

Have your say

If you would like to comment on areas of the project that are not covered by a specific question in our community impacts consultation response form, please use question 4: 'Other comments'

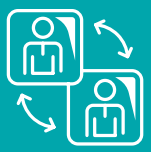
Response form

The guide to consultation

Construction update

Operations update

Ward impact summaries



You said, we did

Draft DCO application documents

- **Development Consent Order** (DCO) **schedule 2 & explanatory note**
- **Outline site waste management plan**
- **Outline Traffic Management Plan for Construction** (OTMPfC)
- **Materials handling plan**
- **Register of Environmental Actions and Commitments** (REAC)
- **Code of Construction Practice** (CoCP)
- **Design principles**
- **Wider network impacts - management & monitoring plan**
- **Outline landscape & ecology management plan**
- **Framework travel plan**

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Project updates

We have made some changes to the project since our design refinement consultation last summer. These are the result of continued engagement with stakeholders, ongoing design work and assessments, and a greater understanding of the technical constraints to building and operating the new road.

Changes since our design refinement consultation

These changes, summarised here, are explored in further detail in chapter 3 of our Operations update.

Your feedback during the design refinement consultation has also shaped the development of the project, including some of the changes presented here. Please see chapter 4 of our You said, we did for a summary of the feedback we received.

Two important ways in which our proposals have developed since our previous consultation relate to our proposed Order Limits and utilities works. These are summarised below.

Order Limits

Referred to in previous consultations as the development boundary, the Order Limits are the outermost edges of the Lower Thames Crossing project.

Since our last consultation, we have reduced the area within the revised Order Limits from 22.9km^2 to 22.2km^2.

We have also reduced the number of properties within the Order Limits to 130 from 150. Of these, 46 of these would only be affected by works to adjust existing overhead electricity power lines in the Linford area, and would not be acquired for the project. Of the other properties in the Order Limits, 35 would

need to be demolished and the remainder would be impacted by construction works or would need temporary or permanent changes to how they are accessed.

Utilities

We have continued to work with utility companies to further refine our proposals for more than 100 utility works to enable the project to be built. Our emphasis has been on reducing the impact on communities, local landowners, businesses and the environment, while also working to minimise any visual impacts once the new road is open.

The Operations update and Map Book 2: Land Use Plans, provide further information, including:

- the realignment of gas pipelines to reduce impacts on woodland near to Brewers Road and the Orsett Showground
- the relocation of the Shorne Woods switchgear equipment
- changes to proposed electric substation locations, resulting in modifications to the proposed utility diversion routes, the Order Limits and our land requirements

Our ongoing discussions with utility companies have also enabled us to remove a number of areas of land from the Order Limits as they are no longer needed for utility diversions. These are detailed in chapter 3 of the Operations update.

To describe the changes, we have divided the route into several sections on both sides of the river:

- south of the river in Kent: A2/M2 corridor, south of Gravesend (A2/Cyclopark), south of the Thames/southern tunnel entrance
- north of the river in Thurrock and Essex: Tilbury area, A13/A1089 junction, Mardyke Valley/North Road, M25/J29

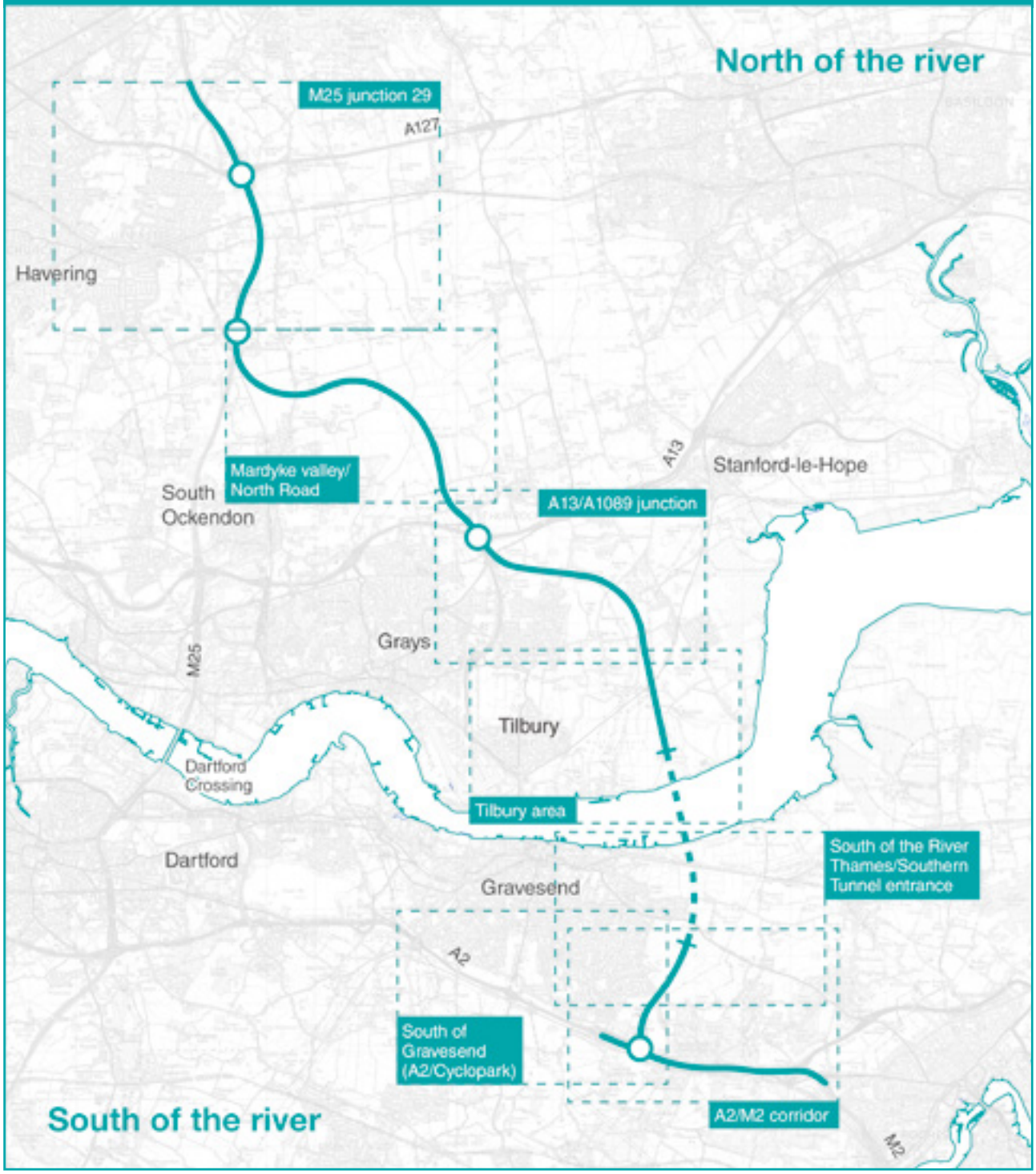
Find out more

For more information on the changes since our previous consultation, see chapter 3 of the Operations update.
For further changes made in response to feedback, please refer to the You said, we did document.

Have your say

To comment on the Order Limits, answer questions 2e and 2f in the response form.

Figure 3-1 The Lower Thames Crossing route sections map, covering the changes since the design refinement consultation.



South of the river in Kent

A2/M2 corridor

- A gas pipeline would be located underneath Brewers Road and Park Pale instead of the land adjacent to the A2. This would reduce the impact on Ancient Woodland and the area of outstanding natural beauty.
- Following stakeholder feedback, the previous proposal, which required two crossings of the existing National Grid gas feeder pipeline, was revised to improve safety. The revised diversion route will avoid the need for the crossings. This reduces any risk to the pipeline, the workforce and the environment. This change means we will require permanent rights over a slightly larger area.
- Access to the Harlex Haulage business has been changed and a public right of way diverted to improve public safety.
- Relocation of Shorne Woods utility switching station from Thong Lane to the A226. The change would reduce visual impacts by removing the existing overhead power cables.

South of Gravesend (A2/Cyclopark)

- An electricity cable would be located either under, or next to, the footpath around the A2 Roman Road, from Valley Drive west to the B262 Hall Road to reduce the impact on this area.

South of the River Thames/southern tunnel entrance

- Works to install the temporary drainage pipeline from the Southern Tunnel Entrance Compound to the River Thames, would be carried out in a field behind the houses on the north side of Lower Higham Road. Access would be required via an existing entrance to the field from Lower Higham Road.
- We have included three arable fields in the Order Limits to the north of Chalk and to the south of the Thames and Medway Canal and Metropolitan Police firing range. Our proposed changes to how these fields are farmed will improve the habitat for birds during construction.

Have your say

To comment on the changes to the route south of the river, answer questions 2a and 2b in the response form.

North of the river in Thurrock and Essex

Tilbury area

- We have extended the Order Limits to the south of Substation Road, where it passes between the existing power transmission site to the north and the site of the old Tilbury Power Station to the south. This would allow for a new power line to be placed underground and would reduce impacts on the utility companies.
- Two existing culverts on the Tilbury Main river to the east of the new road would be removed and a further culvert replaced with a larger structure.
- Vehicle access to a private wharf situated to the east of Port of Tilbury (Tilbury 2 terminal) and to the west of Coalhouse Fort has changed to a single vehicle crossing to limit the impact on the Two Forts Way public right of way.
- We have removed the East Tilbury Jetty to the east of Port of Tilbury (Tilbury 2 terminal) as any deliveries by river would come through the Port of Tilbury or other established port/ dockside facilities.
- We have reduced the land required to accommodate a pipe to discharge surplus water into the river.
- An area of ecological mitigation land is no longer within our Order Limits following stakeholder feedback.

A13/A1089 junction

- A modification to the A13 junction, comprising an extra lane on the link road extending from where the road passes Baker Street through to the Orsett Cock roundabout to provide additional capacity.
- We have identified an alternative location for the restringing of overhead power lines north of Linford and reduced the area required within the Tarmac site but extended the Order Limits north east over vegetation and agricultural land.
- Changes to the route of utility diversions to the south of Stanford Road A1013 and an overall reduction in the Order Limits as we can locate the utilities along field boundaries.
- Extension of the Order Limits to fields to the east and west of the A1089 Dock Approach Road to ensure permanent access rights to the overhead line network.

- Following feedback received from landowners and the owners of Orsett Showground, the proposed replacement area for Orsett Showground has been removed from the Order Limits.
- We have reduced the Order Limits around the Ron Evans Memorial Field following changes to replacement open space proposals.
- Working with gas company, Cadent, we have refined the area to the north of the A13 between Rectory Road and Orsett Cock roundabout, to divert a high-pressure gas pipeline. This allows a reduction of the Order Limits, reducing the impact at Orsett Showground and land currently being used for football pitches by Orsett Park Royals Football Club.

Mardyke Valley/North Road

- The proposed replacement Orsett Fen common land has been reconfigured and the Order Limits amended.
- There has been an amendment to the landscape design associated with the Mardyke Crossing to provide a suitable ditch network and habitat for water voles.
- A refinement to the Order Limits, including an overall reduction around Ockendon Road/Pea Lane to avoid impacting existing vegetation.
- A flood relief channel would be built next to the Mardyke, at the western end of the proposed viaduct. A flood bund would be constructed to the west of where the new road would cross the Mardyke. There would be a reduction in the size of the compensatory flood storage area here.
- A reduction in the size of the compensatory flood storage area to the north of Green Lane.

M25/J29

- An extension of the Order Limits around St Mary's Lane substation to include an existing substation, which some of our utility diversions will connect to.
- To avoid impacting a local business, the woodland planting and environmental mitigation proposals in the area to the north of J29 of the M25 and around Folkes Lane Woodland have changed.
- Access from Moor Lane east and from Laburnham Gardens is no longer needed due to the proposed introduction of access directly from the new J29 road.

Did you know?

We have reduced the amount of Ancient Woodland affected by the project by almost half, and for every square metre lost we would replant six square metres of new woodland.

Have your say

To comment on the changes to the route north of the river, answer questions 2c and 2d in the response form.

Special category land

The Lower Thames Crossing would have an impact on special category land. This includes, but is not limited to, land that forms part of common and open space. The compulsory purchase of special category land, or of rights over this land, such as a right of access, is subject to specific statutory rules.

Our proposals for the new road and its construction would have both temporary and permanent impacts on eight open space sites and three common land sites.

Since the previous consultation, we have updated our proposals at five sites:

Shorne Woods Country Park

A small area of permanent rights would be required along the north of the A2 for ecological mitigation.

Cyclopark

We have reduced the impact on the Cyclopark by reducing the width of the land required for our works north of the A2.

Ron Evans Memorial Field

We propose to acquire two areas of replacement land to the south and west of the existing site. The replacement land would be landscaped and connected to the area of the memorial field to be retained to the north of Long Lane.

Orsett Fen – common land

We are now proposing to provide replacement land to the north and south of the existing common land. This replacement area would be designated as common land and benefit from the same rights of access and common rights as the existing and retained common land.

Thames Chase Community Forest

We have reduced the amount of replacement open space land, removing a previously proposed area of land on the eastern side of the M25. Now, all the proposed replacement land would be on the western side of the M25, situated north and south of the existing Thames Chase Community Forest.

We propose to acquire six areas of land to provide replacement open space and common land within the Order Limits. For these areas we will be providing 926,200m^2 of replacement land, which is more than the 816,200m^2 we are proposing to acquire.

These areas would be:

- Shorne Woods Country Park
- Tilbury Green
- Ron Evans Memorial Field
- Orsett Fen – common land
- Thames Chase Community Forest
- Folkes Lane Woodland

We will acquire land in accordance with the relevant provisions of sections 131 and 132 of the Planning Act 2008, which means we will provide replacement land which is no less in area than that which we propose to purchase and which will be no less advantageous to those, if any, entitled to rights of common or other rights, and to the public.

You can find further details, including a breakdown of replacement land provided in each area along with maps of these areas, in chapter 3 of the Operations update. Further information on replacement land and the new open space sites can also be found in Map Book 1: General Arrangements.

Have your say

To comment on the changes to special category land and private recreational facilities, answer questions 2g and 2h in the response form.

Case study: Community woodland

Highways England will create a new 100 hectares (ha) community woodland in partnership with Forestry England, next to the route of the proposed Lower Thames Crossing.

Set to be the largest community woodland in the region, it will be part of Highways England's commitment to increase biodiversity along England's strategic road network by 2050. It will go ahead regardless of consent being granted for the Lower Thames Crossing.

The woodland will be created on Hole Farm, which was recently purchased by Highways England. Part of the land at Hole Farm is also proposed to form part of the Folkes Lane Woodland replacement open space land.

The site will be managed by Forestry England, which is supporting the government's target of planting 30,000ha of new woodland every year by 2025 to help deliver ambitious plans to achieve net-zero carbon emissions by 2050.

Private recreational facilities

In addition to impacting special category land, the new road would affect a number of private recreational facilities, as well as the Orsett Showground site. This is either because we propose purchasing all or part of those sites (or rights over those sites), or need to use the areas temporarily to build the new road.

Since the previous consultation, we have updated our proposals at three of these facilities.

Gravesend Golf Centre

The site consists of a nine-hole pitch and putt golf facility with a driving range. We propose to permanently acquire part of the facility for the landscaped parkland around the southern tunnel entrance.

At our previous consultation, we said we were proposing to provide a replacement golf facility to the south-east of the Cascades Leisure Centre, to enable the Gravesend Golf Centre business to continue. We are, however, engaging with Gravesham Borough Council and the current operator regarding a potential proposal to replace the golf facility on land within the site of the Cascades Leisure Centre, which is currently used as football pitches. That proposal, if agreed, would be delivered separately to the Lower Thames Crossing project.

If a golf facility is provided on that site, we would seek to provide football pitches on the land to the south-east of the Cascades Leisure Centre, rather than provide a golf facility on that land as proposed at the design refinement consultation. If the potential proposal being discussed with Gravesham Borough Council is not implemented and a golf facility is not provided on that site, we will provide a replacement golf facility as previously proposed.

Linford Allotments

This land comprises approximately two hectares of land within the Order Limits and is required for the temporary construction and for permanent operation of an existing overhead electricity cable and a new corridor for several utilities.

Orsett Park Royals Football Club pitches

A field to the north west of Orsett Cock roundabout is currently being used by Orsett Park Royals Football Club for two football pitches and one smaller pitch. We are proposing to divert a gas pipeline to the south and east of the pitches. There may be some impact on the area currently used for the smaller pitch during the diversion works, which we will seek to mitigate.

For more information, please refer to chapter 3 of the Operations update.

New open space sites

Highways England is committed to creating a positive green legacy. We are therefore proposing two new open space sites that would provide wider benefits to the community.

Since the design refinement consultation, we have continued to refine the design of one of these new open space sites, Tilbury Fields.

Chalk Park

Another new park, Chalk Park, is proposed on part of the Southern Valley Golf Club site, which would be permanently acquired. This would provide a recreational area for the public and create a desirable separation between the southern tunnel entrance and the eastern edge of Gravesend. Within the new area, informal footpaths are proposed that would connect with existing public rights of way. When complete, Chalk Park would cover an area of around 38ha.

Did you know?

We would create two new landscaped parks, one each side of the river by our tunnel entrances, giving local communities panoramic views of the Thames.

Tilbury Fields

A new park, Tilbury Fields, of around 45ha is being proposed on the northern banks of the River Thames, just west of the northern tunnel entrance.

We are inviting feedback on two options for the height of the viewpoints in this park. The maximum height of the landform shown in this consultation is currently being developed in more detail with key stakeholders. The design of Tilbury Fields will be developed to enhance the area's unique character and ecology.

The previous design refinement consultation contained general arrangement drawings in Map Books 1 and 3, with potential highpoints. We have continued to evolve the design and are now exploring having highpoints of a range of different heights that could be up to 22.5 metres above ordnance datum level (height of the mean sea level) in the new area, to provide improved viewpoints over the estuary and nearby historic forts on both sides of the river.

The lower landform option as previously indicated at the design refinement consultation would be 16.5 metres above the ordnance datum level. The higher landform option would be up to 6 metres higher than previously indicated at the design refinement consultation and allow for improved views and more repurposing of material.

Have your say

To comment on the two new open space sites, answer questions 2i – 2n in the response form.

Figure 3-2 Proposed changes in the form and height of the earthworks at Tilbury Fields

4

Our approach to assessments

Throughout the development of the Lower Thames Crossing, we have carried out assessments to understand the impacts of construction and operation on local communities, the wider region, the environment and the road network.

How we have assessed and mitigated impacts

The type and scale of the Lower Thames Crossing project means that an Environmental Impact Assessment (EIA) must be carried out in relation to it. The EIA is the process of assessing the potential impacts, both positive and negative, the Lower Thames Crossing might have on the environment. The EIA process has informed the development of the design of the Lower Thames Crossing, and proposed mitigation measures to avoid, minimise, restore and compensate for potential impacts on the environment.

The results of the EIA carried out on the project will be documented in an Environmental Statement (ES), which will be submitted with our application for development consent. The ES is currently being prepared, and the information presented in this consultation reflects the assessment work carried out to date.

To understand the impacts of the Lower Thames Crossing during construction and operation, and identify appropriate mitigation measures, we have carried out assessments that look at the following topics:

- landscape and visual
- noise and vibration
- air quality

- population and human health
- terrestrial and marine biodiversity (ecology)
- cultural heritage
- climate and carbon
- road drainage and the water environment
- geology and soils
- minerals and waste
- cumulative effects

We also carried out assessments using our transport model to understand the impacts the Lower Thames Crossing would have on traffic and local bus routes, both locally and on the wider road network. We used information from the transport model to:

- help stakeholders and the public understand the predicted changes in traffic movements, traffic patterns and journey times on the existing road network while the new road is being built and when it opens
- make sure that the proposed design of the Lower Thames Crossing has sufficient capacity when it opens and in the future
- input into the environmental assessments carried out for various topics in the ES (that will accompany our DCO application), including noise and air quality
- we have also assessed the impacts that the Lower Thames Crossing will have on footpaths, bridleways and cycleways, and identified opportunities for improvements

Summaries of these topics are below, with signposts to the documents where you can find more detailed information.

Measures to reduce impacts

Our design for the Lower Thames Crossing has been developed, where possible, to avoid or minimise significant effects on local communities and the environment.

During this process, we incorporated further measures to mitigate adverse impacts that cannot be avoided. Some of these include landscaping, incorporating noise barriers and the provision of green infrastructure, such as green bridges.

When building and operating the Lower Thames Crossing, we would include:

- Embedded mitigation: such as the use of cuttings to hide roads or green bridges to link footpaths, bridleways and ecological habitats.
- Good practice measures: these are standard approaches and actions, for example, supressing dust to reduce air quality impacts during construction and measures to reduce the risk of pollution.
- Essential mitigation: these are specific measures to avoid or reduce localised environmental effects. They include monitoring protected ecological species during construction or building earth walls (bunds) alongside construction compounds to reduce noise.

Summaries of impacts

Listed below are the topics we've identified that will have an impact on local communities and the environment from building and operating the Lower Thames Crossing. You can find more detailed information in our:

- Ward impact summaries – for localised impacts and mitigation measures
- Construction update and Operations update – for impacts at a project-wide level

Traffic

During construction, there would be more traffic on roads near the project – with people travelling to and from the construction sites, and materials being delivered. The locations of these sites, and the proposed traffic management measures, are in our Ward impact summaries. The summaries also include details of the expected daily number of vehicles travelling to and from each site.

During construction, traffic management measures would be necessary along the road network. These would be at different locations and for varying lengths of time. These are described in the Outline Traffic Management Plan for Construction.

We have used traffic modelling to forecast what the conditions on the road network would be in 2029, the proposed opening year, both with and without the project.

Information and maps showing data for predicted traffic flows and road capacity for the wider area are included in our Operations update.

Public transport

During construction, some bus routes would need to be diverted or changed. Impacts on local rail services will include some weekend and night closures during construction. Further details are in our Ward impact summaries.

Details of impacts on bus routes at a project-wide level when the Lower Thames Crossing is open are in our Operations update.

There would be no permanent impact on rail services when the new road is open.

Footpaths, bridleways and cycleways

There would be some local impacts on routes used by walkers, cyclists and horse riders during construction. Details of temporary local diversions and closures of existing footpaths, cycle routes and bridleways during construction are presented for each ward in our Ward impact summaries.

Working with local authorities and organisations such as Sustrans, a UK-based walking and cycling charity, we have developed a programme of improvements for walkers, cyclists and horse riders. These improvements would connect local communities with green spaces and promote active travel choices. Find out more in our Operations update.

Landscape and visual

Our Ward impact summaries include more information on the visual impacts of the construction and operation of the Lower Thames Crossing, as well as details of how we propose to reduce these through landscaping and good design.

There is more information on visual and landscape impacts and mitigation at a project-wide level in the Construction update and Operations update.

Noise and vibration

In the Ward impact summaries, we explain the local increases and decreases in noise that we expect during construction and operation, and how we plan to mitigate this. There is also information on effects from vibration.

Air quality

When a project is predicted to lead to traffic changes, an air quality assessment is carried out. Roads that are modelled as part of the traffic assessment are included in the air quality assessment.

Nitrogen dioxide (NO_2) is one of a group of gases called nitrogen oxides, which are generated by road traffic. PM_{10} is a type of particulate matter (fine particles of dust) that is also generated by road traffic, and high levels can cause health issues.

For some areas in the Ward impact summaries, we explain that we expect local increases in pollutants, while air quality would improve in others. Information can also be found in our Construction update and Operations update.

Population and human health

In our Ward impact summaries, we highlight the potential positive and negative impacts of the Lower Thames Crossing on people's health and wellbeing. This includes information on health effects from changes to air quality and noise, and changes to accessibility caused by road or footpath closures and construction traffic, as well as access to work and training.

Biodiversity

We cover the impact the new road would have on local and marine wildlife and vegetation during construction and operation in our Ward impact summaries. This includes information about sites of importance for biodiversity and marine biodiversity.

We have worked hard to incorporate new habitats, build green bridges and introduce landscaping measures into the design.

Cultural heritage

We outline the impact of construction and operation on conservation areas, listed buildings, scheduled monuments and other elements of local built heritage in our Ward impact summaries. For an update on our archaeological investigations, see our Construction update.

Contamination management

In our Ward impact summaries we have detailed how we would manage local sites of potential contamination, such as landfill and petrol stations, to prevent harm to local land or water supplies.

Geology and soils

Areas of agricultural land would be affected by the construction of the Lower Thames Crossing. Once the new road opens, there is a risk of soil being contaminated from surface water and groundwater from road spray, pollution incidents and traffic accidents (for example, fuel or oil spillages). To mitigate these, we have proposed measures to capture any contaminants. Find out more about impacts on geology and soils in our Construction update and Operations update.

Road drainage and water environment

The construction and operation of the project could potentially cause changes to surface and groundwater levels (as well as quality), and increase the risk of flooding in localised areas. Find out more about our assessments and proposed mitigation measures in our Construction update and Operations update.

Climate and carbon

While developing the Lower Thames Crossing, we have carried out assessments to estimate the greenhouse gas (GHG) emissions associated with building the project, as well as the change in these emissions over a 60-year period after the opening year. For more information, including details on our approach to reduce GHG emissions from the Lower Thames Crossing, see our Construction update and Operations update.

Minerals and waste

During both construction and operation, we would aim to reduce the amount of materials required and waste produced, for example, by reusing materials onsite. Details of the impacts identified, and the proposed mitigation measures, are in our Construction update and Operations update.

Cumulative effects

Cumulative impacts are when two or more types of effects combine to cause impacts on the environment. These could be ‘intra-project effects’ where a receptor or location would experience more than one effect, or ‘inter-project effects’ where there would be impacts from the project in combination with other nearby projects that are either in construction or are planned. Further information on the assessment of cumulative effects is in our Construction update and Operations update.

5

Construction update

We have signed up to the highest construction standards through our Code of Construction Practice and will minimise our impact on communities as much as possible.

This chapter provides a summary of, and signposts to, documents that describe how we are likely to build the Lower Thames Crossing, should development consent be granted.

Summary of construction activities and methods

Subject to the new road being granted development consent in 2023, and construction starting in 2024, we expect it to open in 2029.

Given the complex nature of construction, we would divide the works into four sections to help make sure they are delivered on time with the minimum impact on local communities, the environment and road users. In chapters 2 to 6 of the Construction update document, we describe the:

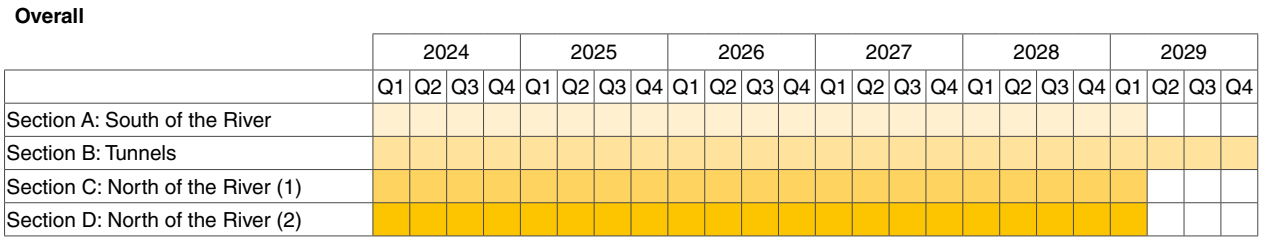
- construction sections
- works in each section
- timeline of construction
- construction compounds and Utility Logistics Hubs

Our proposed sections would be:

- **Section A**: south of the Thames in Kent, to include works along the M2/A2 corridor, the proposed junction with the M2/A2, and all other carriageway works as far as (and including) the proposed Thong Lane North Bridge over the new road.
- **Section B**: to the north of Thong Lane North Bridge, as far as the proposed Tilbury Viaduct. This includes the works to build the tunnel and its approaches south and north of the Thames.
- **Section C**: from (and including) the proposed Tilbury Viaduct, as far as (and including) Green Lane, north of the proposed A13/A1089 junction with the new road.
- **Section D**: north of Green Lane, to include works through the Mardyke Valley, along the M25 corridor and around junction 29 of the M25.

Figure 5-1 Location of our construction sections

Figure 5-2 Construction programme for the Lower Thames Crossing



Construction in each section would typically cover three main phases of work:

- initial works, including setting up the construction compounds
- main works, covering the construction of the highways north and south of the Thames and all elements of the tunnels and their approaches, as well as utilities and environmental mitigation works
- testing and commissioning, in which we make sure the new road and its infrastructure is safe and ready for use

During construction, we would carry out activities typically associated with major infrastructure projects. This includes:

- tunnelling
- earthworks
- building retaining walls
- road resurfacing and widening works
- culverts, drainage works and flood compensation
- removing topsoil and temporary soil storage
- management of excavated material and earthworks
- drainage and flood compensation
- bridge and viaduct construction
- temporary lighting
- site fencing and hoarding
- installation of gantry and signage foundations
- tie-in and finishing works

For more information on construction methods used to build the Lower Thames Crossing, including associated structures such as bridges and viaducts, please refer to chapter 2 of the Construction update.

Did you know?

22,000 people would be involved in building the project, including hundreds of apprenticeships and graduates.

Section A would include the following:

- offline works north of the A2/M2, involving:
  - excavating a large area of land north of the A2/M2, so that the new road can be built into it and approach the southern tunnel entrance at an appropriate depth
  - building a new junction with the A2/M2, involving two new viaducts and extensive ecological planting to mitigate any negative impacts
- Gravesend East junction
  - the existing junction would need to be modified, with changes to the roundabout, the widening of a bridge, new retaining walls and roadside infrastructure, including lighting
- connector roads around the A2/M2
  - building new green bridges (linking habitats for wildlife, as well as connections for walkers, cyclists and horse riders) at Thong Lane and Brewers Road
  - works affecting other local roads, including Halfpence Lane
  - decommissioning and removing the Cobham service station
- A2/M2 corridor works
  - widening a section of the A2/M2 close to the new junction
  - adding a fourth lane of the M2 through junction 1
  - additional lanes providing connections to the A289 and the old A2

To learn more about works in Section A and their impacts, please go to chapter 3 of the Construction update. Please see the Ward impact summaries for more information on the impacts of construction and their mitigations in Section A.

Section B would include the following:

- tunnel compound set-up
  - building and preparing two large compounds north and south of the Thames for the tunnel boring machines to be assembled, launched and later disassembled for removal
  - setting up two smaller compounds south of the Thames
- ground protection tunnelling and strengthening works
  - building a shorter tunnel beneath a section of land south of the Thames so that we can strengthen the ground through which the main tunnels would be built
- launch structure and approach ramp
  - excavating the land needed north of the Thames to launch the tunnel boring machines and, once that has happened, preparing the same land so that we can build the section of road that connects Section A to the tunnel entrance
- tunnelling and fit-out
  - preparing the bored tunnels for use as roads, including the assembly of concrete segments, laying the road and building cross-passages between them
- earthworks and landscaping
  - using or removing the significant quantities of earth that would be generated by the tunnel boring machines and other works needed to build the tunnel entrances and approach roads

To learn more about works in Section B and their impacts, please see chapter 4 of the Construction update. Please see the Ward impact summaries for more information on the impacts of construction and their mitigations in Section B.

Section C would include the following:

- Tilbury Viaduct
  - building a new viaduct to carry the new road over the Tilbury Loop railway line
- Chadwell St Mary link
  - building new bridges to carry Muckingford Road, Brentwood Road and Hoford Road over the new road
  - building the new road from the new Tilbury Viaduct to its junction with the A13
- A13 junction
  - building a new underpass beneath the existing A13/A1089 junction
  - replacing the current bridge carrying Rectory Road over the A13
  - realigning Stanford Road (A1013), requiring the construction of three new bridges
  - building the Orsett Heath Viaduct, which would pass over Baker Street and the A1089
  - replacing the existing bridge at Baker Street and the realignment of Baker Street
  - realigning Heath Road by around 250 metres further to the south
  - relocating the existing Gammonfields traveller site to a nearby location
  - realigning Stifford Clays Road and building two new bridges to carry the road over the Lower Thames Crossing
  - realigning Green Lane and building a new green bridge
  - building new roads and infrastructure to connect the Lower Thames Crossing to the A13 and Orsett Cock junction

To learn more about works in Section C and their impacts, please see chapter 5 of the Construction update. Please see the Ward impact summaries for more information on the impacts of construction and their mitigations in Section C.

Section D would include:

- Ockendon link
  - building the section of road connecting the A13 junction with the M25
  - building two new viaducts in the Mardyke area so that the new road can safely pass over the floodplain
  - building a new bridge to carry North Road over the Lower Thames Crossing, involving the temporary realignment of North Road
- Lower Thames Crossing/M25 junction
  - building temporary slip roads between our worksite and the M25 for direct access
  - building an underpass for the northbound Lower Thames Crossing to pass beneath the M25
  - building a new bridge to carry Ockendon Road over the new road
- M25 widening, including M25 junction 29
  - widening the road to manage the changes to traffic flows that the Lower Thames Crossing is likely to generate
  - widening St Mary's Lane and Shoeburyness railway line bridge
  - increasing the M25 main carriageway to four lanes at junction 29

To learn more about works in Section D and their impacts, please see chapter 6 of the Construction update. Please see the Ward impact summaries for more information on the impacts of construction and their mitigations in Section D.

Did you know?

We are offering businesses free training to give them the skills needed to work on this project, and the many schemes in this area and across the UK.

To support construction, it is likely we would need 18 compounds and 16 Utility Logistics Hubs. We would locate these away from environmentally sensitive areas and local communities wherever possible. However, they would need to service specific areas along the project route and provide access for staff and materials, so some would be near towns or villages.

Utilities

Along the proposed Lower Thames Crossing, there are a number of existing utilities including overhead power lines, high-pressure gas pipelines, electric cables and substations, gas mains, water pipes, sewers and fibre-optic and telecoms cables that would need to be diverted to build the new road.

Our proposals for utility works have evolved during the project's design and development. We have been working closely with the utility companies to significantly reduce the environmental impacts and shorten the duration of the works. There should be no disruption to the supply of power, water or any other utilities caused by our construction work.

For more information on the planned utility works, please see chapter 2 of the Construction update.

Control documents – securing mitigation for the project

When we apply to the Planning Inspectorate for permission to build the new road, we will provide a range of documents that set out how we would make sure our appointed contractors effectively manage the potential impacts of construction on the environment and local communities. We call these the control documents, and we are providing drafts of them as part of this consultation. They include the Code of Construction Practice and another related document, the Register of Environmental Actions and Commitments (REAC), as well as several others dealing with specific topics.

If permission to build the new road is granted to us, the control documents would be developed further by our contractors and, once agreed upon, those contractors would have legal obligations to comply with the conditions they contain.

For more detail about the control documents, see chapter 1 of the Construction update.

Summary of construction impacts and mitigation measures

Impacts on the local road network

The construction of the project would have an impact on the performance of the highway network and journey times for many people travelling in the area.

There would be an increase in the number of heavy goods vehicles (HGVs) on public roads, as these would be used to deliver materials to the various construction compounds and Utility Logistics Hubs (ULHs). Chapters 3-6 of the Construction update describe the location of these compounds and ULHs, and the access routes HGVs would take. These routes are designed to make the maximum use of the lower case earlier - strategic road network and in some locations there would be a ban on the project's HGVs using certain local roads. Once haul roads are built early in the construction programme, it would be possible to reduce the use of the local road network by vehicles accessing the compounds.

There would be some use of private cars by people working on the project to reach the compounds and ULHs. There are a number of ways we have planned to reduce the number of staff cars on the network. This includes the promotion of car sharing and public transport and providing buses from key local railways stations to the compounds. The effectiveness of the travel plans would be monitored, and adjustments made to these routes and car sharing would be used throughout the construction period.

The most noticeable impact of the construction of the project on other road users would be from the traffic management measures that we would use. The location and duration of these works would vary throughout the construction period. The Ward impact summaries contain descriptions of the traffic management measures planned in each area.

On some parts of the network, particularly the A2 in east Gravesham, the M25 near Junction 29 and the A13 near the junction with the A1089, there would be periods when there would be narrow lanes in place and the speed limit reduced. Where possible, the design of the traffic management in the sections of narrow lane would meet the requirements allowing traffic to flow at 60mph. At certain times of the day and where the flow of traffic is heaviest, there could be an impact on the speed of vehicles on narrow lane sections.

In some locations, road closures would be needed. These locations are described in the Ward impact summaries. The longer closures would be where a new bridge is to be provided in the same location as an existing one. Vehicles that would otherwise use these roads would be directed on to a diversion route and would have longer journey times. There may also be some delays to the other traffic on these routes, such as at the junctions.

Air quality

The Lower Thames Crossing has the potential to affect air quality through the release of dust and exhaust emissions from construction activities and traffic during the construction phase.

As explained above, the impact on traffic flows will vary throughout construction, which in turn will lead to corresponding variation in air quality impacts. In general, traffic flows are expected to decrease on the M25 and A2/M2, which could lead to temporary air quality improvements at properties located close to the affected roads. Traffic flows are expected to increase on the A13, A1089, M20 and A226, which could lead to temporary increases in air pollutant concentrations at properties close to the affected roads.

However, given the temporary nature of construction it is unlikely that the project would have a significant effect on air quality during its construction.

Noise and vibration

The construction of the Lower Thames Crossing would have an impact on the noise environment because of activities associated with building the new road and tunnel.

Noise sensitive receptors, such as schools, homes, hospitals, care homes and churches, located within 300 metres of the centre of the new road and 50 metres of any construction haulage routes, have the potential to experience temporary construction noise impacts during the daytime, evening and night-time, depending on the type of activity and what machinery is used.

There would be temporary negative effects from the vibration of piling works (such as bridge construction and other structures) near vibration sensitive receptors. The vibration caused by the operation of our tunnel boring machines is unlikely to cause any adverse effects as there is a large distance between the tunnels and any vibration sensitive receptors.

Did you know?

We will explore new ways of building roads in a low carbon future, enhance habitats for wildlife, increase biodiversity and improve air quality to leave the local community and environment better off than when we arrived.

To mitigate these impacts, we propose a number of measures, including:

- closed board fencing installed around the construction compounds to provide screening
- use of low noise equipment where practical
- locating noisy activities as far away as possible from noise sensitive receptors
- setting limits to the construction phase noise and vibration levels, the exceedance of which would result in works being stopped and additional mitigation put in place

Once mitigation is in place, it is still likely that around four noise sensitive receptors within 300 metres of the project, and approximately 900 within 50 metres of an existing road used by construction traffic, would experience significant effects on their noise environment at some point during construction. However, the significant effects on the noise environment would be temporary.

Cultural heritage

Archaeological remains are protected, and they need to be considered before any development can take place. To do this we need to know more about any buried archaeological remains. We have reviewed aerial photographs and carried out documentary research and geophysical surveys. However, the only way to know if archaeological remains are present, how well they are preserved or how important they are, is to see them, by digging trial trenches. Nearly 2,750 archaeological trial trenches have been excavated across the project, and there are approximately 1,200 still to dig.

So far, our investigations have discovered:

- A Roman settlement east of Orsett Heath, including kilns and evidence of animal butchery on an almost industrial scale.
- Iron Age and Bronze Age enclosures off Rochester Road and possible burial mounds that have been ploughed flat over time. There is also evidence of Mesolithic occupation around Shorne and to the north of Thong.

We continue our excavations and all specifically identified mitigation measures would be recorded in the Archaeological Mitigation Strategy and the Outline Written Scheme of Investigation to be submitted with our DCO application. They continue to be updated with information from our trial trenching and through discussions with heritage stakeholders.

Geology and soils

The construction of the Lower Thames Crossing would result in the permanent loss of agricultural land. We would also need some land temporarily during construction and we would then reinstate this for agricultural use. There would also be temporary and permanent impacts on soils supporting designated and non-designated notable habitats.

We would carry out further ground investigation to gather more information for the detailed design for construction (this stage would begin once our DCO application is submitted). This information would help to inform the specific mitigations required.

Terrestrial biodiversity

The Lower Thames Crossing is located in an area with a large number of ecological designated sites, including wetlands of international significance, country parks and Ancient Woodlands. Construction of the Lower Thames Crossing is expected to result in disturbance to protected species and wildlife.

There would be permanent habitat loss at Shorne and Ashenbank Woods Site of Special Scientific Interest (SSSI), including Ancient Woodland to the south of the Thames, permanent habitat loss both north and south of the river at Claylane Wood Ancient Woodland, Franks Wood Ancient Woodland, and Local Wildlife Sites including Rainbow Shaw, Low Street Pit, Codham Hall Wood and Blackshots Nature Area.

There would also be loss of habitat used by terrestrial invertebrates, and increased mortality of terrestrial invertebrate groups north of the Thames and permanent habitat loss within the Ancient Woodland around the A2/M2 junction 1 to the south of the Thames, and west of M25 junction 29, north of the river and permanent loss of 10 veteran trees.

Did you know?

We would identify invasive species before construction and remove or treat them (as appropriate) to prevent their spread.

The Lower Thames Crossing would avoid, minimise or offset its impact on terrestrial biodiversity through a number of good practice and essential mitigation measures, for example through:

- offsetting the loss of Ancient Woodland by creating new habitats, designed to improve connectivity between existing habitats
- translocation (movement) of protected species away from the construction area to a suitable existing or newly created habitat
- hedgerow habitat would be compensated by creating new hedgerows elsewhere, using species native to the area
- temporary fencing would be installed around important and protected habitats to prevent construction access or accidental damage
- vegetation clearance would be programmed sensitively to avoid bird nesting season

Highways England has committed to achieving no net loss in biodiversity by the end of 2025 and will work towards net biodiversity gain by 2040 across its estate. Although the construction of the project would have adverse effects on statutory designated sites and irreplaceable habitats, our design has tried to provide biodiversity gains wherever possible.

Did you know?

We would create 40 new wildlife ponds (an increase of 40%) and 260ha of new woodland (an increase of 200%).

Marine biodiversity

The construction of the Lower Thames Crossing would require discharges to the Thames Estuary of rainfall collected within construction areas and groundwater collected from the tunnels during construction. These discharges have the potential to change flows, water quality and sediment deposition, resulting in a temporary but direct loss of habitats. Other effects on the marine environment include disturbance from construction activities, underwater noise and vibration, and risk of injury to marine mammals.

With the implementation of proposed mitigation measures, no likely significant effects are predicted on marine biodiversity during construction. These measures include water discharged to the river being appropriately treated before discharge and construction works following methods to reduce effects on the marine environment. For example, planning the works around the tides and timing them to avoid disturbing over-wintering birds.

Material assets and waste

Materials needed for the construction of the project would include materials for earthworks such as fill and topsoil, as well as concrete and steel for new structures, and asphalt for road surfacing.

Where possible, materials needed for construction would be sourced and reused on site, including excavated material, concrete from demolition, and vegetation used as mulch and for habitat creation. However, not all materials can be reused on site, and the project has the potential to generate large volumes of waste during construction, which we would need to manage off site. Waste generated during the construction of the project could potentially use up landfill capacity in the area local to the project. There is also a potential for hazardous wastes to arise from building demolitions and the excavation of historically contaminated land.

We have proposed mitigation measures to avoid or reduce effects on the availability of materials and waste facility capacity. These include:

- standardising design elements
- designing out material use
- reuse and sourcing of materials on site
- applying the waste hierarchy (prevention-reuse-recycle-disposal)

Furthermore, where materials cannot be reused on site, we have proposed mitigation measures to make sure that the waste taken off site would not go to landfill, such as including commitments and targets to reduce the impact in our construction contracts.

Essential mitigation such as the development of site-specific remediation, where contamination has been identified during ground investigation work, would be completed in consultation with the relevant local authority. During the earthworks, workers would remain vigilant and any suspected contamination would be recorded and assessed accordingly via a watching brief protocol.

Did you know?

Through further design since statutory consultation we have avoided the need to remove 11 million cubic metres of waste from the site, cutting thousands of potential lorry trips.

Road drainage and water environment

Tunnelling, cutting and other road construction activities have the potential to reduce groundwater levels and degrade groundwater quality. Surface water quality could also be affected where watercourses receive construction worksite runoff, and there are also risks to surface water from accidental spillages or a pollution incident caused by extreme weather conditions, such as runoff from heavy rain.

Furthermore, construction activities could increase the risk of river flooding as it would reduce the floodplain storage by constructing hard standing which would change rainfall runoff rates and volumes.

The impacts would be mitigated through design and control measures. These include the use of retaining walls to limit the amount of groundwater seeping into deep excavations to reduce the effect on groundwater levels, wastewater from welfare facilities at the construction compound being discharged to the sewer, and measures to ensure water use efficiency and leakage reduction across the construction.

As the project construction would remove some of the available floodplain storage in the area, we would provide compensatory flood storage to offset this, in land adjacent to the Mardyke and the Mardyke West Tributary, as well as in the upstream catchment of West Tilbury Main.

Climate

Our preliminary climate assessment shows that materials used during this phase are the biggest source of construction greenhouse gas (GHG) emissions. Construction activities would also contribute to GHG emissions from fuel consumption by vehicles and machinery. The treatment, disposal and transport of waste material from the new road can also contribute to GHG emissions and would need to be carefully managed to reduce this. Site clearance, such as the removal of vegetation, would result in losses of carbon sinks (the natural environment's ability to absorb GHG emissions

Mitigation measures have been explored to reduce the impacts of construction. Examples of these include:

- the use of low carbon materials in the design, such as steel fibre reinforced concrete for the tunnel lining and cement replacement alternatives
- trees, shrubs and hedgerows planted to offset some of the GHG emissions
- the reuse of suitable excavated and demolition materials within the design proposals, avoiding the embodied carbon emissions associated with the import of new materials as well as emissions associated with the disposal of wastes
- the use of some hybrid and electric plant and machinery for worksite activities to build the project
- requiring contractors to commit to procuring renewable electricity at compounds
- setting targets for reducing emissions to give contractors a clear direction and requiring contractors to adhere to PAS 2080, the approved standard for carbon management in infrastructure
- asking contractors to identify the top 10 materials in terms of emissions and to request environmental product declarations for them

We will continue to investigate ways to reduce these emissions during the detailed design process. The new road has been designed to reduce its vulnerability to climate change through a range of design and material specification measures. For example, the drainage systems would be designed to cope with extreme weather events and the inclusion of construction materials to withstand fluctuating temperatures.

Landscape and visual

While the Lower Thames Crossing is being built, there would be clearly noticeable activities resulting in temporary changes to views and noise levels, reducing the tranquillity of the landscape. Construction activity would also affect some landscape features, such as temporary changes to characteristics of Orsett Fen and the Kent Downs Area of Outstanding Natural Beauty (AONB).

The prospective construction effects have been reduced via best practice mitigation measures, including positioning taller construction compound facilities as far away as possible from residential properties and re-vegetating stockpiles to soften their appearance.

Cumulative effects

Cumulative effects are where two or more types of effects combine to cause impacts on the environment.

We look at the cumulative effects at locations that could experience more than one effect as a result of the new road and review all predicted effects for the various environmental topics on these locations.

We also identified a number of nearby projects whose impacts would be felt in our assessment area and assessed the combined effects of the new road and other developments. The list of projects is continually reviewed and currently includes:

- Thurrock Flexible Generation Plant
- The London Resort
- M25 junction 28 improvement scheme
- various mixed use and residential developments
- various solar parks
- Thames Estuary 2100 long-term strategy for managing tidal flood risk in the Thames Estuary
- the Freeport

More information on the project-wide impacts of building the new road can be found in chapter 7 of the Construction update, while impacts in the construction sections are in chapters 3 to 6.

Have your say

To comment on how we plan to build the Lower Thames Crossing, and how we plan to mitigate the impacts of building the Lower Thames Crossing, answer questions 1a – 1d in the response form.

6

Operations update

When the Lower Thames Crossing opens for traffic, the direct, reliable connection would bring people closer to jobs, and businesses closer to their customers and suppliers.

This chapter presents a summary of the impacts of the new road and tunnel after their planned opening in 2029. More detailed information can be found in our Operations update.

The new A122 would be approximately 23km long, with 4.25km of this in a tunnel under the Thames. The tunnel would be located to the east of the village of Chalk on the south side of the river, and to the west of East Tilbury on the north side.

At the following locations, there would be:

- a new junction with the A2 to the east of Gravesend
- a modified junction with the A13/A1089 in Thurrock
- a new junction with the M25 between junctions 29 and 30

The majority of the road would be three lanes in both directions. It would use technology for incident detection, lane control and variable speed limits. The southbound connection from the M25 to the junction with the A13/A1089 would be two lanes, as would link roads and stretches of the carriageway through junctions.

In line with other A-roads, it would not have hard shoulders – but it would have narrower one-metre-wide hard strips along most of it. However, there would be hard shoulders along modified sections of the M25 and the A2. The new road would also have emergency areas at regular intervals, with the exception of the tunnel where enhanced operational and technology measures would be used.

It remains our proposal to apply a user charge for the Lower Thames Crossing, with a local resident discount scheme for those living in Thurrock and Gravesham.

Once built, the new road would provide more reliable journeys across the Thames between Kent, Thurrock, Havering and Essex. It would also improve connections to the busy ports in the South East and better manage the high volume of HGV traffic crossing the river.

Further information on the proposed route and its features can be found in chapter 2 of the Operations update.

Traffic impacts

Chapter 4 of the Operations update provides an overview of our transport modelling work to assess the need for, and impact of, the A122 Lower Thames Crossing on the road network, junctions and bus routes. This looks at the forecast impacts over a wider geographical area than the Ward impact summaries.

Our transport model simulates the transport system in the Lower Thames area and is called the Lower Thames Area Model (LTAM). It provides information on how the road network is predicted to perform in the future with and without the new crossing, known as the 'do something' and 'do minimum' scenarios.

When the new road opens, some of the traffic that currently uses the Dartford Crossing is predicted to divert to the Lower Thames Crossing because it would offer a shorter route and provide additional road capacity. Some of the space this creates at the Dartford Crossing would be taken up by motorists who were not using it before due to the high traffic levels and unpredictable journey times.

The transport model predicts that:

- The level of daily traffic using the Dartford Crossing would fall on average by 21% in 2029 and 14% in 2044 compared with the 'do minimum' scenario.
- Average speeds on that part of the network would rise and journey times would become more reliable.

If the Lower Thames Crossing is not built, it is expected that the high levels of traffic using the Dartford Crossing would lead to more incidents, increased journey times and more days where traffic conditions are worse than typically experienced.

Figures 6-1 and 6-2 show the predicted change in the anticipated amount of traffic on the road network as a result of the Lower Thames Crossing in the opening year (2029).

Roads contained within the transport model are shown in varying shades of blue if traffic levels are forecast to decrease and in yellow to red if they are forecast to increase. The darker the colour, the greater the change. The route of the Lower Thames Crossing is shown in green.

Overall, the impact on traffic flows with the Lower Thames Crossing would be similar during the morning, evening and inter-peak periods, with the changes more pronounced, and covering a wider area, during the morning and evening peaks.

On many roads to the west of the project, such as the A2, the A13, the Dartford Crossing and the M25 in Thurrock, the number of vehicles would fall when the Lower Thames Crossing opens. However, roads on the approach to the new crossing, including the M2, A228, A229, some roads to the east, such as the A13, the A2, and some sections of the M25, would experience an increase in traffic levels as travel across the river becomes easier and more reliable.

Figure 6-1 Change in flows with the project: morning peak (7am to 8am), 2029

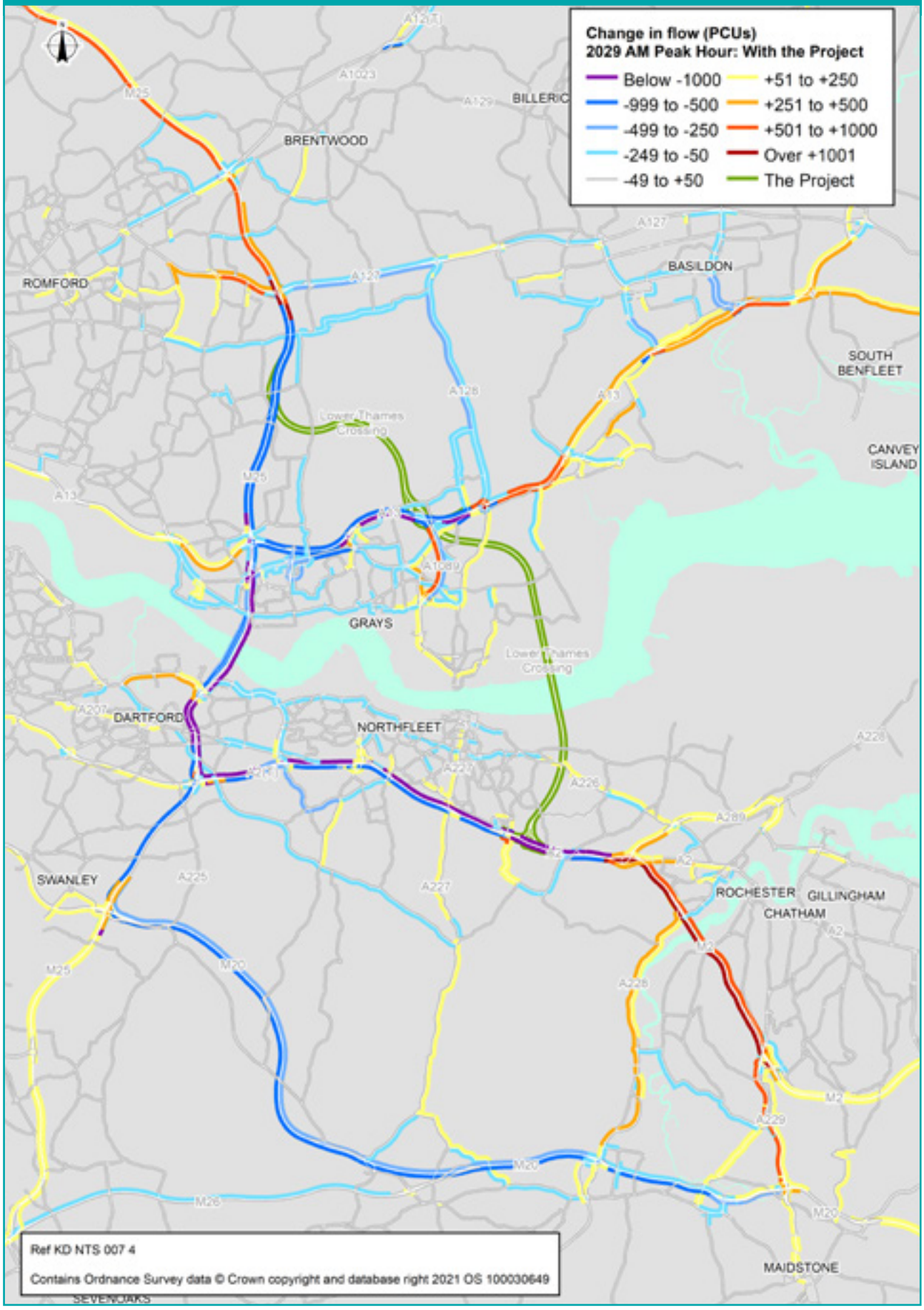
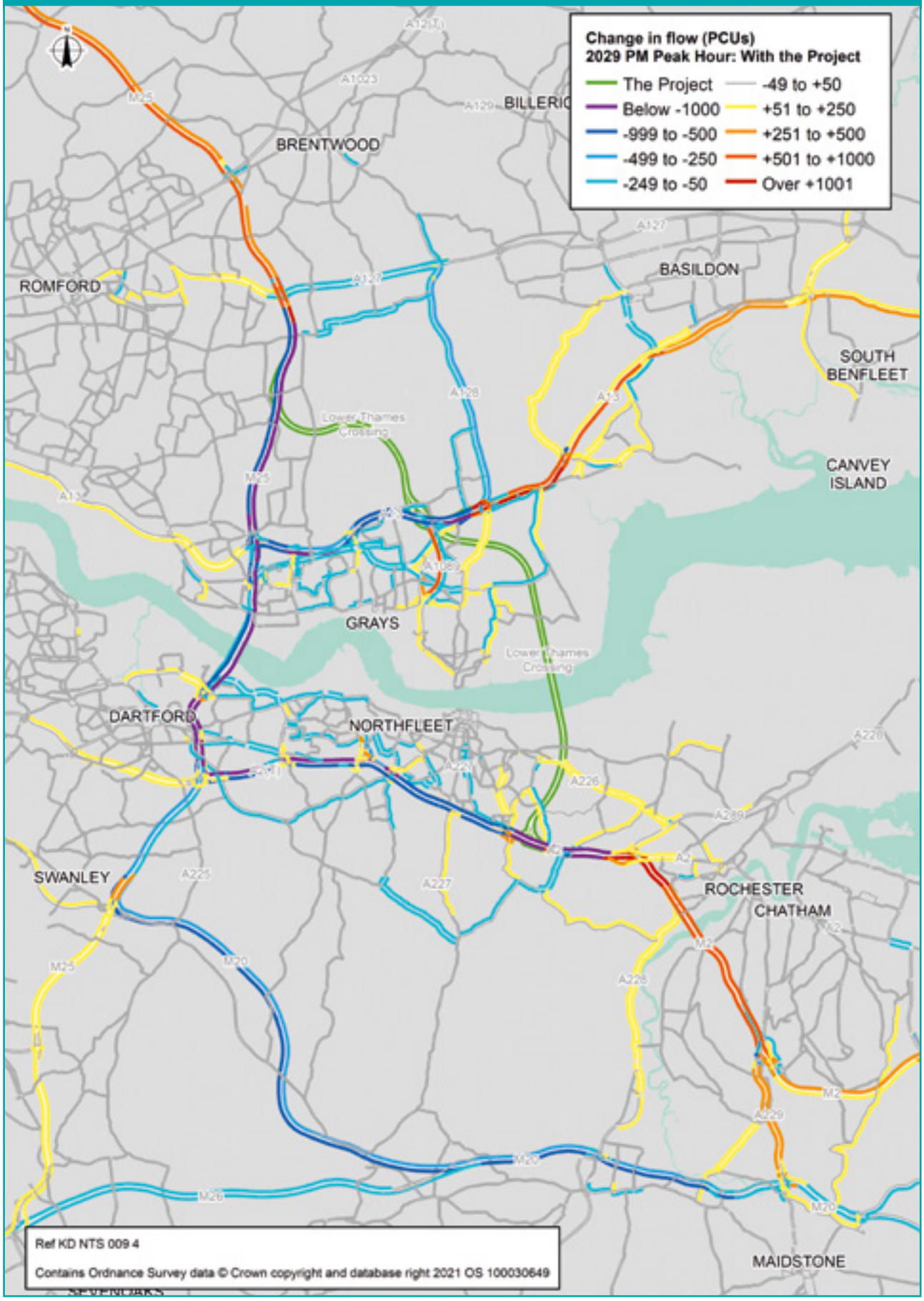


Figure 6-2 Change in flows with the project: evening peak (5pm to 6pm), 2029



As a result of the Lower Thames Crossing, there are predicted to be improvements in how the road network operates around the Dartford Crossing and on other roads in Gravesham and Thurrock. On the wider road network, conditions would remain largely unchanged. Congestion is predicted to increase on some roads, particularly those close to the project.

For example, in the morning peak, in the 'do minimum' scenario, the percentage of volume (the number of vehicles using a road) to road capacity (the number of vehicles a road can carry) is predicted to be above 95% on a number of roads, including critical areas like the Dartford Crossing, sections of the M25, A2, A12, A13, and A228, and areas around Basildon and Rochester.

In the 'do something' scenario, the Lower Thames Crossing is predicted to improve the operation of the road network in the morning peak around the Dartford Crossing, as well as on the M20 and on parts of the M25, A13 and A2. However, there are some increases in the percentage of volume to capacity on sections of the M25 north of the Lower Thames Crossing, on the A13 to the east and on the M2, as traffic switches away from the M20 on to the new route.

Bus routes

There are likely to be impacts on the journey times of some bus and coach services if the traffic speeds of the roads they use change once the new road opens. Most routes would not be affected and the impact for an individual passenger would depend on where they get on or off a particular service. For example, a commuter coach service along the A2 would travel at a lower speed east of the new crossing but at a higher speed west of it.

Further information on specific bus routes that would be affected can be found in chapter 4 of the Operations update.

Utilities

To construct the Lower Thames Crossing, works would need to be carried out to the existing utility networks to make sure customer supplies are maintained. We would therefore need to divert, relocate or protect the existing utility infrastructure.

New connections to the existing networks would also be necessary for the operation of the new road.

All the work to existing utilities that would be needed for the project would be managed and programmed with the relevant utility network operators and follow their procedures and regulations. This would minimise disruption to the network and its customers. Where possible, we would complete works at the same time to reduce any impact on the surrounding road network.

Further information on effected utilities can be found in chapter 2 of the Operations update.

Improvements for walkers, cyclists and horse riders

Working with local authorities and organisations such as Sustrans, a UK-based walking and cycling charity, we have developed a programme of improvements for walkers, cyclists and horse riders that would connect local communities with green spaces and promote active travel choices.

Following statutory consultation and targeted stakeholder engagement, we developed a walkers, cyclists and horse riders strategy that examined the value of existing and potential routes. This was shared at our design refinement consultation. A list of possible opportunities was developed that would result in 46km of new, realigned or improved footpaths, cycleways and bridleways. In determining these, we considered:

- connections to employment
- connections to education
- recreational/green space connectivity
- addressing historic severance

Further information on these opportunities can be found in chapter 2 of the Operations update.

Did you know?

Seven new green bridges would connect new pathways, including the widest in the UK on Thong Lane. This would triple the number of green bridges currently in the UK. These would connect local communities and create safe crossing places for wildlife, connecting habitats and colonies, while also helping to integrate the road into the landscape.

Environmental impacts

It is important to understand the likely environmental impacts of the Lower Thames Crossing when it is open and how we would mitigate these. Chapter 5 of the Operations update focuses on these impacts, which have been identified through environmental assessments, and our proposed mitigation measures over the area of the project. The topics covered include:

- air quality
- noise and vibration
- geology and soils
- minerals and waste
- road drainage and water environment
- climate and carbon
- landscape

Information on localised environmental assessments can be found in our Ward impact summaries.

Air quality

Although during operation of the Lower Thames Crossing some areas are predicted to experience decreases in air quality due to changes in traffic flows across the region, there will be improvements in others and an improvement in air quality in the project-wide area overall. This could affect receptors (such as people's homes or sensitive habitats) that are located close to the route or those in locations where traffic flows on the wider road network would be affected. The change in concentrations of pollutants has been assessed.

In the opening year, the assessments show that there would be localised increases on certain roads, such as the M2 junction 1 to 2 and parts of the A228, causing air quality to get worse and in some cases exceed the national air quality objective for NO_2. However, the results also show numerous air quality improvements, such as around the A282 Dartford Crossing (where existing air quality is poor) due to significant reductions in traffic and congestion in this area. In total, 24 receptors are expected to experience a change in air quality in those areas where concentrations of pollutants are expected to exceed the air quality objective, set by the government. Of these 24 receptors, 15 are predicted to experience an improvement in air quality. The remaining nine are predicted to experience worsening air quality once the route is open.

Our assessment is based on our opening year model, which represents a worst-case scenario, without accounting for the increase in less-polluting vehicles on our roads over time.

Air quality is assessed across the whole scheme, taking into account the improvement and reduction in air quality. The air quality assessment concludes that there would be no significant effects from NO_2 and particulate matter. As a result, mitigation is not proposed.

Noise and vibration

Impacts on noise levels once the new road opens include increases in traffic noise at sensitive receptors, such as people's homes or on ecological species, along the route and on some existing roads.

Reductions in the sound of traffic at noise sensitive receptors in other locations are predicted as traffic is diverted along the new road. These include areas along the A2 between the Lower Thames Crossing and the A282 (junction 2), the A282 across the Dartford Crossing, the A13 between the new road and junction 30, and the M25 between the junction with the new road and the A282.

Through developing our proposals we have reduced the potential noise impacts by locating the road as far as reasonably practical away from noise-sensitive locations. We have also designed the new road to be at a low level, with approximately 80% of the route in a cutting, false cutting or tunnel, and used earthworks where possible to reduce noise.

Mitigation measures will also include the use of low-noise road surfacing technologies on new and resurfaced roads and acoustic noise barriers at certain locations along the route where earthworks measures are not possible.

Impacts from road traffic vibration would not be significant because the Lower Thames Crossing new road surface would be constructed in accordance with highway specifications that ensure a smooth road surface.

Geology and soils

During the operation of Lower Thames Crossing, there is a risk of soil being contaminated from surface water and groundwater from road spray and pollution incidents and from traffic accidents (for example fuel or oil spillages).

To mitigate these potential impacts, the drainage network would include special devices to capture any contaminants to avoid polluted water infiltrating into the surrounding soil. We are also proposing to include tunnel waterproofing and barriers around excavations required during construction to reduce effects on groundwater. Good practice mitigation measures, such as the removal of contaminated soils after pollution incidents, would be put in place to prevent contamination spreading into the wider environment.

With these proposed measures, no likely significant effects on geology and soils are predicted during operation.

Materials and waste

During the operation of the Lower Thames Crossing, maintenance works, for example, road resurfacing, would need lower quantities of materials compared with construction, which would have a lower impact on resources and product supply.

It is anticipated that minor quantities of waste would be produced from offices at the tunnel entrances and from maintenance repairs. Practices to reuse, share and recycle waste would also be implemented.

Road drainage and water environment

Impacts on the water environment after the Lower Thames Crossing opens are likely to come from drainage from the road, which has the potential to cause changes to groundwater levels and quality. Permanent cuttings and embankments could also affect groundwater by acting as a drain, lowering the groundwater table, or reducing the ability for rainfall to soak in. Operation of the tunnel also has the potential to cause groundwater levels to drop, which may draw in saline waters or risk contaminating the ground.

Areas of land to the north of the River Thames around the site where the northern tunnel entrance would be located are currently at risk from flooding due to the low-lying geography of the area. The Lower Thames Crossing is not at risk of flooding to the south of the river.

With the implementation of proposed mitigation measures, including drainage systems, flood bunds, flood relief channels and compensatory flood storage areas, and allowance for projected climate change effects, no significant adverse effects on road drainage and the water environment are predicted after the Lower Thames Crossing opens. Some localised beneficial effects on flood risk and land drainage are predicted.

Climate and carbon

GHG emissions will be generated when the Lower Thames Crossing is open through additional road traffic, energy consumption and the maintenance, repair, and replacement of the infrastructure.

When we confirmed the route for the Lower Thames Crossing, the estimated change in GHG emissions was assessed as 5.98m tCO2e over the 60-year appraisal period.

Since then we have developed more detailed assessments and continue to update these to take into consideration refinements to the project, traffic forecasts and the influence of policy and other factors on the forecast emissions from different vehicle types. Our work focuses on the impact of the Lower Thames Crossing over its full 60-year appraisal period from opening. We will continue this work, considering the ongoing development of government policy and guidance, for our planned DCO application later this year.

To reduce GHG emissions when the Lower Thames Crossing is open, the following items have been included as part of the proposals:

- trees, shrubs and hedgerows planted as part of the landscape design
- maintaining existing and providing new connectivity for walkers, cyclists and horse riders through public rights of way, and providing road users with potential alternatives to vehicles

- electricity during operation would be sourced from renewable suppliers
- low-energy light sources, for example, light-emitting diode (LED) or equivalent technology, would be used (subject to emergency lighting requirements) to reduce energy consumption

In addition, measures have also been incorporated into the design to increase the Lower Thames Crossing's capacity to be resilient to the effects of climate change. These include:

- establishing future flood risks in consultation with the Environment Agency
- designing parts of the new road with consideration to our flood risk assessment, which has influenced aspects of the design such as the height of the road, watercourse crossings and protection measures at the northern tunnel entrance
- incorporating flood alleviation measures into the design to reduce the risk of flooding, including earthworks to protect the northern tunnel entrance, provision for a flood relief channel and removal and/or enlargement of culverts

Landscape

When the Lower Thames Crossing is open, it would create a noticeable addition to the landscape. To the south of the River Thames, landscape effects would include the loss of woodland due to the widening of the A2 corridor, the introduction of the junction of the new road with the A2 and additional road lighting. There would also be changes to overhead electricity lines and towers.

To the north of the River Thames, the most noticeable changes would include the raised Tilbury Viaduct, road embankments and the enlarged A13 junction. Further north, the elevated road through the flat Orsett Fen landscape and various viaducts and bridges would be noticeable. Existing overhead electricity lines to the north of the River Thames will also be realigned to allow for the new road.

Other likely significant effects on the landscape and views are likely to include permanent adverse effects on the landscape character of the Kent Downs AONB and intermittently on the local landscape along the route corridor.

Vegetation would be planted to provide screening along parts of the route. This would mature over time and therefore the visual effects would generally reduce after 15 years.

To avoid or reduce any adverse effects, mitigation measures such as landscaping earthworks, have been incorporated into the design of the Lower Thames Crossing so that it integrates into the landscape.

Approximately 80% of the new road has been set in a cutting, false cutting or in the tunnel providing visual screening. Other measures include:

- replacing lost landscape features, for example hedgerows and woodland
- provision of green bridges
- creating new woodland around the A2, A13 and M25 junctions with the new road
- planting vegetation along the route to screen views of the road and to help integrate it into the landscape

Cumulative impacts

Cumulative impacts are when two or more types of effects combine to cause impacts on the environment. These could be 'intra-project effects' where a receptor or location would experience more than one effect, or 'inter-project effects' where there would be impacts from the project in combination with other nearby projects that are either in construction or are planned.

Intra-project effects

The intra-project cumulative effects assessment considers locations that could experience more than one effect (for example, air quality and noise and vibration impacts) as a result of the Lower Thames Crossing.

The assessment will review all predicted effects for the various environmental topics on locations likely to be affected. It is possible that multiple effects would combine when the new road is open to result in likely significant effects on some receptors. This would vary between geographical areas and all receptors would not experience the same impacts, magnitude or significance of effects.

The Ward impact summaries provide a description of the predicted effects by ward, but at this stage a detailed assessment of the likely intra-project cumulative effects has not been included. It is only possible to understand these effects once all other environmental topic assessments have been completed. These will be presented in the ES on the submission of the application for development consent.

Inter-project effects

Nearby projects are being identified and considered in the inter-project effects assessment along with the combined effects of the Lower Thames Crossing and other developments. Each of the projects identified would have a responsibility to include mitigation within their proposals to avoid or reduce adverse effects on the environment and comply with relevant legislative requirements.

The list of nearby projects continues to be reviewed and updated for the inter-project effects assessment for our DCO submission. Other developments to be considered in the inter-project effects assessment include:

- Thurrock Flexible Generation Plant
- The London Resort
- M25 junction 28 Improvement Scheme
- various mixed use and residential developments
- various solar parks
- Thames Estuary 2100 long-term strategy for managing tidal flood risk in the Thames Estuary
- the Freeport

Have your say

To comment on how we plan to operate the Lower Thames Crossing, and how we plan to mitigate the operational impacts of the Lower Thames Crossing, answer questions 1e – 1h in the response form.

7

Ward impact summaries

As we have developed our proposals, we have listened to communities to make sure that we leave a positive legacy for local people long after construction is complete.

The Ward impact summaries explain how we have assessed and developed proposals to mitigate impacts of the project on local communities.

To make the Ward impact summaries document more user friendly, we have split it into three sections. The first section covers all wards south of the River Thames, while the second and third sections cover the project areas north of the river. All three sections include the same introductory 'chapter 1', which explains more about the document, which wards have been selected, and the assessments that we have carried out.

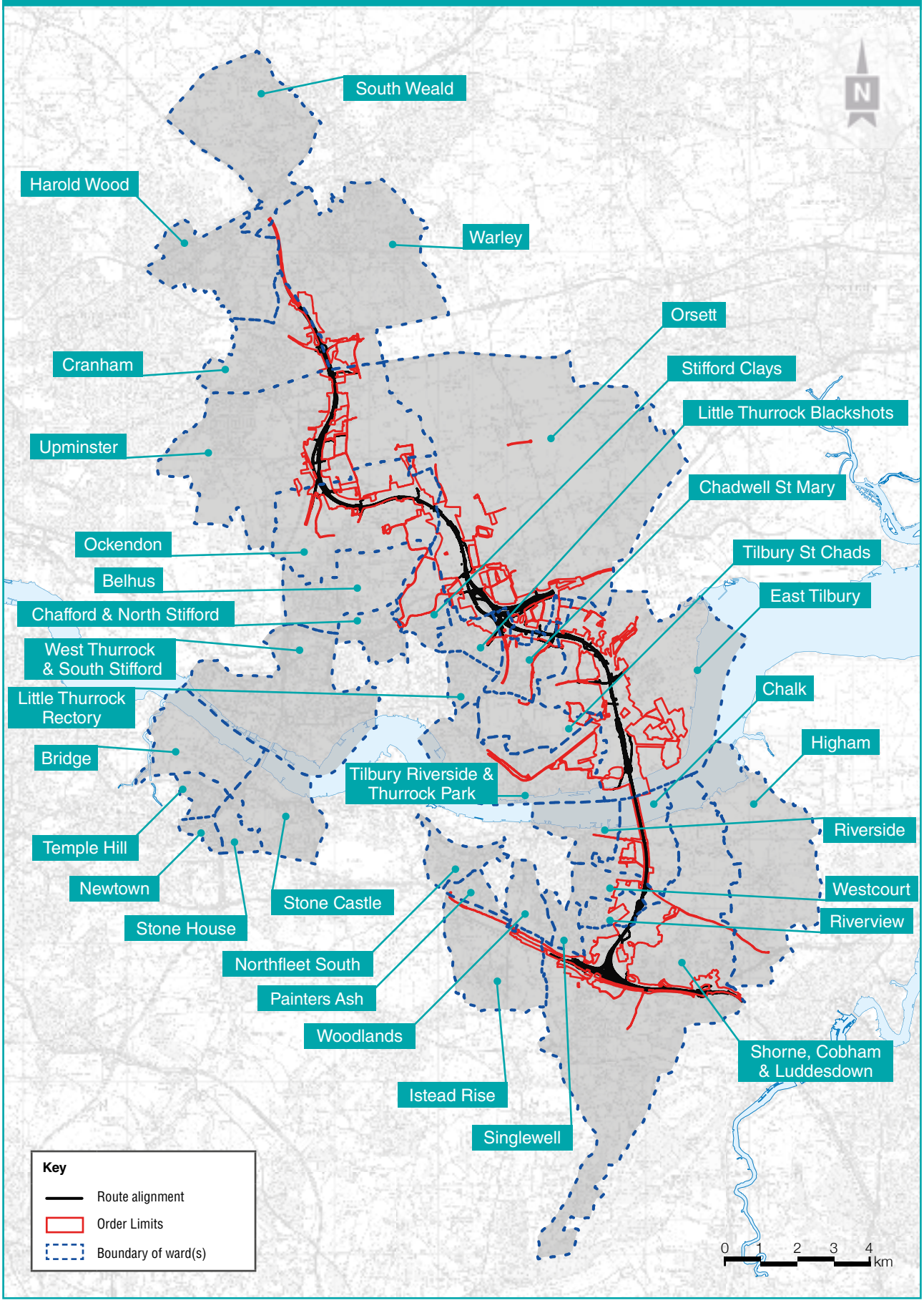
Each chapter within the Ward impact summaries includes numerous ward-specific maps showing information about different topic areas. As well as referring to those maps, we recommend that you also visit the online GIS map-viewer on our consultation website and look at the A3 map books that are included as part of this consultation. In some instances, the GIS viewer and the map books will provide similar information at a larger scale or additional information about the project that may be of interest to you. We also recommend you refer to the other consultation documents described in this Guide.

The Ward impact summaries divide the project up using local authority electoral wards (see below). Some wards at the fringes of the project have been grouped together because they are impacted in similar ways.

We have included wards near the Dartford Crossing, even though they are not directly affected by the construction or operation of the project. This is because there are predicted impacts on traffic, noise and air quality in these wards. Below is the full list of chapters, including the wards in each and the relevant local authority that are covered in the Ward impact summaries.

Chapter	Ward(s) included	Local authority
2	Higham	Gravesham
3	Shorne, Cobham and Luddesdown	Gravesham
4	Chalk	Gravesham
5	Riverside	Gravesham
6	Westcourt	Gravesham
7	Riverview	Gravesham
8	Singlewell	Gravesham
9	Woodlands	Gravesham
10	Northfleet South; Istead Rise; Painters Ash	Gravesham
11	Newtown; Stone Castle; Stone House; Bridge; Temple Hill	Dartford
12	East Tilbury	Thurrock
13	Tilbury Riverside and Thurrock Park	Thurrock
14	Tilbury St Chads	Thurrock
15	Chadwell St Mary	Thurrock
16	Orsett	Thurrock
17	Little Thurrock Blackshots; Little Thurrock Rectory	Thurrock
18	Stifford Clays; Chafford and North Stifford; Belhus	Thurrock
19	West Thurrock and South Stifford	Thurrock
20	Ockendon	Thurrock
21	Upminster	Havering
22	Cranham; Harold Wood	Havering
23	Warley; South Weald	Brentwood

Figure 7-1 Ward summaries and proposed Order Limits map



Each chapter is divided into 12 sections, and the topics covered are detailed in table 7-1.

In each one, we summarise the current situation and explain how construction and operation would affects the ward(s). We set out what the impacts are predicted to be and the measures we would use to reduce them. Where there are no significant impacts, this is highlighted.

Table 7-1 Topics covered at a ward level

Section	Topics covered
Overview	Information about the ward, including area, population and significant features, such as population centres and transport links.
Project description	The construction activities required to build the project in this ward, including information about the traffic management measures associated with construction. It also includes information about the elements of the new road that would be in this ward once the new road is open, information about the impacts on open space and private recreational facilities, and changes to the Order Limits (referred to as the development boundary in our previous consultations) since our design refinement consultation in 2020.
Traffic	Descriptions of the impacts of construction on local roads, including heavy goods vehicles and project workforce movements. It also includes information about traffic flows on roads in the ward once the new road is open, and information about how the new road would affect journey times and access to job opportunities for people within the ward.
Public transport	The impact on bus and rail services during construction, including any closures or diversions required. It also sets out the impacts on bus and rail services once the new road is open, with the latter including information about journey times by car to nearby stations.
Footpaths, bridleways and cycle routes	The impacts of the project on footpaths, bridleways and cycle routes during construction, including any proposed diversions. It also includes information about new and upgraded routes once the new road is open.
Visual	The visual impacts of the construction and operation of the Lower Thames Crossing, as well as information about how we have sought to reduce these through measures such as landscaping and good design.
Noise and vibration	Daytime noise impacts from construction sites, information about traffic noise for each year of construction, and a summary of areas likely to experience 24-hour, seven-day working. This section explains the anticipated noise and vibration impacts of the new road once it is open. It also includes information about the measures put in place to reduce noise and vibration impacts during construction and operation.

Section	Topics covered
Air quality	Air quality impacts during construction of the new road, including the impact of construction traffic. It also explains the controls that would be in place during construction to reduce the impacts of dust, while providing information about the impact on air quality once the new road is open.
Health	The potential impacts of the project on people's health and wellbeing, including from improved access to job opportunities and from changes to noise or air quality.
Biodiversity	The impact of the new road on vegetation and wildlife during construction and operation. Where relevant, this section includes information about designated sites that are areas of countryside that have special status as protected areas because of their natural and cultural importance. It also describes our work to create new habitats, build green bridges and introduce landscaping measures.
Built heritage	The impact of construction and operation on conservation areas, listed buildings, scheduled monuments and other buildings of local importance. This section includes information about how we have sought to preserve the integrity of local built heritage where possible.
Contamination management	How we would manage existing sites of potential contamination, such as landfill and petrol stations, to prevent harm to local land or water supplies. It also sets out procedures to manage contamination from incidents, such as collisions, once the road is open.

Did you know?

We will explore new ways of building and operating roads in a low carbon future, enhance habitats for wildlife, increase biodiversity and improve air quality to leave the local community and environment better off than when we arrived.

Topics covered at a project-wide level

Landscape, climate, geology and soils, archaeology and water management are predominantly dealt with at a project-wide level in the Construction update and Operations update, with additional maps and information. Following engagement with local authorities, it was determined that these impacts were more appropriately dealt with on a project-wide level. Traffic impacts are covered both at a ward and project level.

Have your say

To comment on project impacts and mitigation detailed within the Ward impact summaries, answer questions 1a – 1h in the response form.

8

You said, we did

The Lower Thames Crossing has been shaped by a record-breaking programme of consultation, engagement and design development.

In this chapter, we explain how we have used your feedback, along with the results of ongoing engagement with a huge range of stakeholders, to refine the design of the project and how we will build it.

Since the preferred route for the Lower Thames Crossing was announced in 2017, we have held three public consultations. We've also carried out environmental surveys, traffic modelling and detailed design work, such as identifying diversions to existing utilities.

In 2018, we held a statutory consultation. This was followed in 2020 by a supplementary consultation and a subsequent design refinement consultation, both of which were non-statutory.

In summer 2019, we published a project update summarising the feedback we received. It accompanied a report produced by Traverse, a specialist agency that analysed the consultation feedback.

Our You said, we did document

This sets out some of the actions we have taken in response to the comments you made during our previous consultations since 2018.

Each consultation is discussed in a separate chapter, with a breakdown of the comments we received. The most common feedback points are summarised for every question we asked, and we have included our response to both negative and positive views. We have provided the top 25 suggestions received for each consultation, along with our response to these.

We have also provided a series of maps and images to show how your feedback has helped to develop the project.

We appointed Traverse to independently analyse the responses to these three consultations, and we reviewed and considered all the issues raised. Every response received was scanned (hard copy only) or downloaded, assigned a unique reference, and added to a database. The issues raised were grouped into themes, then analysed and considered in the decision-making process.

Statutory consultation

Our statutory consultation was held between 10 October and 20 December 2018. Its main purpose was to provide all interested parties, including statutory consultees, local communities, organisations and people with an interest in land affected by the new road, with an opportunity to understand our proposals and provide feedback. It also sought people's views on the preliminary environmental information relating to these proposals, which was presented in our Preliminary Environmental Information Report.

We asked for feedback on:

- the need for the Lower Thames Crossing
- the selection of the preferred route and subsequent changes made to it
- the route south of the River Thames
- the tunnel and its entrances
- the route north of the River Thames
- the junctions
- public rights of way
- measures to reduce the impacts of the project
- the land required to build the Lower Thames Crossing
- the rest and service area, and maintenance depot
- forecast traffic conditions with the project
- our approach to road user charging
- plans for building the Lower Thames Crossing
- changes to utilities infrastructure

We also asked for any other comments about the Lower Thames Crossing and the consultation.

Consultation responses

We received 28,493 responses to our statutory consultation – this is a record for a consultation of its type. Responses were collected from across the UK, with a large proportion from Kent, Essex, Thurrock and Havering. We received more than 25,000 online response forms.

The majority of responses were from individual members of the public, with 314 from statutory consultees and local authorities. More than 500 were from other organisations and groups.

The Woodland Trust organised an online email campaign with a pre-printed message and space for respondents to add their own comments. In total, we received 2,117 responses to this email – 966 added additional comments.

Breakdown of response type

25,210 Response form: online

1,151 Campaign

966 Campaign with variations

918 Response form: hard copy

221 Email/letter

27 Response form: email

Main themes

Overall, a substantial number of respondents supported the need for the new road and the proposals. We asked you to help shape our solutions and here we list some frequent themes in connection with the construction and operation of the new road raised in your responses:

- traffic and congestion on local roads and the strategic road network
- impact on the landscape, countryside and green belt land
- impact on Ancient Woodland and other woodland areas
- impacts to local wildlife and habitats
- increase in pollution and impact to air quality
- impact on local communities, including amenities and open space
- noise and vibration during construction and once the road opens
- the complexity of the junctions, including safety of the roads and crossing
- impacts of the rest and service facilities and Tilbury junction
- opposition to charges

Our responses to these and other issues raised during statutory consultation, including the action we have taken to address those issues, are set out in chapter 2 of our You said, we did document.

Supplementary consultation

This consultation was held between 29 January and 2 April 2020. Its main purpose was to obtain people's views about the changes made as a result of feedback from statutory consultation and technical engagement with stakeholders, further design development and new information.

We asked for feedback on:

- proposed changes south of the river
- removal of a dedicated rest and service area, maintenance depot and the junction at Tilbury
- changes in the area around the A13/A1089 junction
- changes in the area around M25 junction 29
- changes to the area of land required to build the Lower Thames Crossing
- proposals for walkers, cyclists and horse riders
- changes to the environmental impacts
- revised proposals to build the Lower Thames Crossing
- revised proposals for utility works
- updated traffic forecasts

We also asked for any other comments about the Lower Thames Crossing and the consultation.

Consultation responses

We received 6,576 responses to our supplementary consultation. The majority were from individuals, while 316 were from statutory organisations, local authorities and people with an interest in land.

As before, the Woodland Trust organised an online email campaign with a pre-printed message and space for respondents to add their own comments. In total, we received 3,378 responses through the Woodland Trust campaign, 1,365 of which were slightly tailored.

Breakdown of response type

2,604
Response form: online

2,013
Campaign

1,365
Campaign with variations

354
Response form: hard copy

221
Email/letter

19
Response form: email

Main themes

Overall, a substantial number of respondents supported the need for the new road and the proposals. We asked you to help shape our solutions and here we list some important themes raised in your responses:

- increase in traffic on the surrounding road network, including congestion in local areas and whether the new road would solve congestion at the Dartford Crossing
- disruption to local communities, including moving the route closer to Linford and impacts to amenities
- removal of the rest and service area and Tilbury junction
- the complexity of the junctions, including safety of the roads and crossing, and smart technology
- impact of construction on communities and local roads
- removal of one lane southbound between the M25 and A13
- increase in land required to build or operate the project
- impacts of land required for utilities proposals including works to gas mains near the A2/M2 and in Orsett
- environmental impacts such as air quality, visual impact and climate change
- issues relating to the proposals for walkers, cyclists and horse riders, including the loss of existing paths, safety and concern about shared paths

Our responses to these and other issues raised during supplementary consultation, including the action we have taken to address those issues, are set out in chapter 3 of our You said, we did document.

Design refinement consultation

Our design refinement consultation was held between 14 July and 12 August 2020. Its main purpose was to ask for feedback on those refinements presented in the consultation materials.

We asked for feedback on:

- changes south of the river
- changes in the area around Tilbury, A13/A1089 junction, M25/LTC junction, M25 junction 29
- changes to the area of land required to build the Lower Thames Crossing
- proposals regarding special category land and sports clubs
- changes to the environmental impacts of the project

We also asked for any other comments on the Lower Thames Crossing and the consultation.

Consultation responses

We received 1,206 responses to our design refinement consultation. The majority of these were from individual members of the public, with 207 from statutory organisations, local authorities and people with an interest in land.

Breakdown of response type

871
Response form: online

216
Email/letter

112
Response form: hard copy

7
Response form: email

Main themes

Overall, a substantial number of respondents supported the need for the new road and the proposals. We asked you to help shape our solutions and here we list some important themes raised in your responses:

- increased traffic on the surrounding road network, including congestion in local areas
- disruption to local communities, including impacts on amenities, public open spaces, common land, recreational areas, sports clubs and Orsett Showground
- the complexity of junctions, including limited connectivity to local roads
- noise barriers and their effectiveness at reducing road noise
- impacts of utilities proposals on local residents, including sewer diversions in the M25 area
- the impact of construction on communities and local roads, including construction compounds and working hours
- general feedback on landscaping proposals, including at the tunnel entrances
- proposals for walkers, cyclists and horse riders, including that green bridges would not be wide enough
- the amount of land required for the Lower Thames Crossing project compared with the statutory consultation proposals
- effects on the environment, including on local wildlife and habitats, air quality, Ancient Woodland and the visual impact
- removal of the rest and service area, the maintenance depot and Tilbury junction
- removal of one lane southbound on the new road between the M25 and A13

Our responses to these and other issues raised during design refinement consultation, including the action we have taken to address those issues, are set out in chapter 4 of our You said, we did document.

Have your say

To comment on the You said, we did, answer question 3 in the response form.

9

How to have your say

Please let us know your views on our community impacts consultation. All the information, including the response form, is available at www.highwaysengland.co.uk/ltcconsultation

The easiest way to comment is by filling out our online consultation response form, but you can submit a response by using any of the methods listed below. Please note, we cannot guarantee that responses sent to any other address will be considered. Responses will be accepted until 23.59 on 8 September 2021.

If you would like to comment on aspects of our proposals from earlier consultations, please use the 'Other comments' section on the response form.

Online

Fill in the survey at www.highwaysengland.co.uk/ltcconsultation

Post

Send your response form, or comments, to **FREEPOST LTC CONSULTATION**

The Freepost address is the only text needed on the envelope, and you don't need a stamp.

Email

Send your comments to **LTC.CONSULTATION@TRAVERSE.LTD**

Telephone surgery

You can book a call back from a member of the project team to discuss any questions or provide comments on the proposal. From 14 July 2021, call us on **0300 123 5000** (weekdays between 9am and 5pm) to book an appointment.

Home delivery

If you do not have access to the internet, from 14 July 2021 you can order printed copies of this guide to consultation, a feedback form and Freepost return envelope, maps and other documents. Please call us on **0300 123 5000** to request a consultation pack. These will be delivered free of charge – there is a limit of one pack per household.

Data privacy notice

We are committed to protecting your personal information. Whenever you provide this 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 to:

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

Any personal information you include in this form will be available to, or used by:

- Highways England
- Traverse (an independent company we are using to analyse feedback to the consultation)
- the Planning Inspectorate (the Government agency that will consider our application for permission to build the Lower Thames Crossing)
- the Secretary of State for Transport (who will decide 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 your contact details to communicate with you about this project.

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 at www.highwaysengland.co.uk/our-work/lower-thames-crossing/privacy-notice/

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Find out more

You can provide feedback on the community impacts consultation, including the quality of this Guide and other consultation documents, by answering question 5 in the response form.

All our consultation materials are available online at www.highwaysengland.co.uk/ltcconsultation

They include:

- Guide to community impacts consultation
- Response form and Freepost envelope
- Construction update
- Operations update
- Ward impact summaries
- You said, we did
- Map Book 1: General Arrangements
- Map Book 2: Land Use Plans
- Map Book 3: Engineering Plans
- Large scale map operation
- Large scale map construction
- Community impacts consultation leaflet
- Easy Read versions of the Consultation guide and other materials

Draft DCO application documents

As well as the material listed, we are also consulting on draft versions of a number of other technical documents, which set out how we, and our appointed contractors, would build and operate the new road. These documents are on our website at www.highwaysengland.co.uk/ltcconsultation

Website

Visit our website at www.highwaysengland.co.uk/ltcconsultation to:

- watch videos explaining the proposals
- explore an interactive map
- watch new fly-throughs of the proposed route
- download the consultation documents, including the response form and maps

Events

We have planned a series of carefully managed events in line with government guidance, and copies of our consultation materials will be available at a number of locations along the route. As government guidance may change, please check our website www.highwaysengland.co.uk/ltcconsultation or call us on **0300 123 5000** for the latest information.

Locations to review consultation materials

Owing to restrictions during the pandemic, not all locations may be open and many libraries and civic centres will have limited capacity to hold copies of our consultation materials. We are working with local venues to make more places available for you to safely review or take away information.

The consultation materials will be available to collect, and additional technical documents and maps will be available to review, at deposit locations from 21 July 2021:

Kent and Gravesham

Dartford Central Library and Museum, DA1 1EU

Gravesend Library, DA12 1BE

Maidstone Library, Maidstone, ME14 1LQ

Rochester Community Hub, ME1 1EW

Thurrock, Essex and Havering

Romford Central Library, Romford, RM1 3AR

Brentwood Library, Brentwood, CM14 4BP

Grays Library, Grays, RM17 5DX

Tilbury Hub, Tilbury, RM18 8AD

For the most up-to-date list of consultation venues, please refer to our website at www.highwaysengland.co.uk/ltcconsultation or phone us.

Locations or take away consultation materials

The guide to community impacts consultation, response form and Freepost return envelope will be available to collect from 21 July 2021 at the following locations:

Kent and Gravesham

Riverview Park Library, Gravesend, DA12 4NG

Marling Cross Library, Gravesend, DA12 5TY

Shorne Woods Visitor Centre, Gravesend, DA12 3HX

Meopham Library, Gravesend, DA13 0AH

Thurrock, Essex and Havering

Belhus Library, South Ockendon, RM15 5DX

Blackshots Library, Grays, RM16 2JU

Chadwell Library, Grays, RM16 4JP

East Tilbury Post Office, Essex RM18 8YP

East Tilbury Library, East Tilbury, RM18 8ST

Thurrock Council Civic Offices, Grays, RM17 6NG

More venues could become available during the consultation period, so please check our website for updates at www.highwaysengland.co.uk/ltcconsultation

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

Webinars

We are holding a series of webinars where a member of the project team will explain our proposals and give you the opportunity to ask any questions. These webinars will include live captioning and a British Sign Language interpreter.

You can also access a recording of these at www.highwaysengland.co.uk/ltcconsultation in the 'Find out more' section.

Telephone surgery

We are offering additional support to help you provide feedback over the phone. From 14 July 2021, call us on **0300 123 5000** (weekdays between 9am and 5pm) to book an appointment. Please be aware that appointments are not available every day.

Previous Lower Thames Crossing consultations

All the documents from our previous consultations are available online at www.lowerthamescrossing.co.uk/archive