



GRAVESHAM BOROUGH COUNCIL

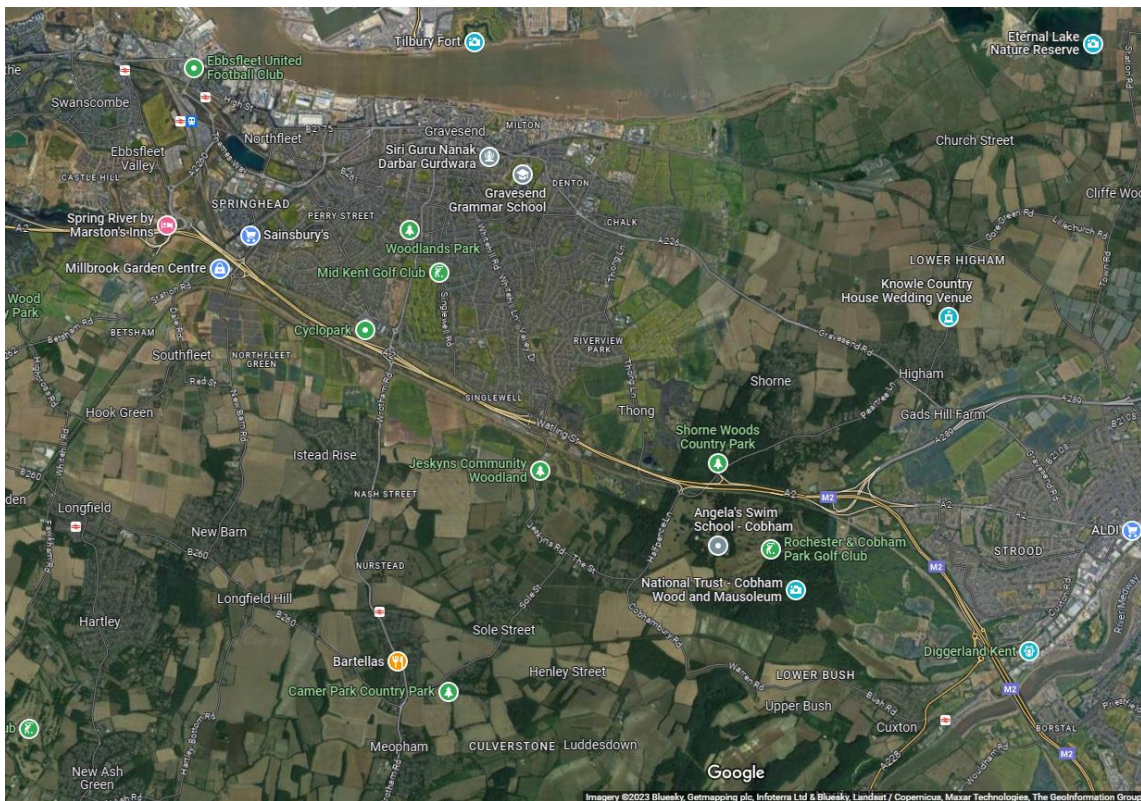
TR10032: Lower Thames Crossing

Local Impact Report

18/07/2023

Impacted area of Gravesham

Source: Google Maps



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1. Introduction

- 1.1. This is the Local Impact Report from Gravesham Borough Council (“the Borough Council”) on the National Highways Development Consent Order (DCO)¹ Application for A122 Lower Thames Crossing (“the project”). From the application form the project is described as: *The A122 would be approximately 23km long, 4.25km of which would be in tunnel. On the south side of the River Thames, the Project route would link the tunnel to the A2 and M2. On the north side, it would link to the A13, M25 junction 29 and the M25 south of junction 29. The tunnel portals would be located to the east of the village of Chalk on the south of the River Thames and to the west of East Tilbury on the north side. Junctions are proposed at the following locations:*
- *New junction with the A2 to the south-east of Gravesend*
 - *Modified junction with the A13/A1089 in Thurrock*
 - *New junction with the M25 between junctions 29 and 30.*
- 1.2. This report is based on the application documents as submitted on 31 October 2022 and accepted on 28 November 2022. Whilst minor amendments and corrections have been made subsequently, this Local Impact Report is based on the application material available on the Planning Inspectorate web site on 1 April 2023¹. Discussions with the applicant on the Statement of Common Ground are ongoing. In addition a series of workshops have been held which have provided further clarification on some matters discussed below.
- 1.3. The project has been subject to 7 consultations as set out below (excluding previous consultations leading up the Secretary of State’s route choice in April 2017):
- Environmental Scoping – November/December 2017
 - Statutory Consultation – October/November/December 2018
 - Supplementary Consultation – January 2019
 - Design Refinement Consultation – July 2020
 - Community Impacts Consultation – July 2021
 - Local Refinement Consultation – May 2022
 - Minor Refinement Consultation – May 2023²
- 1.4. Gravesham Borough Council is the Local Planning Authority for the majority of the project south of the river. Tonbridge & Malling Borough Council and Maidstone Borough Council are the local planning authorities for the nitrogen mitigation site at the top of Bluebell Hill. Kent County Council is the Local Traffic and Highway Authority for Kent (excluding the unitary of Medway), whilst Medway Council the same for its area.

¹ <https://infrastructure.planninginspectorate.gov.uk/projects/south-east/lower-thames-crossing/?ipcsection=docs&stage=app>

² This is discussed in section 2 on construction

Structure of Local Impact report

- 1.5. In preparing this document the content of Advice Note 1 issued by the Planning Inspectorate has been taken into account. The Advice Note states that; “The sole definition of an LIR is given in s60(3) of the Act as ‘a report in writing giving details of the likely impact of the proposed development on the authority’s area (or any part of that area)’. The content of the LIR is a matter for the local authority concerned as long as it falls within this statutory definition.”
- 1.6. This document does not seek to replicate the Environmental Statement but rather explores the local dimension but following the structure of that set of documents to allow cross reference. It has been written so that it can be read without the need to consult other documents, so does replicate some explanatory material. Given the scale and complexity of the application a full understanding of the project does require reference to full documentation.
- 1.7. The analysis divides the impacts between those that result from the construction of the project and those that arise from the completed, operational road.
- 1.8. Some chapters of this document cover a topic completely whereas others consist of brief text supported by a main report in Appendices.

Formal Council position on the project

- 1.9. The Council has opposed the choice of a potential route east of Gravesend (Option C) since it unanimously adopted the resolution on the 8 December 2015.
- 1.10. On 20 June 2023, the Council received a report which:-
 - provided an update on the current progress on the Lower Thames Crossing Development Consent Order application;
 - reaffirmed the Council’s opposition to the Lower Thames Crossing; and
 - reiterated the Council’s key asks for mitigation and compensation.
- 1.11. It was resolved that the Council-
 - reaffirms its opposition to the siting of a new Lower Thames Crossing to the east of Gravesend, which will have significant detrimental impacts on communities in Gravesham who would potentially suffer air quality, noise and health issues, as well as congestion on local roads which will be exacerbated as drivers seek to avoid problems elsewhere on the local and wider highway network. Other significant detrimental impacts include increased carbon emissions, damage to the Kent Downs Area of Outstanding Natural Beauty and internationally significant nature conservation areas, Green Belt and heritage sites;
 - endorses the key asks for mitigation and compensation; and
 - objects to the loss of its land at the Cascades Leisure Centre site to the proposed scheme.

Common concerns

- 1.12. It is clear from the relevant representations that there are a number of areas of common concern between the affected local authorities including:
 - Validity of traffic modelling and alignment of strategic and operational model outputs, along with cross-boundary considerations.

- Measures to reduce the construction impacts of the scheme on local communities
- Approach to mitigating wider scheme effects within and outside of the Order limits including lack of mitigation with particular regards to the impacts on the Local Road Network (LRN)
- Monitoring of the construction and operational impacts of the scheme, provision of monitoring data, and ensure that interventions are enacted to bring impacts to agreed levels
- Focus on amorphous wider socio economic impacts – rather than addressing economic impacts on local businesses (lack of compensation) and local residents ability to access the employment opportunities given as only benefit
- Lack of public transport investment and sustainable transport including PROW concerns
- Safety of proposed all purpose trunk road scheme designed to smart motorway standards
- Approach to the discharge of Requirements post consent
- The sharing of timely information on scheme progress post consent, with the opportunity for Local Authorities to input on relevant aspects

Gravesham Borough Council's recommendations to the Examining Authority

- 1.13. The Borough Council starts from the position of opposing the project overall because its significant harms to the environment and communities south of the River Thames are not outweighed by its benefits, and would therefore ideally like the ExA to recommend that the case for the project has not been made and the DCO application should accordingly be refused by the Secretary of State.
- 1.14. That said from the point of view of the Local Impact Report it is appropriate to look at the local impacts and see what can be done to mitigate, compensate or otherwise deal with issues that have emerged.
- 1.15. As a fundamental principle, that impacts in Gravesham should be avoided / designed out, mitigated or compensated, as far as feasible, in Gravesham. Gains elsewhere outside the Borough of Gravesham do not go anyway towards offsetting local impacts. Local residents and businesses will have to deal with those impacts on a day to day basis.
- 1.16. The Council has concerns about the project but has tried to work collaboratively with the applicant. As the Examining Authority has heard at the first issue specific hearings, the applicant is willing to meet but its focus is justifying its approach and explaining why our concerns are unfounded and that we should just trust that they are correct, rather than discussing 'Plan B' options or trying to come to a resolution.
- 1.17. If National Highways are so confident that they are right in the assumptions in their technical work, the Council fundamentally does not understand why they will not put mechanisms in place for options if those assumptions are wrong. Those options will only come into play if the situation on the ground is not as modelled. Many of the Council's asks are related to this and are modelled on components from other NSIP projects as explained in our s106 asks.

- 1.18. The Council recognises that the construction phase of the LTC scheme will be disruptive, but that it is essential that every opportunity is taken to minimise the adverse impacts or to mitigate against them.
- 1.19. It is disappointing to report that despite the numerous consultations the picture that has emerged is of relatively few changes having been made to the project. Good examples where they have are extending the length of the Thames Tunnel and the width of the Green Bridges, and these changes are welcomed, but the overall position is that National Highways has shown insufficient interest in responding to concerns raised. It especially disappointing when the Code of Construction Practice (APP-336) sets out in paragraph 1.4.10 that the Project is committed to avoiding, preventing, reducing or remediating for, as far as reasonably practicable, the adverse effects of the construction and operational activities of the Project on people, businesses and the natural and historic environment.
- 1.20. Despite the statement in APP-336, Highways England only appear to want to comply with all necessary statutory regulations which can have a high bar at “significant adverse”, whereas the Council needs them to go beyond them to alleviate harm to local residents and businesses.
- 1.21. As part of this process, the Council recognise that a comprehensive mechanism is needed to allow residents and businesses meaningful engagement with Highways England and its construction partners. This needs to be instigated in advance of the commencement of construction and continue throughout the works and into the operational phase.
- 1.22. Coping with major change is difficult for most people but people are more able to accept difficult changes when they feel like they understand the reasons and they have access to on-going information. The Council considers that the Silvertown Tunnel approach to monitoring and mitigation sets a good precedent with clear commitments to monitoring and resolving issues.
- 1.23. The CoCP (APP-336) has altered slightly from the version shared at the Community Impacts Consultation with the addition of sentences such as “All non-conformances will be recorded and monitored through a Contractor’s action plan within an agreed risk based timescale for resolution” to paragraph 2.7.7 which was not in the equivalent paragraph (2.6.6). However the focus is still focused on informing rather than collaboration.
- 1.24. The applicant has not engaged in serious discussions about making changes to the project, hence it is necessary to suggest significant changes. Gravesham BC, Kent CC, health authorities and the emergency services are examples of agencies that will incur additional expenditure due to this project and without those demands being put, services will need to be reduced elsewhere to meet the deficit. Whilst we note their point about public money, the Council considers that National Highways is in no different position to any other developer and must address issues with its proposal in a substantive way because, otherwise, it is not adequately mitigating its impact on the Borough.
- 1.25. The draft Section 106 Heads of Terms (APP-505) was submitted by National Highways containing:
- Skills, Education and Employment Strategy,
 - Community Fund,
 - Officer Support Contributions, and
 - Pedestrian Crossing Improvements – Severance including:
 - Valley Drive, Gravesend (Old Rd East to St Alban’s Close)

- 1.26. For the Valley Drive improvement, National Highways will pay a sum to Kent County Council, as Highways Authority, to implement the identified improvements from the feasibility assessment.
- 1.27. The Council welcomes that National Highways' draft Section 106 Heads of Terms includes that National Highways will make available two community funds, one North and one South of the River, to provide a mechanism to address some of the residual impacts of the Project. This is something that the Council had suggested as it recognises that issues will arise that the affected communities will need to have addressed. It would not be right to suggest that any party involved in this project can identify now what those needs might be and so the fund will fill that gap.
- 1.28. The fund is meant to cover issues that cannot currently be identified. The Council is disappointed that the draft Section 106 was not more comprehensive and include a range of interventions that were omitted from the material, such as the ferry, or could be triggered if certain conditions arose i.e. issues that we have been raising for some time in our response to the numerous consultations and in technical meetings and briefings. National Highways were aware of our desire for a more comprehensive section 106 package, but the agreed meetings on the secure mechanism for including such components were never arranged.
- 1.29. The Examining Authority asked the Council to submit its Principal Areas of Disagreement Summary Statement (AS-069) and, as a number could potentially be addressed via Section 106, the Council included the list of draft asks (AS-070). As explained in the notes at the front of the document, the Council takes a holistic view of the impacts from the scheme on its residents and businesses regardless of where responsibility for particular matters may formally sit, i.e. Kent County Council. Gravesham residents are KCC taxpayers so additional demands on services funded or provided by KCC or others will impact on GBC residents. This is why we are raising issue of school place pressures from non-home based workers' children. No additional funding means that resources will need to be taken elsewhere to the detriment of current residents.

Asks

- 1.30. Simplistically the Council's asks relate to the following core concerns about the impact of the project on its residents, businesses and the environment:
- The adequacy of the transport modelling for the construction and operational phases (assumptions, consideration of local road impacts etc) and all the technical studies that rely on that work about which the Council has serious concerns
 - Assumptions about workers, their travel and parking patterns, their accommodation needs and their service demands including demands from their families
 - Monitoring during construction for a range of factors is essential and the proposed monitoring regime is insufficient and focused on the contractor relationship rather than environmental and socio-economic outcomes
- 1.31. In summary, the Council's main asks are:
- A skills and training hub in Gravesham to allow local people to take maximum advantage of construction job opportunities
 - Free or discounted travel for Gravesham residents over both Thames crossings
 - Increased environmental improvements, such as tree planting
 - Infrastructure to support the use of hydrogen as fuel

- Improved leisure infrastructure connected to the new Cascades Leisure Centre in
- A proper supply of housing for LTC construction workers to avoid additional strain on the already stretched local housing market
- Addressing concerns about traveller caravans on two sites which would be surrounded by construction works for five and a half years.

Executive Summary

- 1.32. This purpose of this Local Impact Report (“LIR”) is to outline the anticipated impacts of the Lower Thames Crossing (the Scheme) on the residents, businesses and environment within Gravesham Borough.
- 1.33. The Council contends that the LTC construction for a period of 6-8 years will create unacceptable impacts that require serious mitigation.
- 1.34. At the heart of these concerns, is the traffic model which underpins the highway and air quality impacts and also forms the basis of much of the various particular assessments in the Environmental Impact Assessment is considered to be fundamentally flawed. This is a common concern of a number of interested parties.
- 1.35. It is the view of the Council that various uncertainties add very significant weight to the importance of identifying clear monitoring and mitigation strategies to be built into the proposed project but which remain absent. It is of concern that a robust monitoring and mitigation strategy for intended and non-intended impacts is not secured within the current iteration of proposed draft Development Consent Order.
- 1.36. The Council is also concerned that National Highways is disregarding issues that would be unacceptable from a private promoter and this is not acceptable. Gravesham’s environment, business and residents will bear the brunt of the insufficient mitigation and compensation, and in some cases will have the added indignity of having to put up with poorer services as a result of that impact not being recognised and funded.
- 1.37. Through CPO, the project removes a pitch and putt course at the rear of the Cascades Leisure Centre, which is owned by Gravesham Borough Council and provided as an important local asset, and the Southern Valley Golf Course (18 hole pay and play). That latter has now closed as a direct result of uncertainties due to the proposed scheme, but although private provided for public use. Discussion is ongoing on the pitch and putt but there is no replacement for the Golf course or another active outdoor recreation facility. Chalk Park, and other mitigation/compensation areas, extend the open space offer but in an area that is already well provided for.
- 1.38. As such, the Council anticipates making further representations through the Examination Hearing process, to seek the most favourable resolution for Gravesham residents and businesses in anticipation of its concerns being resolved. If not, the Council will maintain its objections to the current formulation of the Scheme.

Pen Portrait of Gravesham

- 1.39. Gravesham Borough (“the Borough”) is a triangular shaped area located on the south bank of the River Thames east of London, geologically underlain by chalk which rises gently southwards up to the crest of the North Downs scarp. A series of dry valleys run northwards down to the River Thames or eastwards to the River Medway. The main urban centres are Gravesend and Northfleet, historic settlements located on the bank of the River Thames. To the east of the urban area are the North Kent Mashas stretching away to the Medway and outer Thames

- Estuary, which are of international nature conservation significance. The southern boundary of the urban area is defined by the A2 Watling Street, approximately on the alignment of a Roman Road (Wæcelinga Stræt in Anglo Saxon) from London to Rochester, Canterbury and the ports of Richborough/Dover/Lymne/Reculver.
- 1.40. The east side of the Borough abuts the Medway Unitary Authority area, whilst Tonbridge & Malling Borough is to the southeast and south. Sevenoaks District is to the southwest and Dartford Borough due west along the River Thames. North of the River Thames is Thurrock Unitary Authority. Ebbsfleet Development Corporation (EDC) is the Development Management Authority for the Ebbsfleet Valley (part Dartford / part Gravesham), and Northfleet Embankment West & East.
- 1.41. The current A2 through Gravesham is a 4 lane dual carriageway with hard shoulders, frequently called a motorway although technically it is not. On the east side of the Borough, it becomes the M2 bypassing the Medway Towns and terminating at Faversham (M2 J7 – Brenley Corner), where it connects along the coast to Thanet (A299) and Dover via Canterbury (A2). Note the section of the road from M2 J1 to J7 through the Medway Towns, Sittingbourne and Faversham is a local highway, designated the A2 as well. It is here called A2 (local road) to avoid confusion. The A289/A2/A278 forms a loop from the M2 J1 to M2 J4, passing beneath the Medway in a tunnel, as well as providing access to the Hoo peninsula and the Isle of Grain.
- 1.42. The M20/A20 corridor lies to the south of Borough, connecting to the M25 at Swanley or via M26 at Sevenoaks. Together with the M20, the M2 is one the two routes across Kent connecting the M25 to the port of Dover and the Channel Tunnel terminal at Folkestone. There are five county roads which run north-south connecting the A2 and M20 corridors of potential relevance to this scheme. These are (ignoring what happens to them to the north or south):
- A225 running from Dartford to Sevenoaks – along the Darent Valley
 - A227 running from Gravesend to Borough Green with a junction with the A2 (Tollgate), and M20/M26 at Wrotham – the foot of Wrotham Hill
 - A228 running from Strood (M2 J2) to Snodland and West Malling (M20 J4) – along the Medway Valley
 - A229 running from Chatham (M2 J3) to Maidstone (M20 J6) – Blue Bell Hill
 - A249 running from Sittingbourne (M2 J5) to Maidstone (M20 J7) – Detling Hill
- 1.43. The other major road in Gravesham is the A226 which runs along the river from Dartford town centre through Gravesend Town Centre to Strood. At Ebbsfleet it is connected to the A2 via the A2260.
- 1.44. Along the A2 there are junctions serving Gravesham at Ebbsfleet (A2260), Pepper Hill, Tollgate (A227), Marling Cross (Gravesend East), Cobham/Shorne and Three Crutches (M2 J1). The A2, in part as a result of its evolution since the 1920's from a country lane (with ancient origins) to accommodate growing levels of motorised traffic and increasing lengths of journeys, has therefore a very important local traffic function as well as its strategic role

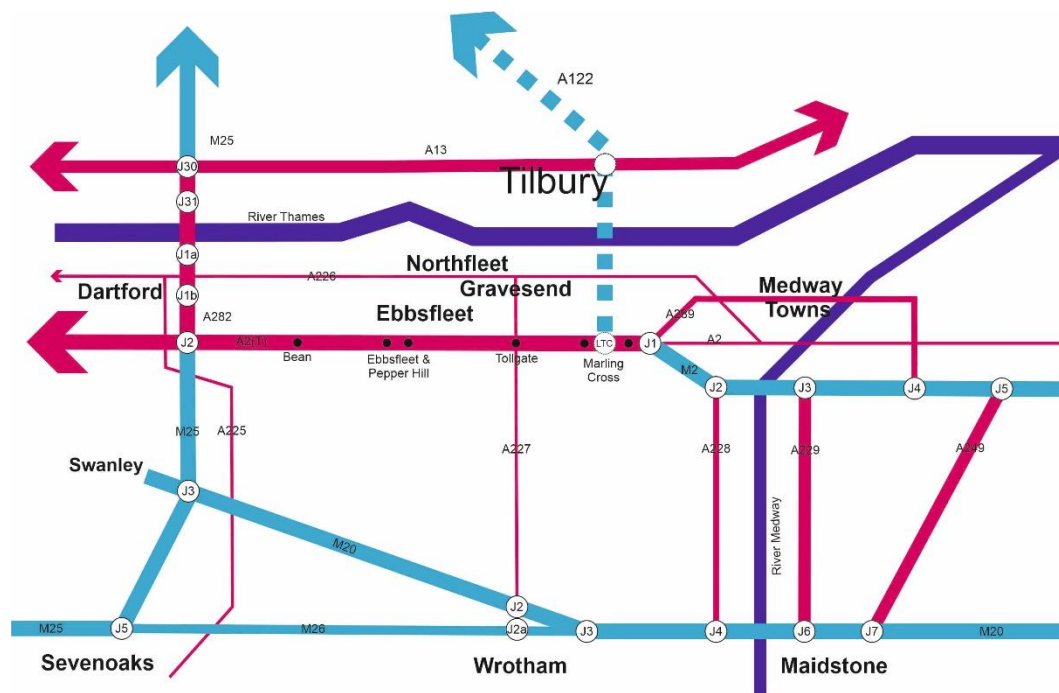


Figure 1.1 Main roads in North West Kent

- 1.45. The original main railway line through Gravesend was the North Kent Line from London (Charing Cross/Cannon Street) to the Medway Towns and further east. To the east of Gravesend across (and above) the marshes this runs alongside the Thames & Medway Canal, and then uses the former canal tunnels to reach Strood. This has been joined by High Speed 1 (originally called Channel Tunnel Rail Link) which runs along the M2/A2 corridor and turns north through the Ebbsfleet Valley, where Ebbsfleet International station is located, and then proceeds under the Thames at Swanscombe Peninsula towards Essex, with the final destination being London St Pancras. The line from the Medway Towns to London Victoria runs through Meopham and Sole Street in the rural part of the Borough.
- 1.46. Originally there was a branch from this line at Fawkham junction to Gravesend West Station, the southern part of which now connects (albeit unused) to HS1. From Ebbsfleet International, St Pancras is 17 minutes by train and from Gravesend (via the connection off the North Kent line) 24 minutes. Charing Cross trains take 65 minutes, and Thameslink 58 minutes to London Bridge. Gravesend Station has direct services to Charing Cross, Cannon Street, St Pancras (via HS1) and Luton (Thameslink via London Bridge & St Pancras).
- 1.47. There is a network of bus services focussed on Gravesend Town Centre, with the most frequent routes linking east Gravesend through to Ebbsfleet and Dartford. The Fastrack system, shortly to go electric, uses sections of bus lane and dedicated highway to link Gravesend, Ebbsfleet, Bluewater, Dartford and north Dartford.
- 1.48. The south and southeast sides of the Borough are in the Kent Downs Area of Outstanding Natural Beauty (AONB), which extends north of the A2 towards Shorne to the east of Gravesend. The North Kent marshes along the Thames are Ramsar/Special Protection Area (SPA) stretching from the urban area further east. The entire of the east and south of the Borough are within the Metropolitan Green Belt with the larger villages as insets. There are 310 listed buildings (10 Grade I &

21 Grade II* and 9 Scheduled Monuments) and 23 conservation areas³ spread across the entire Borough. There are also a significant number of Sites of Special Scientific Interest (SSSI's).

- 1.49. The boundary with Dartford Borough north of the A2 broadly follows the historic Ebbsfleet stream that flows out into the Thames at Northfleet Harbour. There was a major Roman temple complex by the A2 (Vagniacis), and there are numerous historic and archaeological sites in this area, including along the A2 corridor. The northern boundary of the Borough is the River Thames, which at this point is in the order of 500m wide at Northfleet, 600m at Gravesend Town Centre, and then widens out further east towards the sea.
- 1.50. The main development opposite Gravesend on the north side of the river relates to Tilbury Docks, with the more recent development on the former Tilbury Power Station site, which now forms part of Tilbury 2 port facility. Further inland is the town of Tilbury. Tilbury Cruise terminal originally included a railway station (Tilbury Riverside) which, via the ferry gave Gravesend a third rail route into London.
- 1.51. Figure 1.2 below is the core diagram from the 2014 Local Plan Core Strategy which summarises the overall policy designations, key transport infrastructure and location of settlements.

³ Maps and area appraisals for the conservation areas can be found on our [web site](#)

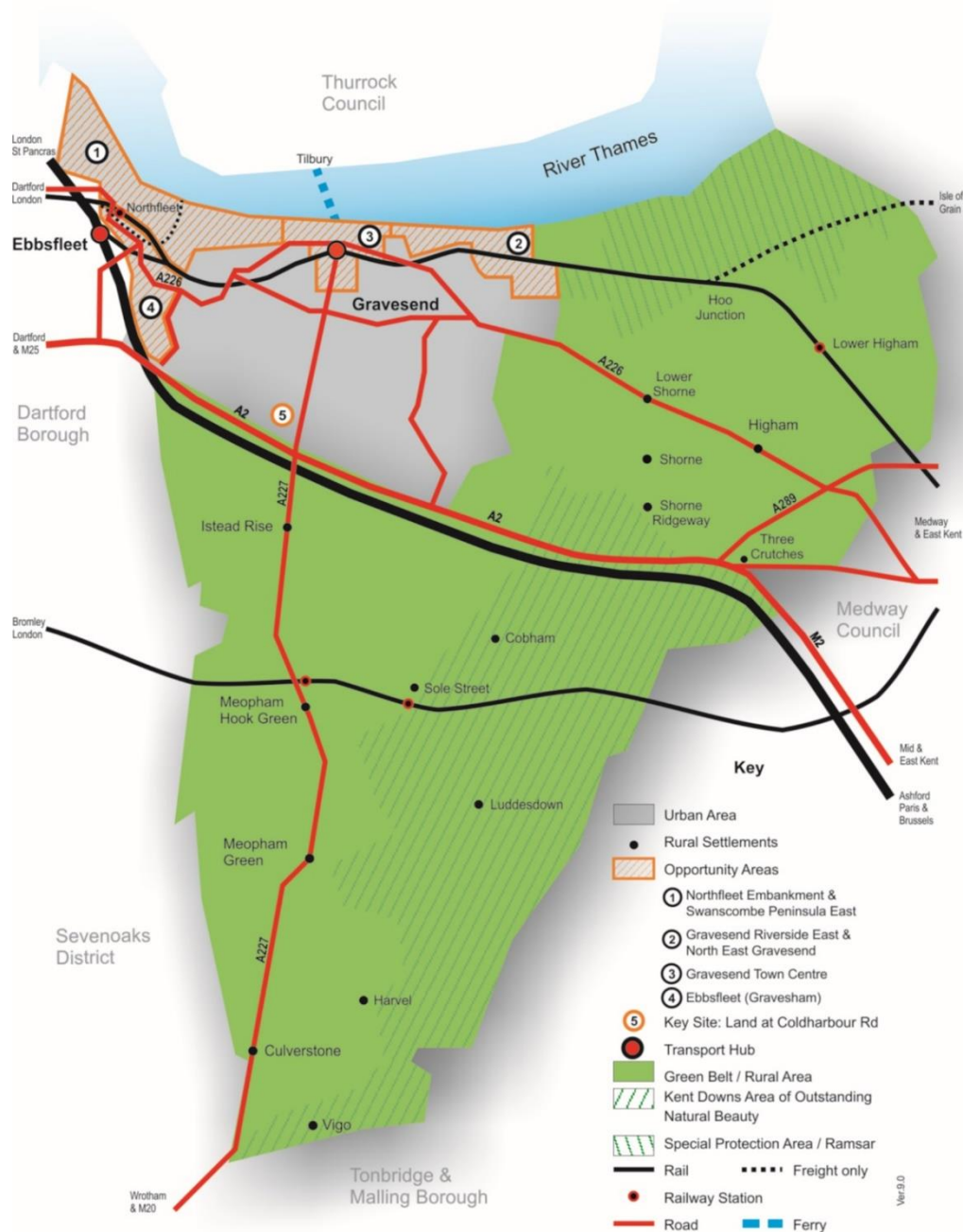


Figure 1.2 2014 Local Plan Core Strategy Core Diagram

1.52. Gravesend was the first and last place on the river, where passengers frequently boarded or disembarked from ships and boats. It is the home of the Port of London Authority, lower river pilots and the place controlling river traffic. It has historic fortifications in the form of New Tavern Fort (and Shornemead Fort further downstream) that complement Tilbury and Coalhouse Forts on the Thurrock side. The Tilbury ferry provides a foot passenger link across the river running from Town Pier (grade II*), the world’s first cast iron pier. Before the first Dartford Tunnel was built there was a car ferry from Gravesend to Tilbury. There was also historically a ferry to London (the long ferry).

- 1.53. The availability of chalk on the river played a key role in the development of the cement industry, so for example at one stage Northfleet Cement works was the largest in Europe. Aspdin's Kiln, a Scheduled Monument in Northfleet, dates from 1846 and is believed to be the first Portland cement kiln. There were also a number of paper mills (Kimberley Clark is still operational), Northfleet Power station and other heavy industrial premises. Many of these were located in former chalk quarries, which were worked back from the river. The net result has been economically a classic picture of industrial decline but combined with a dramatic landscape of chalk cliffs and spines with sudden changes in level from quarrying.
- 1.54. The area on the east side of what is now the urban area stretching from Denton south to Cobham Park and then east to River Medway at Cuxton was all part of the Darnley Estate centred on the listed (II*) park, a Repton landscape, around the Grade I listed Cobham Hall. There is therefore a historical connection to all the land on or under which Lower Thames Crossing passes in Gravesham.
- 1.55. The North Kent Marshes as noted above are of international ecological importance. Much of the relevant area of the marshes is now mainly in the ownership of the RSPB. This area has clays, silts and gravels, whilst the area around Cobham/Shorne is a geologically a mixture of sands/gravels/clays sitting on top of the underlying chalk. This gives the area its distinctive character, with woodland, parkland and perched water tables. The chalk landscape is the primary agricultural area, with orchards historically being a prime feature.
- 1.56. Gravesham has been well used projects of national importance including Channel Tunnel Rail Link (now HS1 which also included widening the M2), the original planning permission for the development in the Ebbsfleet Valley and widening (and moving) of the A2 past Gravesend.

Policy Framework

- 1.57. The relevant National Planning Statements are:
- National Policy Statement for National Networks (NPSNN – 2014)
 - National Policy Statement for Oil and Gas Supply and Storage (EN-4 – 2011)
 - National Policy Statement for Electricity Networks Infrastructure (EN-5 – 2011)
- 1.58. The National Planning Policy Statement (NPPF July 2021) is also relevant, and revisions to it have been consulted upon. A revised NPSNN is also subject to consultation by Government. EN-4 and EN-5 were the subject of consultation in 2022 and a further consultation which closed in June 2023. The application will be determined under the existing documents, though the consultation documents does provide a direction of travel and elements of them may be both important and relevant considerations for the Examination within section 104(2)(d) of the Planning Act 2008.
- 1.59. For the elements of the proposal in Gravesham, the Development Plan consists of the following:
- Gravesham Local Plan Core Strategy – adopted 2014
 - Gravesham Local Plan Core Strategy Policies Map – adopted 2014
 - Saved Policies Gravesham Local Plan 1st Review – adopted 1994
 - Kent Minerals and Waste Plan 2013-2030 – adopted 2020
 - Kent Minerals Site Plan – 2020 (no sites in Gravesham)

- South East Inshore Marine Plan - 2021
- 1.60. As highlighted above, Gravesham essentially consists of the main urban areas of Northfleet and Gravesend (about 25% of the land area) and a rural part with a number of villages in it. The majority of the rural area is covered by Green Belt policy but also contains the Kent Downs AONB, the North Kent Marshes Ramsar/SPA and a number of SSSI's. Planning policy therefore seeks to concentrate development in the urban area, in particular the opportunity areas and key site shown on the plan above.
- 1.61. Rural policy aims to conserve the environment and limit development to within the confines of those rural settlements inset from the Green Belt as defined on the policies map. The following rural settlements all have defined inset boundaries: - Lower Higham, Higham, Three Crutches Shorne, Lower Shorne, Shorne Ridgeway, Cobham, Sole Street, Vigo, Culverstone, Meopham Hook Green, Meopham Green and Istead Rise. The hamlets of Thong, Luddesdown and Harvel are all 'washed over' by the Green Belt. The settlements of Thong, Shorne and Cobham, are closest to the project. Each of these settlements have designated conservation areas
- 1.62. The Green Belt in Gravesham is a long-standing policy designation, and it forms part of the wider Metropolitan Green Belt around London. Of particular relevance in this context is the 4-5km gap between the east side of Gravesend and the west side of the Medway Towns, which is the first point where the Green Belt substantially reaches the Thames south of the river. It is therefore the first fully connected significant break in development coming out of London (though there are some fragments of Green Belt further west) before reaching the Medway Towns.
- 1.63. Progress on major areas and sites identified in the Local Plan Core Strategy⁴ is:
- *Northfleet Embankment and Swanscombe Peninsula East* – Northfleet Embankment East is being built out with housing, a new primary school and some employment uses. Northfleet Embankment West (former Northfleet Cement Works) has planning permission for housing and employment uses plus existing industrial development. Site works are underway. Both these sub areas form part of the Ebbsfleet Development Corporation (EDC) area. Swanscombe Peninsula East (i.e. the part in Gravesham) was in part proposed as the location for the London Resort Theme Park. A DCO application was made in late 2021 for that project, accepted in January 2022 and withdrawn in March 2022. A significant part of the area was declared an SSSI on 10 November 2021. A large scale mixed use application, Northfleet Harbourside, was submitted for development in the Stonebridge Road area in October 2022 which is currently under consideration.
 - Gravesend Riverside East and North East Gravesend – An application, Albion Waterside, was permitted, subject to a s.106 agreement in late 2022.
 - Gravesend Town Centre – there are a number of development sites in and around in the Town Centre. Currently under construction are The Charter (called Heritage Quarter East in the Local Plan) and former police station site. Other sites are at various stages of the planning process and the Council is actively working with developers to ensure these sites are brought forward and delivered.
 - Ebbsfleet (Gravesham) – the case for Ebbsfleet International Station was originally made jointly by the then main landowner (Blue Circle Industries),

⁴ Local Plan Core Strategy and Local Plan Policies Map can be found on [the Gravesham web site](#)

Gravesham, Dartford and Kent County Councils on the basis of the extensive areas of development in the Ebbsfleet Valley and Eastern Quarry, now covered by the EDC. In the Ebbsfleet Valley the eventual output was two interrelated planning permissions from Gravesham and Dartford. Two quarters were within Gravesham: Springhead (now largely developed) and Northfleet Rise, forming part of what is now known as Ebbsfleet Central. The EDC now own the Ebbsfleet Central site and submitted a planning application in September 2022 for a large-scale mixed-use development, which is currently under consideration

- *Land at Coldharbour Road* – this site is now mainly developed for housing.
- 1.64. The Borough Council has been undertaking a review of the Local Plan, which has included taking account of the scale of housing development required by the Government under the standard method. This predates recent proposals to amend that methodology. There have been two regulation 18 consultations as part of the process in Spring 2018 and Autumn 2020. The former considered spatial strategic options for growth, whilst the latter considered a range of sites that **might** be considered for Green Belt land release in the event of them being required to meet housing targets derived from the Government's standard method. This approach recognises the inability of the urban area and rural settlements inset from the Green Belt to meet the entire growth requirements of the borough over the 15-year plan period.
- 1.65. As set out in the emerging Local Plan, the Lower Thames Crossing has had a direct impact upon the spatial choices available to accommodate future growth. A strategic option for accommodating growth to the east of Gravesend, has had to be discounted from the emerging Local Plan due to the proposed location of the project and its development boundary. As the proposals for Lower Thames Crossing have been under discussion for a considerable period of time, the potential east of Gravesend sites have never been comprehensively analysed in Green Belt or any other terms.
- 1.66. It should also be noted that no development (allocations or planning permissions) in Gravesham are dependent on the Lower Thames Crossing being built and rather, as highlighted above, the project limits development options within the Borough rather than enabling growth.
- 1.67. The Borough Council's ability to progress with the emerging Local Plan, has been further frustrated by National Highways seeking transport work on the impact of future growth on the A2, both with and without Lower Thames Crossing. The model to be used, KCC's Kent Transportation model, was made available later than expected and needed to be populated with additional survey data. This work is currently underway and will consider the impacts of development options on the local and strategic highway networks with, and without, Lower Thames Crossing. It should be noted that the results of this work are not currently available to feed into this document.
- 1.68. The emerging Local Plan is at a stage where only limited, if any, weight can be placed on the published documents. As such, potential development sites that have been consulted upon under section 18, including those currently within the Green Belt, but these have no status and there is no certainty that they will be allocated in the emerging Local Plan in whole, in part or at all⁵.
- 1.69. Transport policy is to be found in the Local Plan but also in the Kent Local Transport Plan (which is currently being reviewed by KCC). The scale of development across

⁵ <https://www.gravesham.gov.uk/local-plan-policy/site-allocation-development-management-policies>

North Kent is predicated on greater utilisation of public transport in all its forms, in order to manage and reduce road traffic movements

- 1.70. This goes back to technical work done in the mid 1990's on what was then Kent Thameside (Dartford and Gravesham north of the A2). Kent Thameside can be traced back to the publication of Government regional planning guidance in 1995 (Thames Gateway Planning Framework Regional Planning Guidance RPG9a). The original Kent Thameside Vision document "Looking to the Future", published in Autumn 1995, set out a long-term vision for the regeneration of the area, with one of its key objectives being to achieve a significant shift from car use to use public transport.
- 1.71. This goes back to technical work done in the mid 1990's on what was then Kent Thameside (Dartford and Gravesham north of the A2). Kent Thameside can be traced back to the publication of Government regional planning guidance in 1995 (Thames Gateway Planning Framework Regional Planning Guidance RPG9a). The original Kent Thameside Vision document "Looking to the Future", published in Autumn 1995, set out a long-term vision for the regeneration of the area, with one of its key objectives being to achieve a significant shift from car use to use public transport.
- 1.72. Looking to the Future, was replaced by the South East Plan (May 2009), with Policy KTG1 (Kent Thames Gateway) stating that the forecast growth in car related traffic in particular in relation to employment, needed to be managed by greater use of sustainable modes of transport. It also encouraged greater use of rail and water for freight related traffic. The South East Plan was partially revoked in February 2013, however, the Government continues to recognise the development potential of the Thames Estuary via the creation of the Thames Estuary Growth Board. One of the key aims of the Board, is to deliver green growth through sustainable transport and energy.

2. Project Description

- 2.1. This is based primarily on the APP-140 6.1 Environmental Statement Chapter 2 – Project Description. The objective is to pull out the key items in relation to Gravesham to provide context for the rest of the report. That document contains considerably more detail and the relationship to the various works set out in Schedule 1 of draft Development Consent Order (APP-056).
- 2.2. In this analysis the construction period has been assumed, where relevant, to run from January 2027 rather than January 2025. At the time of writing, the application documents have not been updated to reflect this change, and further changes to the project and the project timing will no doubt be made when contractors are appointed.
- 2.3. The description follows the same geographic order as in the Environmental Statement, that is from south to north. For clarity when referring to direction of travel the A2 London bound is the same as westbound, whilst coastbound is the same as eastbound. North and south bound are used for the A122 (Lower Thames Crossing). Marling Cross junction is also called Gravesend East.

The Project

- 2.4. The description below concentrates on the highway and does not include all the ancillaries. The roads will be lit, signed and will have electronic signs. It is designed as 74.6 mph road to have 70 mph speed limit. Basic carriageway width is 11m (3 lanes plus 1m hard strip). Thin Surface Course System (TSCS) has been assumed for all new and altered highways (see noise section for further information).
- 2.5. The project starts at M2 Junction 1 (Three Crutches circa 75m OD) where all the works are within Gravesham, but the order limits are hard up against the boundary of the Medway Council area, and the housing in Strood. This junction is where the 4 lane M2 coming up from J2 has a lane drop to serve the A289 (Wainscott bypass), so there are three lanes through the junction. The M2 formally ends and the A2 is then joined by the on/off slips to/from the A289 London bound, which also serve the A2 (local road) into Strood, becoming 4 lanes. The carriageways diverge in this area to create a wide central reservation. The highway passes under Park Pale Bridge which is not directly impacted by the project.

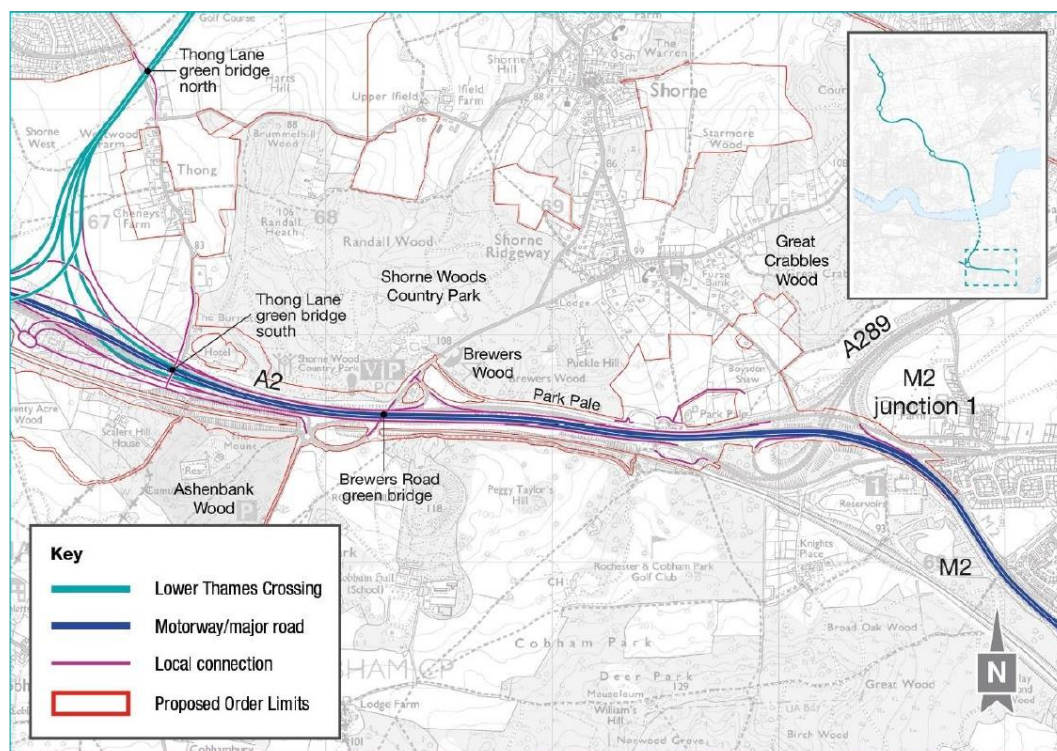


Figure 2.1 Section 1 of project (ES Chapter 2 - Plate 2.1)

- 2.6. With the project this would become 4 lane A2 in the centre in each direction, with 2 lane link roads for the A289/A2 (local road) on either side with no physical connection between them at this point. The road infrastructure would therefore be 12 lanes wide. The central reservation would disappear. A289/A2 (local road) is used to describe these link roads as that is the function they perform, regardless of what formal designation they will carry.
- 2.7. This section of the A2 climbs to the Thames/Medway watershed, at which point there are on/off slips, with very tight radii, serving Cobham and Shorne, linked by Brewers Road (118m OD – A2 112m) on an overbridge. HS1 railway is running in the same corridor and comes very close to the carriageway at this point, with an earth barrier to prevent vehicles reaching it from the A2.
- 2.8. Under the project the southside slip roads would be lost, the traffic movement being provided by an extension of Darnley Lodge Lane to Marling Cross (Gravesend East). On the north side the Shorne slips would remain but only serving the coastbound link road to the A289/A2 (local road). Brewers Road bridge would be rebuilt to be 104m long, 32m wide and 8.6m above ground level on the same alignment as the current one.
- 2.9. Moving east Thong Lane bridge is reached as the A2 begins its descent which carries on all the way to the Ebbsfleet junction (20m OD). This will be demolished and rebuilt approximately 55m to the west, with a length of 153m, 41m width and 10.5m above ground level. At this point would be 17 lanes of traffic, including Darnley Lodge Lane. Thong Lane would be realigned as consequence as would Darnley Lodge Lane.

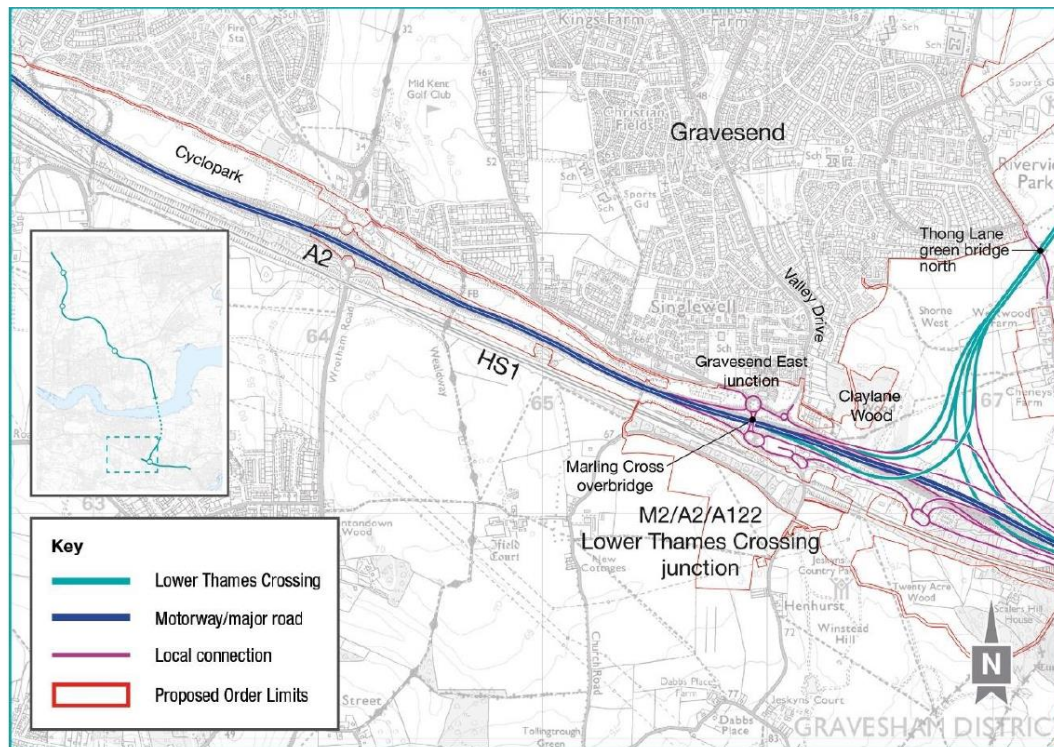


Figure 2.2 Section 2 of project (ES Chapter 2 - Plate 2.2)

- 2.10. Section 2 of the project covers the A2/A122 junction which also involves the Marling Cross (Gravesend East) junction. This serves Hever Court Road and Valley Drive within Gravesend and Henhurst Road running south to Cobham and Sole Street.
- 2.11. At the new Thong Lane overbridge the following roads/slips are proposed from south to north:
- Darnley Lodge Lane 2 lane local road of 1.9km in total length which would be new between Thong Lane and Henhurst Road and realigned from there to Halfpence Lane. At a new roundabout would collect slips from the A2 mainline and A289/A2 (local road) link road. A new roundabout connects it with Henhurst Road, with access to the HS1 Singlewell Electricity sub-station and the HS1 Infrastructure Maintenance Depot, leading onto the Marling Cross junction
 - 2 lane link road from the A289/A2 (local road) which sends a slip off to Darnley Lodge Lane and then merges with A2 London bound
 - 1 lane slip connecting the A289/A2 (local road) to the A2 London bound slip to the A122
 - 2 lane slip from A2 London bound to the A122 as a result of 4 lanes dividing into 2 and 2, which would become the 3 lane A122
 - A2 mainline London bound which after a brief 2 lane section of about 80m becomes a 3 lane road
 - A2 mainline coastbound which is 2 lanes for about 1.4km and is just to the east joined by the A122 slip southbound to become 4 lanes
 - A122 southbound slip to the A2 coastbound, which has just been joined by a 1 lane slip from Marling Cross junction
 - 2 lane coastbound link to A289/A2 (local road) link road

- 1 lane slip linking A122 southbound with the A289/A2 link road coastbound
- 2.12. The junction itself has multiple levels but put very simply the A122 northbound from A2 slip is at the bottom at ground level, and the A122 to A2 westbound goes over the top and the A2 mainline sits in the middle. There is dry valley at this point which the A122 follows so the existing A2 and Cobham Services North (no longer present) and South are all on made land. PDB-003 Junction Layout Plans at Procedural Deadline B show the layout on one page⁶. There are a number of bridge structures, the longest of which is that on the A122 to A2 London bound slip in the order 500m long and another long viaduct on the slip from Marling Cross junction to the A2 coastbound.
- 2.13. The Marling Cross junction bridge would be widened on the east side (from about 19m to 24m width), and the roundabouts reconfigured. The roundabout on the south side gains an off slip from the A122 London bound as well as Henhurst Road (and Darnley Lodge Lane). The London bound slips on and coastbound off would remain as would the connection to Valley Drive. That roundabout currently serves the A2 westbound but would provide a connection to A122 northbound and A2 coastbound. For A289/A2 local road it is necessary to use Henhurst Road/Darnley Lodge Lane / Brewers Road and the existing Shorne slips.

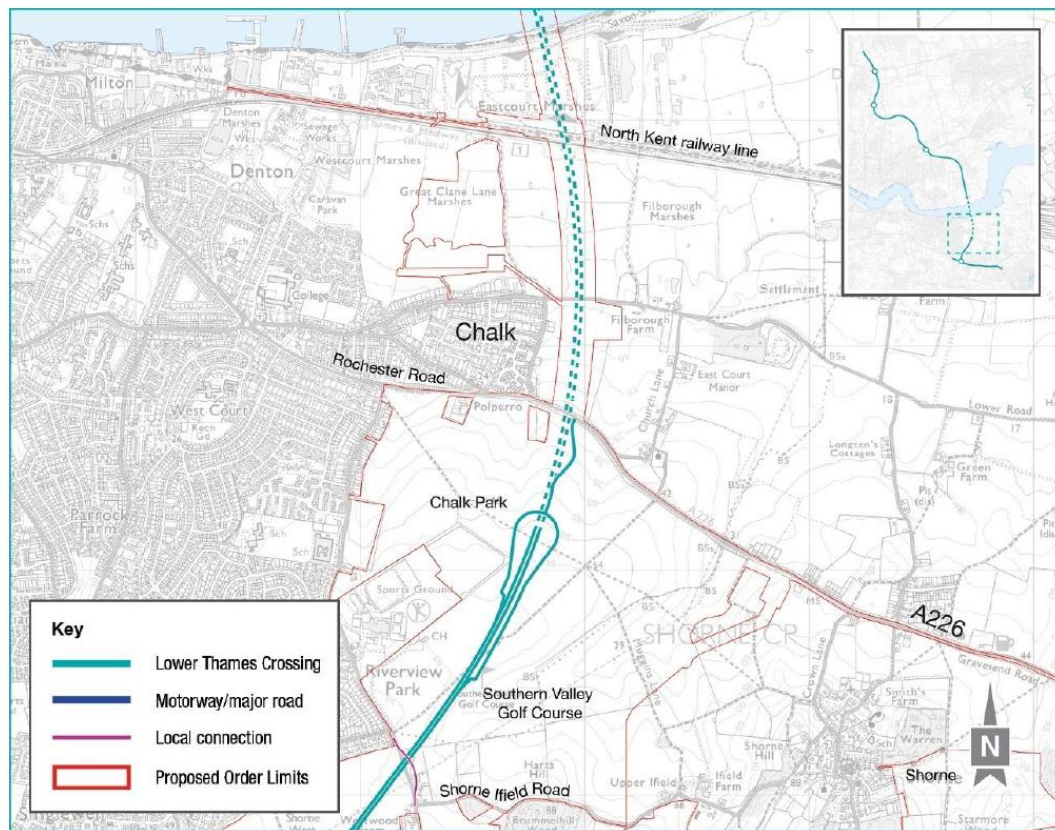


Figure 2.3 Section 3 of project (Plate 2.3 from ES Chapter 2)

- 2.14. The A122 passes beneath Thong Lane on a new bridge (Green Bridge North) some 35m to the north which would be 60m long, 86m wide and 2m above ground level. There would be a minimum clearance to the carriageway of 5.3m. The cutting would

⁶ <https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR010032/TR010032-002188-National%20Highways%20-%20Junction%20layout%20plans%20from%20the%20Applicant.pdf>

- deepen as it approaches the southern portal of the Thames tunnel at which point it is 28m deep.
- 2.15. The tunnel portal incorporates (about 500m south of the A226) a control building with green roof and access links from A226 for emergency and maintenance purposes only. The tunnel is 4.25km long and emerges in Thurrock. Internal diameter is 15m, but the actual tunnel bores will be 16.5m in diameter where bored. There is a Rendezvous point (RVP) for the Emergency Services in the event of a major incident. There is also a substation proposed on the A226.
- 2.16. Any water inside the tunnel will be pumped out at the northern portal and any water on the surface of the southern approach would be pumped to a infiltration basin. The tunnel would be lit throughout, and cross passages provided at approximately 150m intervals
- 2.17. The project also contains a number of utilities diversions, some of which are of sufficient scale to be considered NSIP's in their own right:
- 495m of diverted 400kV overhead line, including 4 new pylons and restringing 3 km
 - 1.6km and 2.7km diversions to high pressure gas pipelines
 - 8.6km new permanent underground power supply from Northfleet East substation to the tunnel portal
 - As a consequence of the above removal of 2.8km of existing 33kV overhead line
 - Movement of 5.4km medium pressure gas main from under the A2 to a utilities corridor on the north side
 - Numerous other small scale diversions and alterations to the utility connections in and around the main works
- 2.18. A number of existing drainage lagoons are extended or remodelled to deal with the additional surface run off from the much increase area of hard surfaces. The largest feature is the set of 7 running north east from Thong Lane down the dry valley feature.
- 2.19. Changes to public rights of way, new access routes and related matters area are dealt with in the relevant sections.
- 2.20. The project would be surrounded by its own immediate landscaping. For example the planting areas between the various slip roads of the A122 junction. There are however a number of other major planting sites as mitigation and compensation:
- Ancient woodland compensation planting north of Park Pale (Work E3 – 28.7ha)
 - Receptor site for protected species along north side of A2 between Thong Lane and Brewers Road – existing woodland (Work E4)
 - Receptor site south of HS1 between Brewers Road and north of Scalers Hill House – existing HS1 planting (Work E5)
 - Receptor site east of Thong, including ponds and other works – new site (existing agricultural land – Work E6 – 12.8 ha)
 - Receptor site south of Church Road and west of Henhurst Road – currently agricultural land (Work E7 – 8.3 ha)

- Nitrogen deposition compensation site west of Henhurst Road and south of land mentioned above (Work E8 – 9.1 ha)
- Ancient woodland compensation planting north of Clay Lane Wood and south of Riverview Park (Work E9)
- Ancient Woodland compensation east of Thong Lane Green Bridge and north of Shorne Ifield Road (work E10)
- Ancient Woodland compensation south of Shorne Ifield Road and adjoining Shorne Woods County Park (work E11 – 9.2 ha)
- Nitrogen deposition compensation site south west of Shorne (Work E12 – 5.8ha)
- Nitrogen deposition compensation site east of Shorne off Swillers Lane (work E13 - 27.7ha)

Construction

- 2.21. The contracts for building Lower Thames Crossing will be split into three, of which the Kent Roads and tunnelling contracts are the most relevant to Gravesham. At the time of writing those contracts have not been let, so there have been no discussions with a contractor on what they may or may wish to do in practice.
- 2.22. Some preliminary works will take place before construction commences will take place. Given the proposed two year delay there is more scope for these before main construction works start. The Council is already in pre-application discussions with National Highways on progressing the works on the land east of Thong by means of a Planning Application.
- 2.23. Major earthworks in Gravesham consist of false cutting alongside the A122 southbound to A2 coastbound slip road, up to 4m above the slip road, embankments to support the various slip roads and the cutting approaching the southern portal.

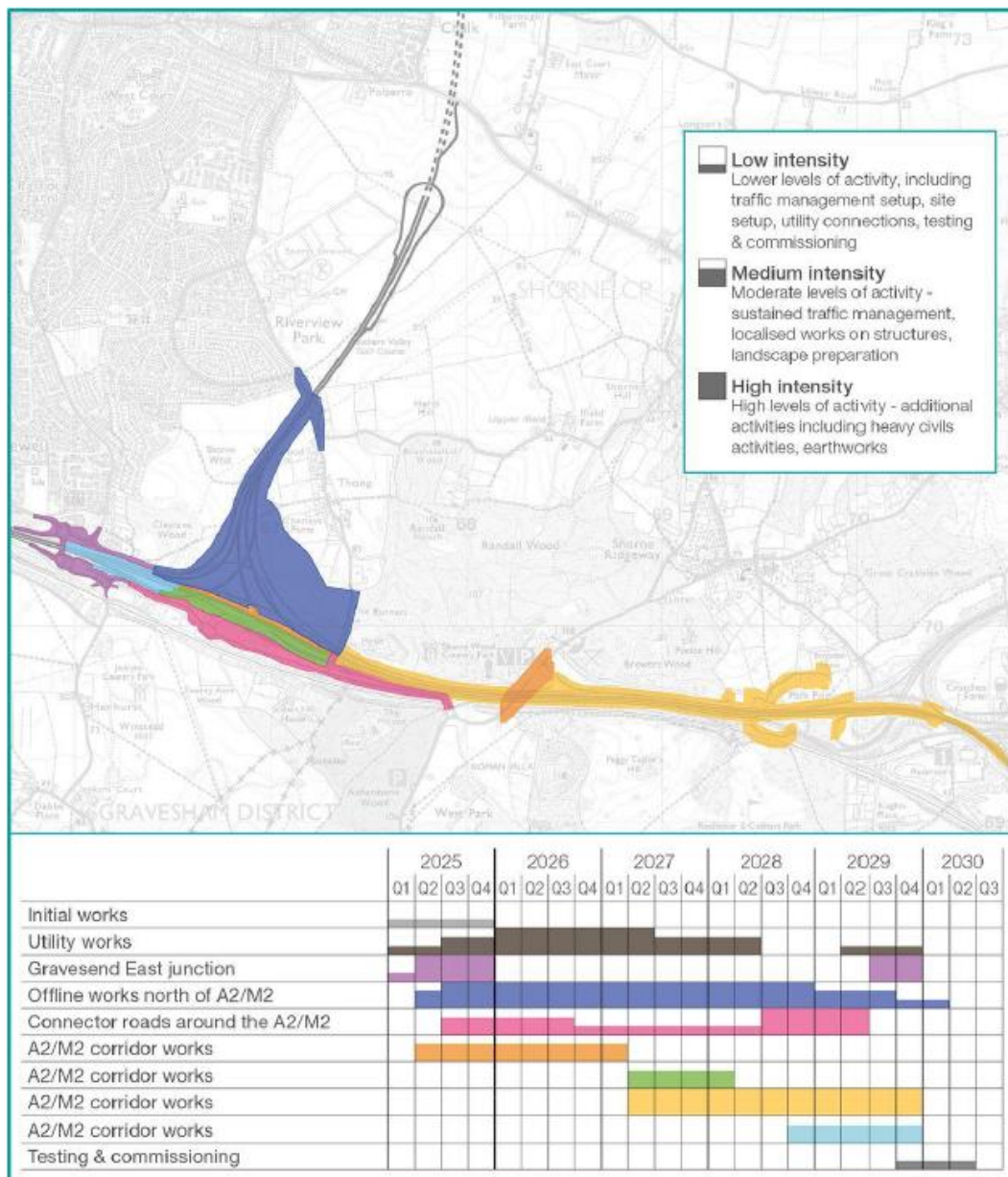


Figure 2.4 Section A construction activities from Plate 2.12

- 2.24. Figure 2.4 gives an outline of the construction timetable on the original 2025 start date, which presumably now can be slid 2 years to 2027. The process starts by fencing off the construction area and setting up the various site compounds. There are some major utility works to be complete (especially between Thong and Riverview Park) before the main road construction activity can occur.
- 2.25. During construction the A2 will require narrow lanes, no hard shoulders and 60 mph running. Overnight or weekend closures will be required to carry out certain operations, such a demolition of existing structures. Brewers Road bridge will be shut for 19 months whilst it is demolished and rebuilt.
- 2.26. At Marling Cross works needs to be done early to secure access to the Construction site A, and then again at the end of the process to connection all the new slip roads etc up. Offline works north of the A2 can proceed, except for Thong Lane, as and when but the critical factor is that the tunnel portal is available to receive the boring machine(s) when required when they arrive from the north.

- 2.27. Spoil for the false cutting will need to be imported. Spoil from the approach cutting gets moved onto what will become Chalk Park and then landscaped.

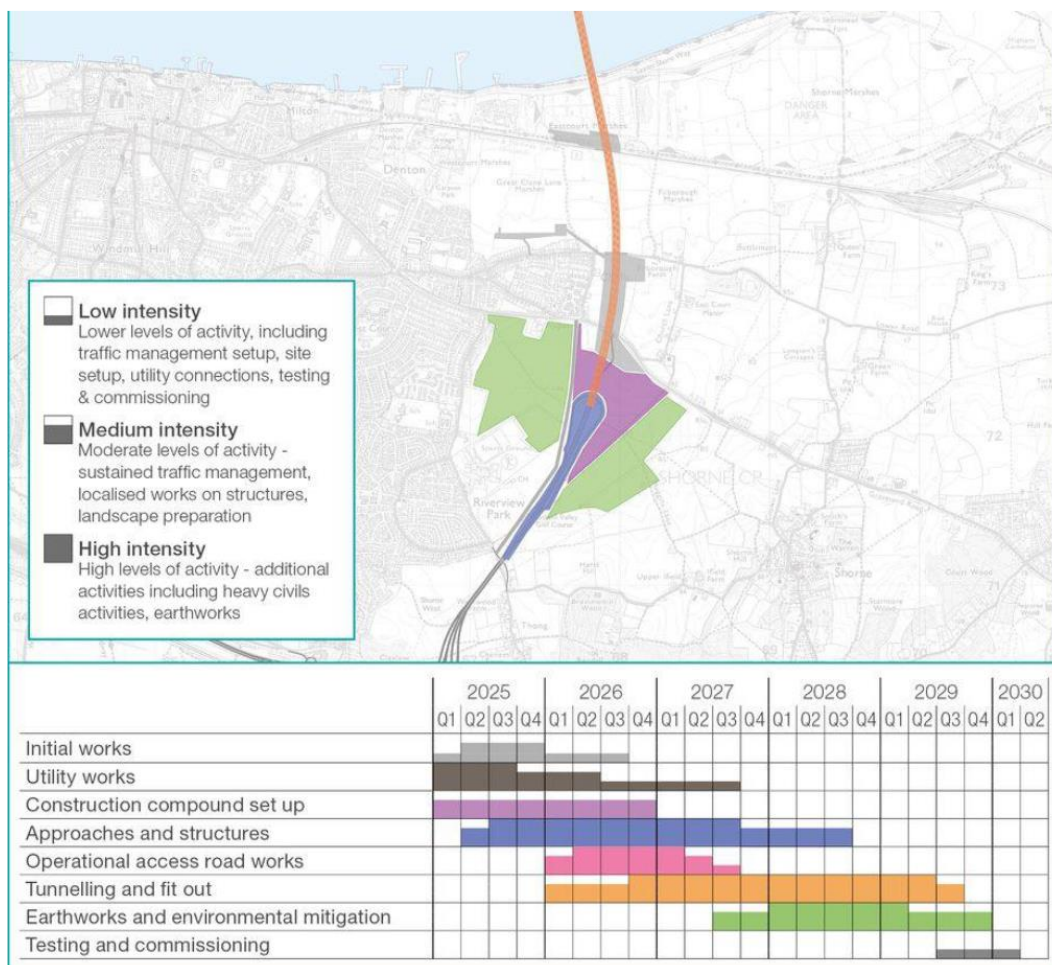


Figure 2.5 Section B construction activities extract from Plate 2.13

- 2.28. Figure 2.5 shows that the construction activities cover most of the build period, key factor being excavation of the tunnel approach. The Applicant is proposed to build a ground protection tunnel from Chalk north under the marshes to the Milton construction site (see below). This may or may not be needed depending on the design of the main boring machine(s) but is assumed for assessment purposes. Its purpose is to stabilise the unstable material under the marshes before the main boring machines arrive. The proposal is that the tunnels will be constructed using a slurry boring machine, whereby the spoil is extracted as a water-based slurry.
- 2.29. The ES Chapter 2 is written on the assumption that that there will be two boring machines coming from Thurrock, with the spoil taken out from the north portals, tunnel segments cast and brought in from the north, slurry pumped out through the northern portal and other support services provided from the north. The Minor Refinements consultation⁷ raised the possibility of using one tunnel boring machine (TBM) and effectively stated that the environmental impacts would not be significantly different, but the Council is concerned that this is at the project level without reference to what is and what is not proposed at the North and South Portal compounds i.e. no specialist accommodation for tunnelling workers at the South

⁷ <https://highwaysengland.citizenspace.com/ltc/minor-refinement-consultation-2023/>

Portal. Also the South Portal is in a more sensitive location with its proximity to the housing and the A226.

- 2.30. The Borough Councils response to the Minor Refinements Consultation is set out in Appendix 2. The most basic point is that there are significant differences in approach and timescales inherent in this proposal, for which as yet the application documents do not provide any evidence. The Council’s response sets out the Council’s understanding of the situation. Chapter 2 needs revising to cover the possibility of a single boring machine and the DCO should be amended to prevent various possible options, like spoil disposal through the southern portal in Kent, from occurring. Chapter 11 will also need to be revised, as currently there is no material being moved North of the River to South of the River. However, with the proposal for just 1TBM, material would be removed from the Southern Portal and taken through the first bored tunnel, to the North portal and the ES needs to fully reflect this.
- 2.31. Any such change should pose no issues for the applicant of the basis of the assertions that have been made. The issue, at the moment, is the lack of evidence to support the assertions made, including how that will affect the nature and timing of activities at the South Portal i.e. Plate 2.13 above would have to be revised and impacts of those understood.

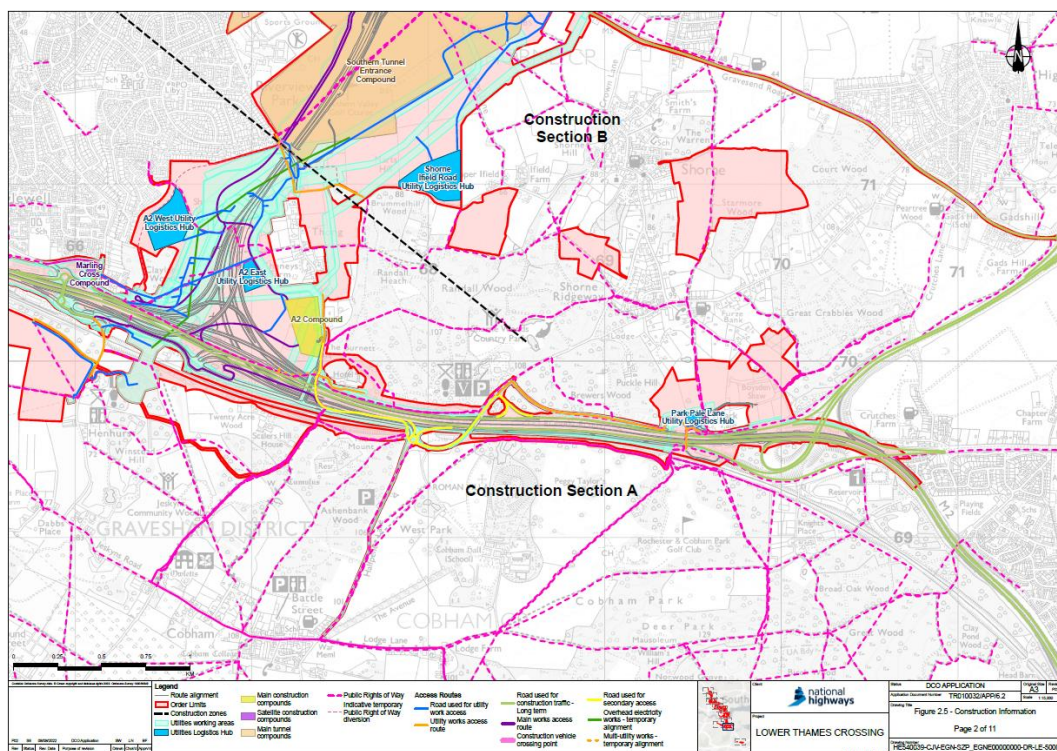


Figure 2.6 APP-169 Construction sites from 6.2 ES Figure 2.5 page 2

2.32. Main construction sites are proposed at the following locations (from APP-335 6.3 ES Statement Appendix 2.1 Construction support information – plate references below are to that document). Sites include illustrative areas for spoil storage, storage, offices/welfare, parking and ‘other facilities to enable construction’. Primary and secondary (where relevant) are also shown:

- Marling Cross (Plate 1.1) – this is a pre-existing site which has the benefit of planning permission and has been used as a base for various survey activities. It is currently mothballed and was originally a lorry park.

- Thong Lane (north of Gravelhill Wood – Plate 1.2) – this is located at the south end of Thong Lane near the A2 and is for the works along the A2. It is accessed off the A2 via what was provision for Cobham North services, which is accessible by using the Marling Cross junction. Egress would be back onto the A2 coastbound which would require, if the destination is to the west, a U turn via A289 Higham junction, A2 (local road) roundabout at Three Crutches or M2 J2. HGV traffic would be banned from Thong Lane but car or van access would be possible. There is also an internal network of haul routes linking this site to southern tunnel entrance (and therefore the A2 to A226)
- Southern tunnel entrance (Plate 1.3) is a large site along the A226 and extending south behind Cascades Leisure Centre. It includes extensive areas of spoil storage (from the cutting excavation) as well as the support facilities. Primary access (separate in and out) will be from A226 with a haul route running south to A2.
- A226 Gravesend Road (Plate 1.4) – is on the north part of land between Chalk (Castle Lane) and Church Lane adjacent to Lower Higham Road but accessed from A226. This would service the launch of the Ground Protection tunnel if required and a series of interconnected settlement ponds.
- Milton Construction site (Plate 1.5) – sites along the Thames & Medway Canal and North Kent Railway line just south the Metropolitan Police firing range, which introduces a specific risk from stray bullets. There is an earth bund and 'temporary range protection' is shown as being provided. Access is via the canal towpath (NCN1) from Norfolk Road which leads back to the east side of Gravesend Town Centre.

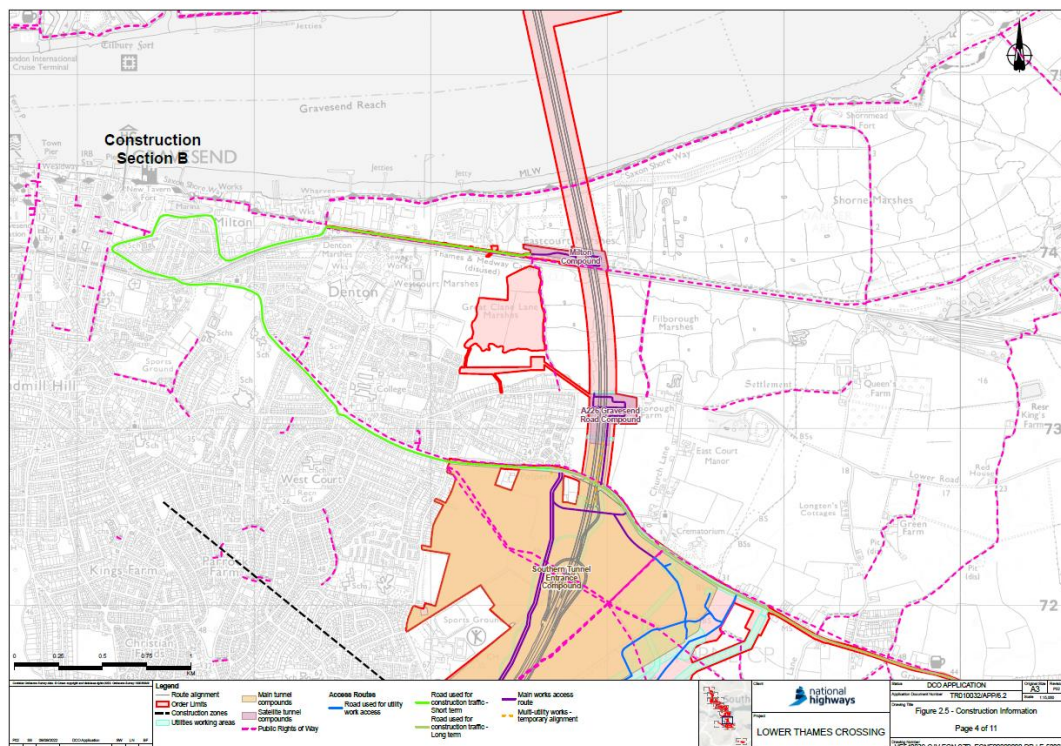


Figure 2.7 APP-169 Construction sites from 6.2 ES Figure 2.5 page 4

2.33. In addition, there are a number of Utility Logistic Hubs for construction of the various major utility diversions:

- Park Pale Lane Utility Hub – north of the junction between A2 and M2 and west of Harlex depot

- A2 East Utility Hub - near the A2 and to the west of Thong Lane and Thong village
 - A2 West Utility Hub - near Gravesend East junction west of alignment at the rear of housing in Davy's Place and Marling Way
 - Shorne Ifield Road Utility Hub – south-east of proposed South Portal and north of Shorne Ifield Road
- 2.34. The ULHs would be required for receiving, storing and distributing the plant and materials needed to complete specific utility works. It is understood that these would be subject to the same controls contained in the DCO and control documents. Some of these are located close to residential property.
- 2.35. The impacts of these sites and their activities are detailed elsewhere in this document, including the traffic impacts.

3. Traffic

Introduction

- 3.1 The traffic impacts are a major concern for local residents and businesses, and their perceptions are based on the day to day experiences they have. A key point is that congestion, particularly on the A2 in the morning peak, is a regular occurrence, and this so are the consequences.
- 3.2 The key documents (which have numerous appendices) are:
- APP-518 7.7 Combined Modelling and Appraisal Report
 - APP-528 7.8 Traffic Forecasts Non Technical summary
 - APP-529 7.9 Transport Assessment
- 3.3 Gravesham views the operation of the local and strategic road network as an important part of the potential benefits and disbenefits of the project. The Council is not the highways authority (which is Kent County Council) but has a threefold interest in the implications for the operation of the Borough's transport systems in functional terms, namely:
- Operation of the local highway network and therefore the implications for local residents and businesses
 - Operation of the wider highway network and how that may react back on Gravesham, for example diverting traffic onto A227 or A228.
 - Implications of the project for the Local Plan Review and new site allocations
- 3.4 There is a specific Local Plan interest in how the project accommodates or hinders development in the Borough and wider across North Kent. If development cannot be accommodated in Gravesham for highway (or other) reasons, it then becomes a duty to co-operate issue with other Planning Authorities. They, if faced with the same issues, may ask questions in reverse. Development elsewhere, or lack of highway improvements, may constrain development in Gravesham by soaking up capacity that would otherwise be available for local development.
- 3.5 During the construction period the effects are very much on local residents confronted with construction traffic and the disruption that will inevitably come from the construction process, especially along the A2. These will come from both actual impacts and also perceived impacts by those seeking to travel through the area or to specific locations within it. See section 4 for more information.
- 3.6 The Council is basing its comments on the information that is contained in application and the GIS copy of results from the LTAM model given to us in April 2022. Further technical work has been carried out by the Kent County Council, Medway Council and National Highways itself, the results of some of which we are aware of, but do not yet have access to the full reports to take the results into account. Hence this version of the LIR looks and the overall picture at strategic level and very local level, but raises issues rather than providing hard and fast impacts, particularly in relation to the operation of some of the junctions. The Council will update its response on this matter as and when additional information becomes available through the Examination process.
- 3.7 The macro planning question is whether the Lower Thames Crossing actual acts to restrict development across North Kent as well as what the direct impacts might be

on local traffic movement. At a level of local roads is congestion significantly worse as a result of the project. National Highways is in no different position than any developer in this regard, something the current draft NPSNN acknowledges, in needing to deal with the impacts of its scheme.

- 3.8 Inevitably in a local impact report one is looking at the local, whereas the scheme seeks to justify itself in terms of the strategic benefits. That tension is for the Examining Authority (and the Secretary of State) to arrive a view on in the round on the basis of the evidence. However there is a fundamental requirement in that if the scheme does not 'work' (however defined) on its own terms the logical conclusion is either that it needs to be redesigned in some way or that it is the wrong scheme altogether.

Existing network

- 3.9 Figure 1.1 diagrammatically shows the highway network of North Kent in diagrammatic form, while figure 3.1 below shows the network modelled in LTAM (brown) overlain on the Kent Highway network (blue - actually the highway boundary data). The detail of the local network is missing in Dartford and Medway. This shows what LTAM has included in the modelled network and what the rest of the highways consist of. From LTAM's point of view one of the consequences is that it tends focus trips on local highways that are included, whereas in practice some of these will spread through the network. The red 'xxx' mark the point where the A226 closed is closed long term due to a recent cliff collapse on the narrow chalk spine it sits on.

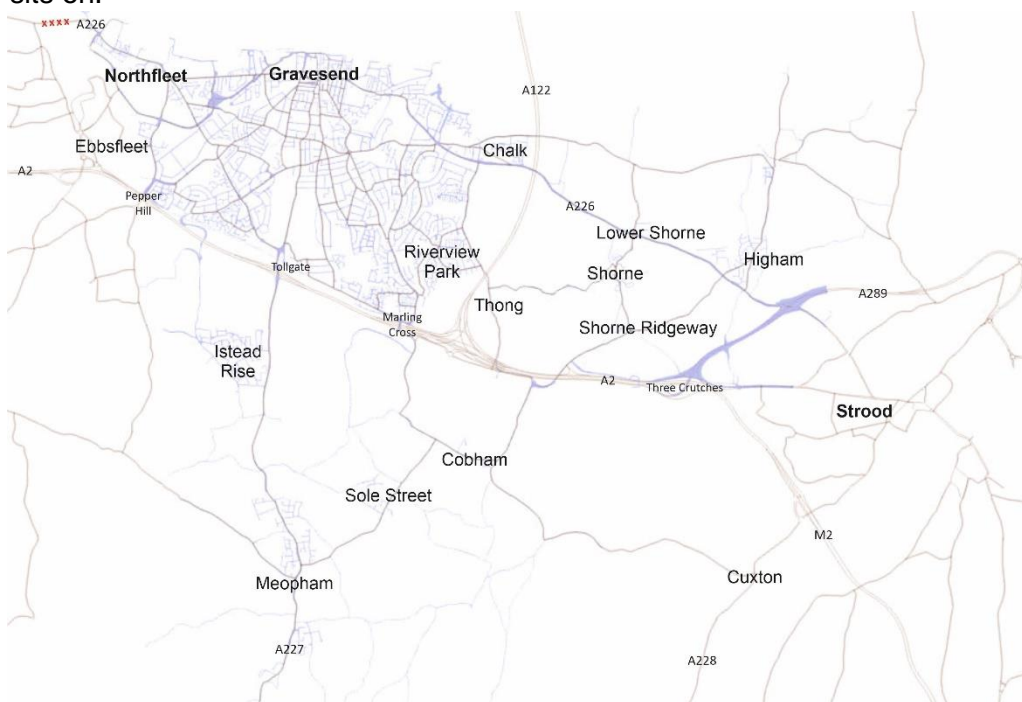


Figure 3.1 Local Road and LTAM networks

- 3.10 An obvious feature of the A2 is the number of junctions along it in relatively close proximity to one another. In the just over 15km between M25 J2 and M2 J1 there are six other junctions. This is related to the way it has evolved from a country lane rather than having been designed from scratch. The last rebuild removed some of the local access points that still existed in the mid 2000's. Given the density of development in both Dartford and Gravesend with the A226 being the riverside

route of very variable quality, the A2 is an essential part of the local road network. Removal of Marling Cross junction (never suggested but an obvious way of simplifying the A122 junction) would simply not be acceptable in traffic terms within Gravesend and would overload the Tollgate junction.

- 3.11 The strategic highway network in West Kent is in simple terms operating at or near capacity at peak times (am peak being more stressed than pm). The Dartford Crossing in particular is overloaded. This particularly true northbound due in part to the twin tunnels of different sizes northbound and the closeness of the junctions on both sides of the river. The QE2 bridge operates well southbound. The pressure of demand is well illustrated by the additional capacity created by removing the physical toll booths in 2014 was filled within 9 months.

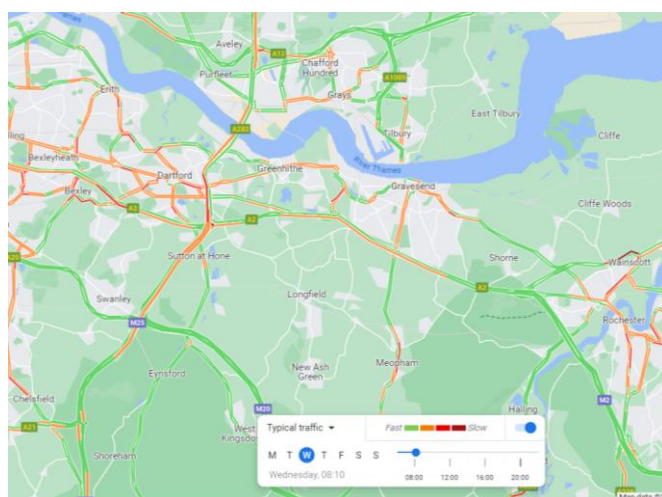


Figure 3.2 AM peak typical congestion from Google Maps

- 3.12 Figure 3.2 gives an overall impression of the position in Gravesham and surrounding areas base on the information that Google Maps traffic layer for 'typical flows'. The purpose of using this data is to paint an overall picture within which to discuss more detailed matters. Points to note are congestion at:

- M25 northbound from J2 through the tunnels
- M25 southbound from J2 to south of J3
- A2 past Gravesend London bound
- A226 west of Northfleet (NB: does not reflect closure of A226 Galley Hill Road referred to above)
- A227 at Meopham (related to the schools in that location)

- 3.13 The PM peak, figure 3.3, is less peaked than AM, so the network operates better, though there are pressure points, for example tailbacks from M2 J3 coastbound and approaching that location northbound on the A229. It also a reminder that there are not that many crossings of the Medway River (central Maidstone, Aylesford, Peter's bridge, M2, A2 (local road) at Rochester and the Medway tunnel (A289).

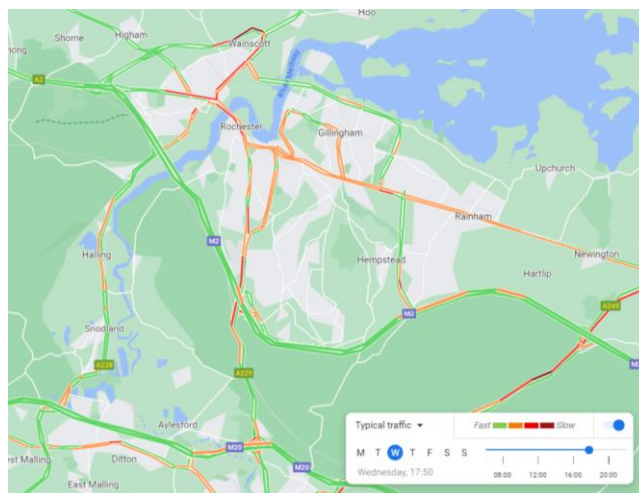


Figure 3.3 PM peak typical congestion from Google Maps

3.14 The Lower Thames Crossing project seeks to introduce a major new road link (A122) between the M2 and M25 but does not of itself alter anything else. Although mostly three lanes, the section southbound between M25 and A13 is only two lanes. Crossing the Thames it is providing 3 additional lanes in each direction, making a total of 7 lanes including the Dartford Crossing. The modelling assumes an hourly capacity of 16,000 at Dartford (7,500 northbound due to the tunnels, 8,500 southbound) and 13,980 at A122.

3.15 The objectives of the project are (from APP-140 6.1 ES Chapter 2 Project description table 2.1):

Economic

- 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

Community and environment

- To minimise adverse impacts on health and the environment

Transport

- To relieve the congested Dartford Crossing and approach roads and improve their performance by providing free-flowing north–south capacity
- To improve the resilience of the Thames crossings and the major road network
- To improve safety

3.16 This section examines these from transport point of view.

Route selection

3.17 As set out in the Gravesham (RR-0368) Relevant Representation the route selection process was as a result of work undertaken in a series of reports by consultants for Department of Transport dating back to 2009. The 2017 route selection process was based on an outline design consulted upon in 2016 that assumed a simple junction on the A2 and did not include rebuilding the A2 through the Kent Downs AoNB to the M2. There was confusion in relation to the approach

adopted to possible improvements at the Dartford Crossing. Circumstances have materially changed since then, especially in relation to matters like the carbon budget, climate change and the outworking of vehicle electrification on air quality (which is a major issue in Dartford).

- 3.18 The Council would contend that the route selection process did not consider the full environmental implications of the route, even in outline form appropriate at that stage. Given the changes that have occurred since on a whole range of matters it would be appropriate to fully reconsider the scheme.

Public transport

- 3.19 The modelling takes due account of public transport but does not address what might be done at a larger scale to change matters. This comes at two levels. The local public transport options, that may relieve the crossing(s) of some of the local trips on the highway network and at the more strategic level what might be done about freight using the Channel Tunnels or the ferries from Dover.
- 3.20 The Tilbury Ferry, from Gravesend to Tilbury, is a local facility that is well used, but has restricted hours (05:40 from Gravesend to 19:10 from Tilbury) and does not run on Sunday's. Financially it depend on subsidy from Kent and Thurrock Councils. The application mentions it as a link at the construction stage but makes no proposals to improve it. The possibility of extending the Fastrack network to Thurrock has been discussed but would depend on it have some form of priority on whatever crossing it used. The A122 (without a junction at Tilbury connected to the local network) does not provide good connectivity into Thurrock due to the A13 junction design. On the Kent side it would be necessary to use the A2 to access destinations. The service and emergency access link to the A226 is not appropriate for regular bus use.
- 3.21 The more strategic issue, given the focus on HGV traffic, is the lack of a strategy from the Department for Transport for rail freight or port traffic. Greater use of the railways to move freight and diverting HGV's bound for the Midlands or further north to east coast ports would not solve all issues but could reduce traffic pressures considerably.

Physical design

- 3.22 The starting point is the physical design. The A2/A122 junction is complex (see EV-035 Junction Layout Plans), and in practical terms stretches along the A2 from M2 J1 to the west of Marling Cross (Gravesend East). The new junction is sandwiched between the absorbs the Marling Cross (Gravesend East) junction, Shorne/Cobham junction and M2 J1 (Three Crutches). The coastbound driver after A2 Tollgate junction (A227) has 4 choices as to where they want to go, which is inherently confusing:
- Marling Cross slip for east Gravesend urban and rural area south of A2 (Cobham)
 - A122 to Thurrock (with congestion charge)
 - A289/A2(local road) plus slips at Shorne onto Brewers Road
 - M2 to J2 and the coast
- 3.23 The driver approaching the Marling Cross junction along Henhurst Road, Valley Drive or Hever Court Road has the following options:

- A2 London bound
 - A122 to Thurrock
 - A2 to M2 for J2 and the coast (and M20)
 - A289/A2 (local road) via the southside of Marling Cross junction, Darnley Lodge Lane, Brewers Road and the existing on slips
- 3.24 The Council would contend that the complexity of the junction layout raises a number of concerns over legibility to users, and therefore ease of use and the risk of accidents. The Council has not carried out any sort of safety audit but has considered the design from the drivers point of view. A consistent theme of our response to consultations has been requests to understand how this junction is laid out physically, but that translates through into ease of use.
- 3.25 A13 junction in Thurrock, which includes A1089, provides links to the east but not west except by using the A13 Orsett Cock junction and coming, as it were, backwards. M25 junction only allows movement to or from the north. Because of these constraints it will still be logical to use the Dartford crossing for some trips to Thurrock from Gravesend, for example to Lakeside.
- 3.26 The passive provision for a junction at Tilbury coupled with building the link road were provided would address that issue to some extent, but does not form part of the project, so cannot be assumed.
- 3.27 The logical high level consequences of this design for Kent, and therefore propositions to be tested, are:
- Relief for the Dartford Crossing in that north to south traffic can use A122 if it originates or has a destination further east in Kent or Essex
 - For most traffic going 'round' London on the M25 a diversion via the A122 does not provide an alternative route as it is double the length
 - As a side effect relief to the A2 west of the A122 due to the flows that have been diverted
 - Increased traffic on M2 J1-J3
 - Increased traffic on M2/A2 to Dover for traffic bound for Eastern docks
 - Increased traffic on A229 to reach the M2 (J3) from M20(J6) to/from Channel tunnel and east Kent
 - Relief to the M20 J6 – J1 and M25 3 – J1a from traffic seeking to reach Dartford Crossing
 - Re-orientation of trips from Gravesend/Northfleet area to reach Thurrock and beyond depending on the precise start and end points and therefore potential implications on the local road network
- 3.28 It may be noted that now from the M20 J6 the A229/M2/A2/A282 route is shorter than M20/M25/A282 by just over 5km. J3 at Swanley is free flow for this movement as is J2 for A2 onto the M25 (technically A282 at the crossing), and the gradient up Wrotham Hill (M20) is easier than up Blue Bell Hill (A229). Given this the HGV's in particular generally remain on the M20. The M2/A2 route involves turning off at M20 J6 to go up Blue Bell Hill and then dealing with the twin roundabouts at M2 J2, which is more complicated.

- 3.29 Medway Council has already highlighted to the Examination (EV-030 ISH1 transcript 22 June and in its Relevant Representation (RR-0682) the issues that exist at M2 J1 (Three Crutches) now, as a result of existing planning permissions, especially for employment use that are not included in APP-523 7.7 Combined Modelling and Appraisal Report Appendix C the Annex A Uncertainty log . The National Highways comments to Medway Council on planning applications noted concerns about both congestion and safety at M2 junction 1, specifically the northbound off-slip and the southbound on-slip links to the A2. They consider that the junction has limited spare capacity. The limit is 60 extra movements during either the morning or evening peak travel periods has been imposed.
- 3.30 The capacity of the M2 between J1-J3, the operational capability of J3 and J6 M20 are obvious matters of concern, because they pose potential constraints on the project. Queuing is to be found in the AM peak on the A229 connection to the M2, A229 connection to the M20 and the M2 coastbound offslip. In the evening the latter is an issue and the A229 connection to M2 queues back onto the A229. The junction, with its traffic signal control, has limited capacity between stop lines, so easily blocks up.
- 3.31 It is noted that APP-525 7.7 Combined Modelling and Appraisal Report – Appendix D – Economic Appraisal Package – Distributional Impact Appraisal Report at paragraph 7.9.6 says that five links are forecast to experience a change of over 50 casualties over a five-year period and a greater than 5% change in the number of accidents compared to that forecast in the Without Project scenario in the 2030 opening year. Three of these are reductions on the M20, the increases however are (the use of south and northbound is very confusing as the M2 overall runs east – west):
- a. M2 between junction 2 and junction 3 (southbound) which is forecast to have an increase in casualties of 17%
 - b. M2 between junction 3 and junction 2 (northbound) which is forecast to have an increase in casualties of 25%
- 3.32 Kent CC acknowledges these issues and has as a result submitted a Large Local Major Strategic Outline Business Case to the Department for Transport for a proposed scheme to address these issues. At the time of writing they had not received a response to this case, so this project falls to be considered without it. Gravesham Council's view has been that such a scheme should be Associated Development since it is crucial to projects operation. As an already failing junction (and the limitations at M20 J6) it is not in a position to take significant additional traffic, with the logical consequence of diverting flows onto A228 or A227 as drivers seek alternative routes.

Congestion Impacts

- 3.33 As has already been highlighted significant parts of the strategic and local networks are already running at or near capacity. The day to day impact of this is 'rat running' whereby when an incident of some sort occurs resulting to additional congestion those in the 'know' divert off the mains roads and seek alternative routes, generally involving small local roads in the rural or urban areas.
- 3.34 Some examples, derived from local knowledge:
- Congestion on A2 at Cobham causes a diversion onto A289 and then A226 through Higham and finding a way through urban Gravesend

- Congestion at M2 J1 if on the A289 southbound causes a diversion through Higham and as above
 - Congestion on M2 causes leaving it at J2 A228 and use a route via Cuxton and Cobham, or coming off at the Cobham junction and going via Cobham, Sole Street, Meopham and Longfield to avoid the A2 as far as possible.
 - From M20 east of J6 alternative options to Blue Bell Hill include use Peter's Bridge to A228, A228 from J4 or A227 from J2a (M26)
 - Congestion on A2 past Gravesend causes use of either a southern route via Cobham, Sole Street, Meopham, Longfield or seeking a way through the Gravesend/Northfleet urban area.
- 3.35 As Cobham Parish Council will testify something happens with great regularity and explains some of the differences between the flows in Lower Thames Area Model and those observed from local monitoring. The modelling assumes an average situation with everything working, which is frequently not the case in practice.
- 3.36 One of the claims made is that the A122 will produce greater resilience across the strategic network. APP-518 7.7 Combined Modelling and Appraisal Report at plates 3.19 & 3.20 contains information on congestion in Dartford and Thurrock as a result of one event at the Dartford Crossing. In one sense this is self-evident that two crossings must be better than one. However the applicant has provided no hard evidence that this is the case, in a similar form to that mentioned above. If 4 lanes are lost at Dartford, for example the QE2 bridge is closed for high winds, 7 lanes of traffic (at peak) will not fit into 3 lanes on the A122. If northbound traffic on A282 blocks back to J2 access to the A2 coastbound can become blocked, and therefore the A122 would be inaccessible other than by using smaller roads. This applies equally to a blockage in the new tunnel.

Business case

- 3.37 The business case for the lower Thames Crossing produces a headline BCR of 1.22 which is very low for a project of this scale. Numerous factors go into this calculation, so the interaction between them is very complex. The Council has already highlighted at Issue Specific Hearing 1 day 2 EV-025 that chapter 11 of APP-526 sets out the sensitivity tests that have been conducted, and essentially by varying some of the input factors, including the levels of traffic growth. Thus there is a high growth and a low growth traffic assumptions, and also varying some of the cost factors.
- 3.38 Interested parties have voiced a number of concerns over the business case appraisal, including:
- The business case is not up to date
 - Use of NTEM 7.2 whereas NTEM 8.0 came into operation in December 2022
 - The shift from an initial BCR of 0.48 to 1.22 (table 7.17 of APP-518) depends on critical assumptions which may be invalidated by changing circumstances and nebulous 'agglomeration benefits'
- 3.39 The business case makes it clear that Gravesham residents are major beneficiaries of from the project, principally due to the access to jobs and other facilities that the crossing will allow in Thurrock. Currently Gravesham has low levels of unemployment, a relatively cheap housing market for its distance from London and

has good links to London (including HS1 is 24 minutes) with its multiple job opportunities and higher wages. A larger range of job opportunities may indeed become available, but how far these will be taken up is not as simple function of accessibility. These 'benefits' of course have to be set against the negative implications in other subject areas. The Council is not convinced that these claimed benefits are substantive.

- 3.40 What cannot be seen is any sensitivity testing carried out of the value of time input away from the central case assumption, and WebTAG unit 1.3, which is on user and provider impacts, recommends sensitivity testing on the value of time, at paragraphs 4.2.19, 4.2.20, 4.3.6, and 4.3.7, and the sensitivities that it recommends are for work time. A sensitivity of plus or minus 25% to the value that you've chosen to use, and for non-work time, depending on whether it's a commuting journey or a non-commuting journey, the range it recommends is either plus or minus 25% or plus or minus 60%. Those are obviously fairly large, sensitivities, if they were to be included.
- 3.41 What WebTAG also advises is that that sensitivity testing should be carried out and should be reported on separately from the main assessment. At the moment the Council can't see where that sensitivity testing on value of time has been carried out or reported. Much of the benefit-to-cost ratio (BCR) is informed by the time savings, so the value of time input will be an important component in that calculation. Given that the adjusted BCR gives a value for money ratio which is categorised as 'low' in the hierarchy the Council would expect to see sensitivity testing plus or minus those kind of magnitudes of that particular input. It is of course only one input to a whole process, but it could have a marked effect on the overall result. Business travel has logically reduced post COVID as many meetings are now conducted online.

Transport modelling

- 3.42 Throughout the consultation process and in our Relevant Representation (RR-0368) we have raised issues concerning the assumptions used in the modelling process. We accept that LTAM is what it is, a high level model of the strategic network with all the constraints and benefits that go with that. The obvious limitations from the local perspective are that the model:
- does not include the full local road network
 - is not validated fully on the local road network
 - Is focussed on the links between nodes rather than the operation of those nodes (which micro simulation models would address)
 - Is 2016 based which whilst reasonable initially is now significantly out of date, both through the passage of time and the impact of changing working patterns post COVID
 - The analysis years with the two year delay are now incorrect
- 3.43 The Council is currently spending a significant sum of money, over £200k on traffic modelling exercise in relation to the Local Plan using the Kent Area Model at the behest of National Highways, due to their concerns regarding the functioning of the Strategic Road Network and A2 junctions within Gravesham. At National Highway's request work this has included additional expenditure on data collection to populate that model, including data for the functioning of the Tollgate junction, which could

now of be used to improve the accuracy of LTAM. Whilst the results of this work are not yet agreed and public, the Council's desire is for the outputs to inform our input to the Examination when they are. However, from the outset of any modelling undertaken to support the emerging Local Plan, National Highway has to date insisted that the modelling is only utilised to support the emerging Local Plan and not used to undermine LTAM. This is despite asking for the modelling to be done, with and without Lower Thames Crossing. This would appear to be a poor use of public funds, if National Highways have confidence in their own modelling which should demonstrate impacts of future growth within Gravesham and beyond on the SRN. Alternatively, if National Highways are of the view that such work is needed to correlate to their own outputs, then any deviations between the modelling need to be considered and addressed accordingly.

- 3.44 In terms of the inputs the Council is concerned that the development inputs to the model:
- Do not include sufficient quantities of development through the reliance on adopted as opposed to emerging Local Plans plus planning permissions back in September 2021
 - Are constrained by NTEM which does not reflect the requirements of housing development currently required by the standard methodology introduced by 2018 NPPF (and by extension the jobs needed to support that population)
- 3.45 For the assessment of impact it is necessary to take account of the level of change between the do nothing and do something options, that is changes brought about by the project. Some junctions or lengths of road may already be experiencing significant congestion, and future growth already in the system may make this worse. An increase on traffic on a main road may not be that significant (though it is usually the junctions that are the pinch points), but through the village (e.g. Thong or Cobham) may be. There are also the implications for bus journey times and the safety of cyclists and pedestrians (for the latter especially where there are no footways).
- 3.46 As a result of the Freedom of information request and information available on the current standard method, the Council has been able to compare the output from NTEM 7.2 (used in the application) and NTEM 8.0 against the standard method housing numbers (labelled NPPF for brevity). This takes account of the latest changes in inputs to the standard method, as is based on calculations by Turley ⁸.

⁸ <https://lpdf.co.uk/wx-uploads/files/newsletters/Revised%20Standard%20Method%20Analysis%20-%20Turley%20-%20Mar2023.pdf>

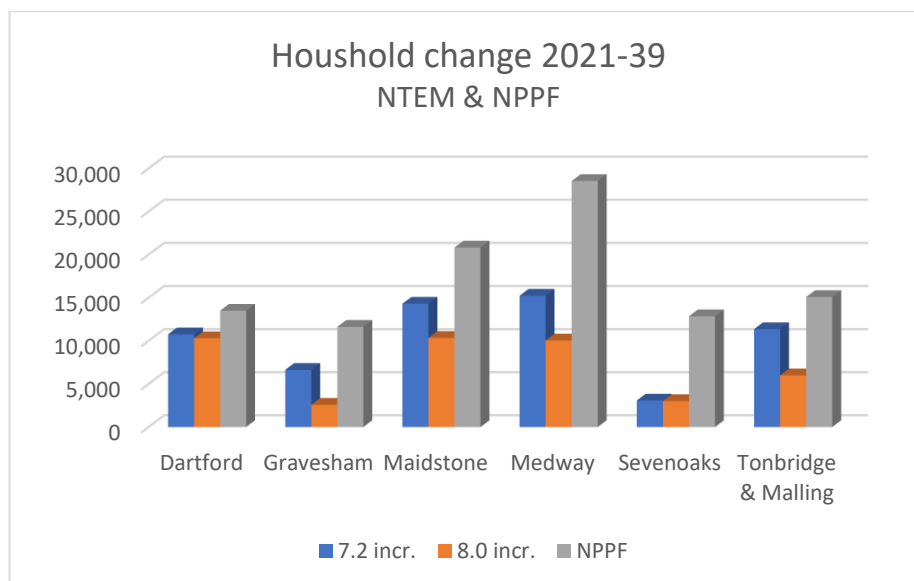


Figure 3.4 NTEM and the Standard method

- 3.47 These numbers act as an overall control on the model results, with the new and project development proving the spatial distribution and therefore loading on specific parts of the network. For the six districts listed the difference between the Standard Method total figures increment between 2021 and 2039 for NTEM 7.2 and 8 is 58% and 40% respectively. The total households from the 2021 census for the above districts is 372,700 to put a scale on the change compared with the base.
- 3.48 This introduces a constraint which fundamentally distorts into the model which means whilst there is a discussion to be had about what might actually happen in terms of actual building (and jobs growth also needs to be considered) the levels of development being asked for by Government are significantly higher than the NTEM suggests.
- 3.49 In this regard a key point is that one of the main functions of the traffic forecasts is to feed into the Environmental Assessment which requires consideration of a reasonable worst case. This is a different test from the requirements of WebTAG, Green Book etc. which seek to provide comparative basis for assessing schemes and their business cases. In this regard we are talking about an 'and' not an 'or', that is a sensitivity test to see how robust the projections might be and what issues may arise is a reasonable worst case. This feed directly though into traffic air quality and noise assessments but is also of relevance for biodiversity. The problem is that despite being asked the applicant has not provided this information to allow a robust assessment to be made. Any analysis of LTAM results therefore treats them as a minimum.
- 3.50 AM peak in Lower Thames Area Model is 07:00-08:00 as that is the when the peak flow occurs on the strategic network. On the local road network it is 08:00-09:00 due to the shorter journey's involved, school run etc. Appendix 3 contains some indicative information on the differences locally from some recent survey information between the two, as well as a more detailed look at some of the local roads.
- 3.51 It is full appreciated that the applicant has done, analysis in accordance with WebTAG and DMRB. Those processes contain all sort of the assumptions to be chosen from as well as approached to ensure comparability across project. the reasons for doing such analysis are fully understood. However the key issue before

the Examination is not what the impacts are in some artificial world – but what are they in terms of the environmental impact on the ground. That has to be based on a view of the real world.

- 3.52 The PINS s.51 advice note from 18 March 2021 says, “DMRB guidance does not constitute policy or law. Developers/ applicants should be able to answer questions about the particular anticipated effects of the Proposed Development, and the methodologies of assessment undertaken in the ES – and not solely rely on referring back to DMRB guidance”. It goes on to say, “the assessment should with professional judgement fit the Proposed Development – the relevant EIA Regulations are what should be applied to the content of an ES”. This is a point the Borough Council has consistently made in the past and needs to be reflected in the application material.
- 3.53 The scheme makes passive provision for an additional junction at the northern portal (Tilbury Access Road for port development), supported by Thurrock Council and Port of Tilbury. Thurrock Council have also suggested a new junction at South Ockendon to support new development). These, and their associated developments, also have implications for the traffic flows on the LTC road and start changing its character from a strategic road link to a more local road. They have not been modelled so it is not possible to say from the current material what the implications from these proposals might be.
- 3.54 It is also essential that there is a proper monitoring of the performance of the highway network (strategic and local) when the scheme is complete to see what actual issues arise, and have a set of possible interventions. In an area like this it will be a complex position because of the interactions between existing issues, the results of new development, other changes to the highway network and the project.
- 3.55 Equally from the ExA point of view it has to be place in a wider picture to assess whether, in layman’s language, the gain justifies the pain. It is important to note that there will be gains locally.
- 3.56 These comments have therefore sought to examine:
- The strategic position (including whether the scheme objectives are met)
 - Current local traffic position
 - Projections and modelling that has been undertaken
 - The implication for Gravesham and neighbouring areas

Construction implications

- 3.57 Monitoring approach of seeing whether projections are met and if not, what is the toolkit from which measures could be drawn. There are a number of A2 junctions where the impacts may require action. This will arise from a combination of LTC impacts, natural traffic growth and development proposals. In an individual case there is going to be a need to sort out who is responsible for what – not an easy task. If a developer is expected to pay the fact that they happen to be called National Highways does not release them from their obligations to deal with impact.

Traffic

- 3.58 This draws on the results from the LTAM modelling (with caveats that have expressed about this), previous technical work and local knowledge. Appendix 3 contains some detailed analysis of local roads. Additional work is ongoing on the

actual operation of the proposed scheme and its knock of effects on certain junctions. So further comment on these will be made when the information becomes available

- 3.59 Previous work commissioned by KCC on a previous version of LTAM has identified a series of local junctions that may need improvement, on which KCC is doing additional technical work to establish precisely what works should be done. It is important to emphasise that this is about the impact of the LTC on the local roads – not about issues that already exist on the network. Subject to the results of this work, it is the view of the Borough Council that National Highways should be making provision for funding any works that are required because of this projects impact.
- 3.60 This essentially is about the local road element of the junction not the mainline flow. Those of concern are the main junctions feeding the urban area at Pepper Hill, Tollgate and Marling Cross. Congestion at these locations then reacts back on the rest of the local network ,as well as possibly raising safety issues on the strategic if slip road are blocking back onto the main carriageway.

Dartford Crossing

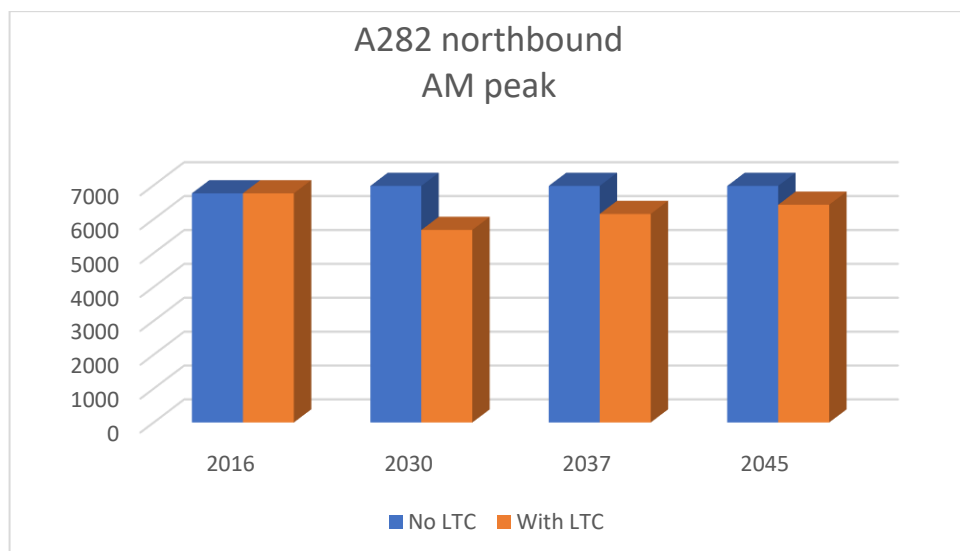


Figure 3.5: Dartford Crossing flows (pcu)

- 3.61 The consultation material includes various tables and diagrams on traffic flow with and without the project. The baseline is an already highly congested highway network. Reference has been made to the benefits of LTC for the Dartford Crossing. Figure 3.5, however shows that whilst there is a short term benefit, in the longer term congestion returns to its current levels or put another way the crossing remains capacity limited. Given past experience already referred to the above it is likely to return towards the levels of congestion seen currently due to suppressed demand.
- 3.62 The new crossing does of course provide more capacity across the river, which is illustrated in the graphs below which show the change in total pcu's for the three time periods modelled (AM peak, interpeak and PM peak) together with the percentage change involved.

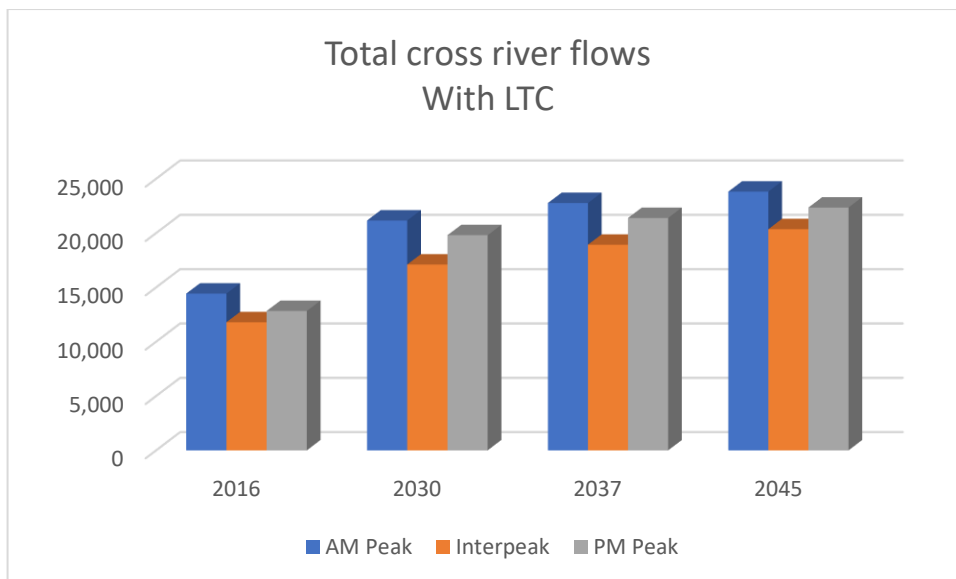


Figure 3.6 Cross river flows

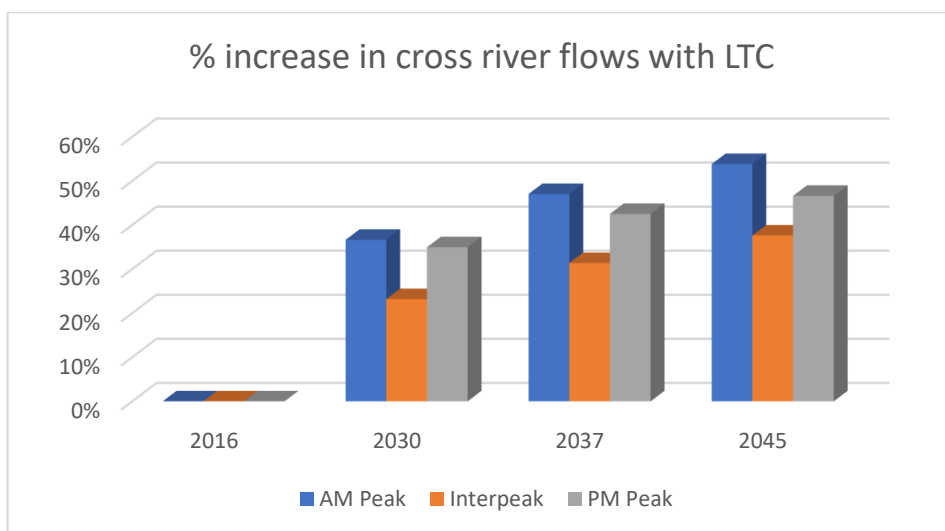


Figure 3.7: Increase cross river flows (% pcu)

3.63 There is a gain in cross river flows as a result of the LTC since overall capacity is increased from 4 lanes in each direction to 7. Traffic increase overall is in the order of 50% by 2045 (see figure 5.2) from the 2016 base. This extra traffic has to be accommodated somehow on the existing network (the modelling makes due allowance for known improvements such as M2 J5 now under construction).

LTAM Model results

- 3.64 The plans in APP-528 7.8Traffic Forecasts Non Technical summary (and in much more detail in APP-529 and appendices) show increased flows
- A229 Bluebell Hill and M2 J3
 - M2 J3 - J1 (noting Medway Councils comment on J1 today and the conditions imposed by National Highways)
 - A289
 - A228

3.65 Conversely there are reductions along the A2 west of the A122. London bound this makes sense, however coastbound, which larger drop, is not so obvious since the existing traffic logically would continue to use the A2 to reach destinations further east and would not be interested in using the A122.

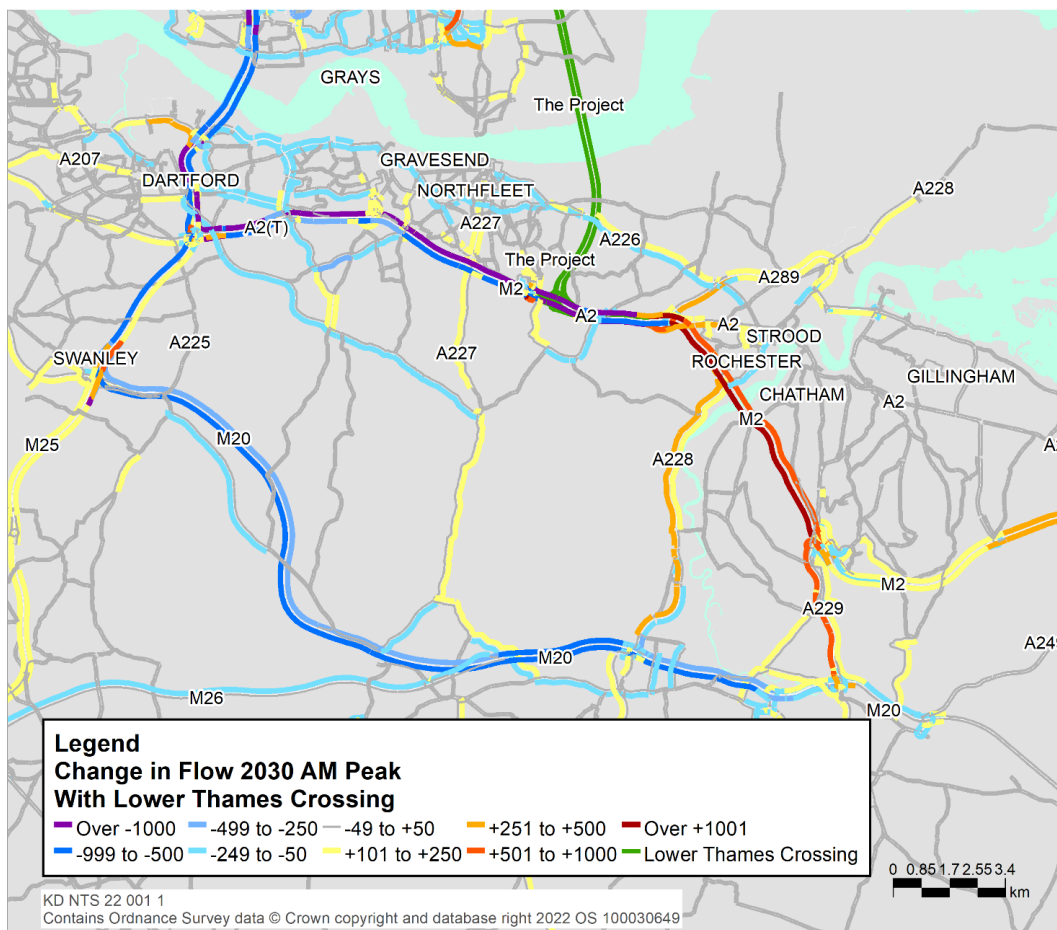


Figure 3.8 LTAM AM peak flows 2030

3.66 The pattern is clear from figure 3.8 that there is a shift in flow, as would be logically expected, from the M20 corridor to the M2 corridor, with the consequential pressure on the connecting roads and junctions. Given the limitations of the A229 there is a spreading of flow on to the A228, and potentially the A227. The A228 has some dual carriageway south of Snodland, and passive provision for dualling up to Halling. The section through Cuxton however would be challenging to widen due to the constraints of North Downs scarp face, quarrying, built development, the river and the need to ascend to M2 height. Figure 3.9 shows the position in 2045 with additional traffic growth.

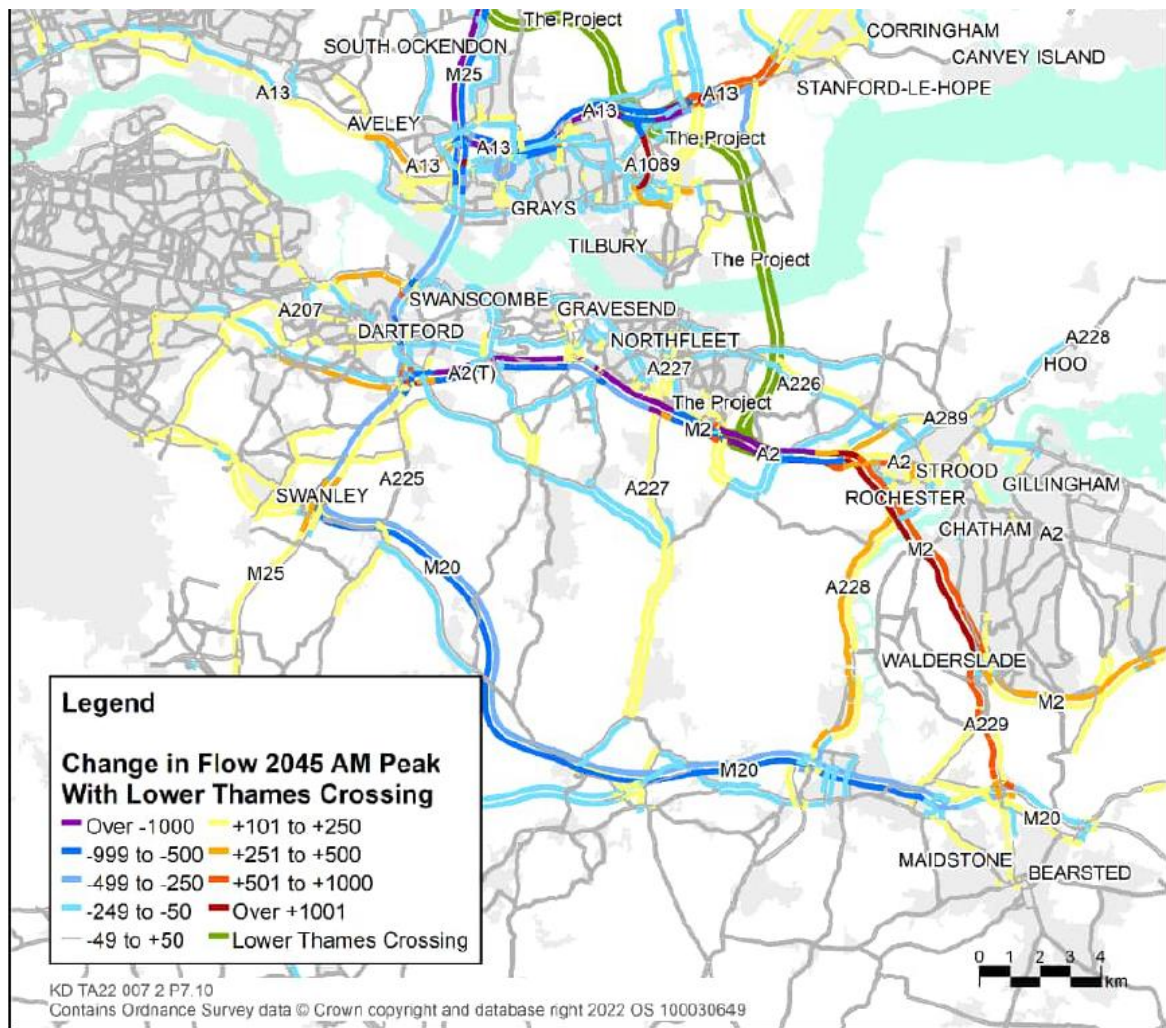


Figure 3.9 LTAM AM peak flows 2045

- 3.67 On more local roads the modelling suggests additional traffic on:
- Henhurst Road
 - Thong Lane
 - Warren Road/Cobhambury Road
 - A227 Wrotham Road
- 3.68 Appendix 3 contains more detailed information on the local roads. It should be emphasised that this is based on LTAM data, with all the caveats that apply to that and also does not take account of the detail of how the junctions may function. If these become congested then all sorts of new 'rat runs' may open up. Further no account is taken in this of other benefits or impacts from the scheme. A227 will be subject to further analysis when there is more information on the Tollgate junction. This has been the subject of detailed discussions with National Highways in relation to the 2014 Local Plan Core Strategy and the specific planning applications.
- 3.69 In broad terms the major change is the loss of the Cobham/Shorne on/off slips direct to the A2. The best route to Marling Cross junction then becomes the key determinant. As a result:
- A lot of links benefit compared with the non LTC world (though whether that is acceptable is another matter).

- Henhurst Road shows a significant increase in traffic and, at a lesser scale dose Warren Road/Cobhambury Road.
- Henhurst Road also shows an increase in HGV movements which may indicate any coming up the Wrotham Road (A227) may use this as a route to avoid Tollgate, for which it is not suitable due to width.

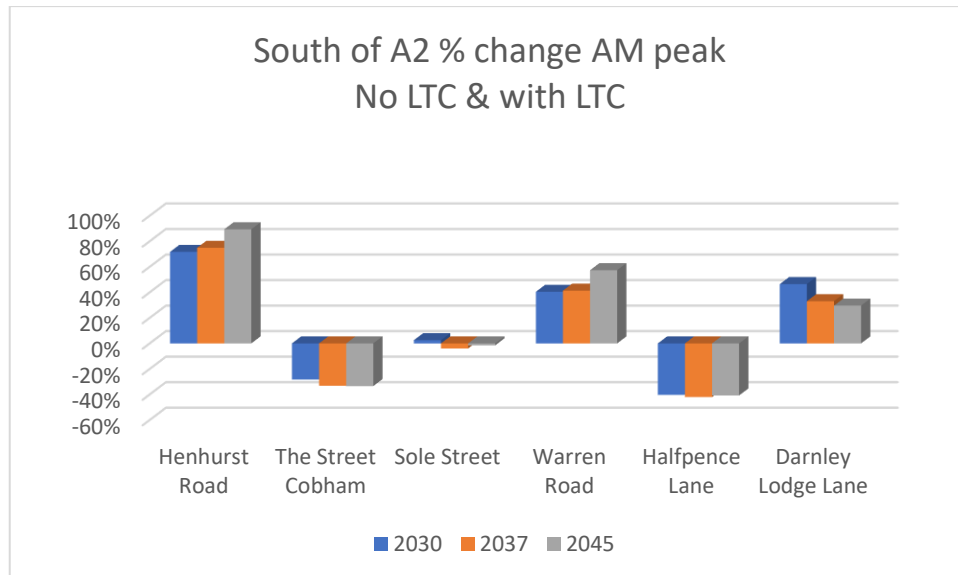


Figure 3.10 Change in flows from LTC south of A2

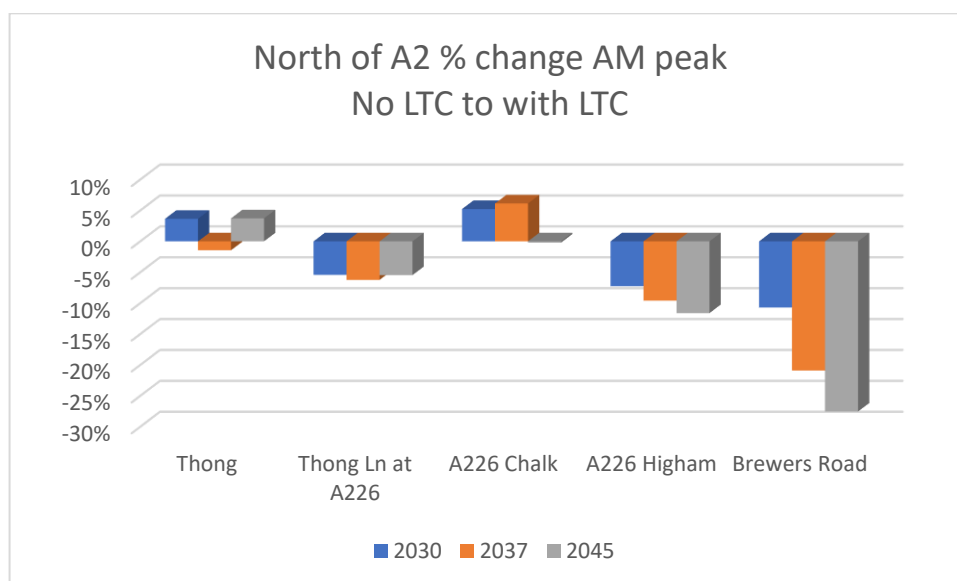


Figure 3.8 3.10 Change in flows from LTC north of A2

3.70 The comparison it with the no LTC world, and the graphs in Appendix 3 show the numbers actually involved. A small change on a small number can produce a large % change, so care is needed in interpreting the results. It is also important to state that this does not been that current conditions on these sections of highway are acceptable.

Emergency Services

3.71 The Emergency Services, in both construction and operation phases, are concerned about access both to incidents (especially the lack of a hard shoulder on

the A122) and to implications to the response times across the wider highway network.

- 3.72 The Emergency Services also have concerns over the evacuation of the drivers and passengers from the tunnels in the event of an emergency event that requires this, and how they might be safely handled. Rendez-vous (RVP) points are provided both north and south of the river for emergency use, but from the planning point of view it is not clear what these actually consist of and how they will sit in their Green Belt location. Most of the time they will not be in use but must be available at very short notice should a major incident occur.
- 3.73 Fuller details on this will be found in the Emergency Services submission.

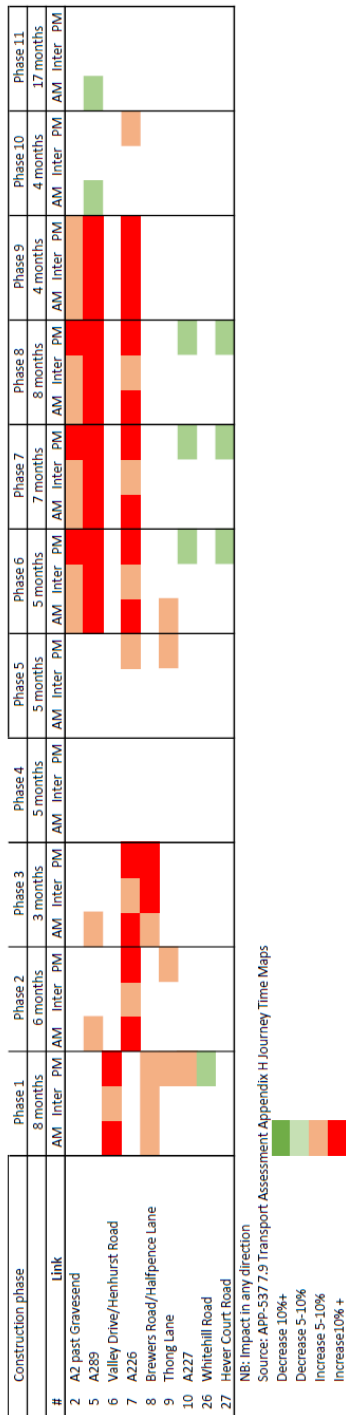
Summary

- 3.74 Paragraph 3.15 sets out the scheme objectives on which the following comments can be made on the basis of the material in this section and elsewhere:
- 3.75 Economic growth – the upside is the improvement of links across the Thames, but the downside is that effectively congestion points are created or enhanced elsewhere so it is difficult to see in reality (as opposed to an econometric analysis) what the gains will actually be
- 3.76 Affordability – costs of the project have risen significantly, as with all infrastructure projects, and in current economic circumstances this is a very expensive project without clear cut benefits
- 3.77 Value for money – the BCR in the application as submitted is weak, and considerable doubt has been cast by multiple sources on the reliability of the numbers
- 3.78 Minimise impacts – any such scheme must have impacts they however considerable on the people and landscape of Gravesham.
- 3.79 Relieve the Dartford crossing – only short term relief is provided and the net result is increase in traffic which does not sit easily with the national climate change objectives
- 3.80 Resilience – an additional crossing logically increases resilience but the applicant has failed to provide substantive evidence that this would be the case given the stresses and strains on the network that will remain
- 3.81 Safety – the new road will be to best modern standards (though with doubts over some elements of the design) but as it creates a major new road with complex junctions

4. Construction traffic

- 4.1. The primary source documents for this section are:
- [APP-140](#) 6.2 ES Chapter 2 Project description
 - [APP-534](#) 7.9 Transport Assessment Appendix E Construction traffic supporting information
 - [APP-536](#) 7.9 Transport Assessment Appendix G Construction Percentage change in flows by Phase
 - [APP-537](#) 7.9 Transport Assessment Appendix H Construction Journey times
- 4.2. The construction process will be spread over some 5 1/2 years in total, though the impacts on the highways network will be much less in the fit out stage.
- 4.3. The precise form of those impacts will vary depending on the actual phasing of operations adopted by the contractors, when appointed. The submitted material therefore is an educated guess, but there is no reason to expect that it is not representative.
- 4.4. From the discussion in section 2 the sources of impact are likely to be:
- Construction work along the A2 from Marling Cross junction to M2 J1
 - Access to the main Kent roads construction site off the A2 via Marling Cross
 - Crossing of Thong Lane by a haul road
 - Creation and use of two access points (in and out) on the A226 at Chalk accessed via A289 and Higham
 - Access to the Chalk works site
 - Access to the Milton works site
- 4.5. Construction traffic can be divided into two broad categories of HGV's, and car and vans. Various restrictions will be placed on HGV access, along Thong Lane for example, but these do not apply to cars and vans. A significant component will be the work force accessing the works sites.
- 4.6. As already indicated, this is a dynamic process, and although for assessment purposes the process has been divided up into 11 periods. These range from 17 months (fit out) to 3 months.
- 4.7. The core area is the box formed by Valley Drive, A226, A289, and A2, though there are implications further afield. This is also a context where perceptions count as some potential trips may be discouraged by the impression that the area is severely impacted even if it not at some times. This may affect leisure trips to places like Cobham, Shorne Woods Country Park, Jeskyns and Cascades Leisure Centre. In a slightly different category are visits to the Crematorium on the A226. Residents in the core area will have a much clearer idea of what is or is not possible at any given time.
- 4.8. From the modelling that has been carried out by the applicant it is possible to digest some information to give a concept of the scale involved and the roads that may be affected.
- 4.9. From the point of view of the core area affected directly the impact is going to be Major Adverse, along with all the other aspects like noise and disturbance that will go with the construction process. It is particularly severe when Brewers Road bridge is closed for its reconstruction.

4.10. Ask: Reading the material in the application the impression is obtained that National Highways and the contractors will engage together and then inform other interested parties what will happen. There must be a full engagement in advance with the Council, Kent County Council as highway authority, and other interested parties as relevant. This needs to cover both the local around the construction site but also the wider implications. For example, when the A2 is shut and diversions are in place via the M20.



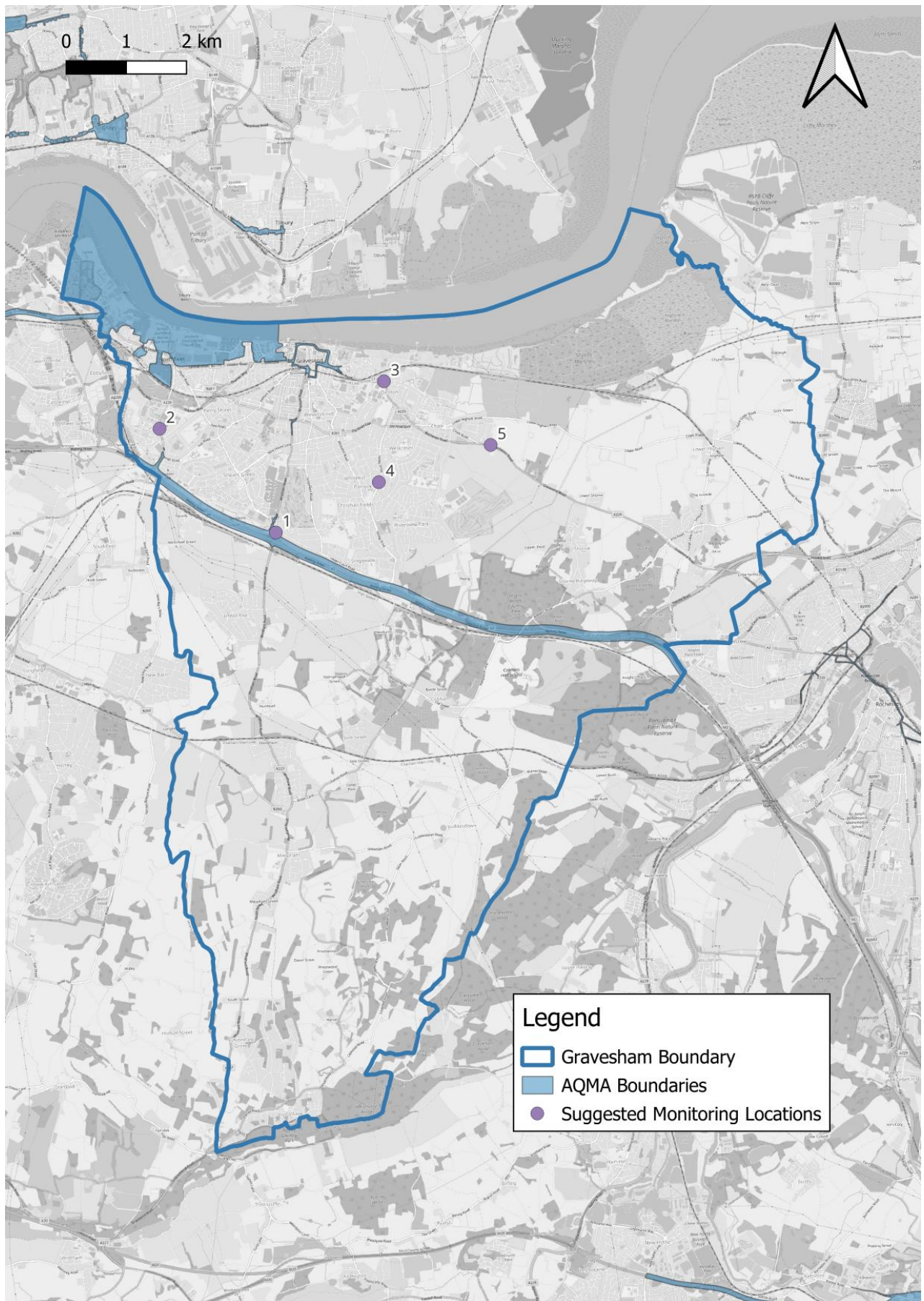
5. Air Quality

- 5.1. The main document is:
- APP-143 6.1 ES – Chapter 5 – Air Quality
- 5.2. See appendix 5 for full report from Buruea Veritas
- 5.3. This assumes the transport modelling from LTAM as contained in the applications documents. The extent to which this is wrong will determine whether results need to be modified.

Asks

- 5.4. As part of the scheme, there is the offer for additional monitoring sites from Gravesham. Potential suggested monitoring locations based on the findings of the Air Quality Assessment and where there are existing gaps in Gravesham's existing Network are set out below.
- 5.5. Five potential locations are shown below for including monitoring at locations where there are predicted increases which are greater than 1% of the AQO for NO₂ (i.e. 0.4µg/m³) and where there is not already existing monitoring.
- 5.6. Ideally, automatic monitoring stations would be installed through which live data could be recorded. An alternative would be for NO₂ diffusion tubes to be installed at these locations.

Proposed Location ID	X	Y
1	564203	171307
2	562269	173026
3	566000	173814
4	565915	172142
5	567774	172759



6. Cultural Heritage

- 6.1. The main document of relevance is
- APP-144 6.1 ES – Chapter 6 – Cultural Heritage
- 6.2. There are extensive appendices including much survey information from investigative archaeological work. On this subject the Borough Council takes the lead on heritage assets and conservation areas, but looks to KCC for archaeological advice provided under a service agreement.
- 6.3. Appendix 6 contains a full report prepared internally on cultural heritage.

Asks

- 6.4. Section 7 of that report contains a list of suggested amendments or other measures to avoid, mitigate or compensate for the harms to Cultural Heritage that have been assessed.

7. Landscape and Visual

Landscape

- 7.1. The section deals with Landscape and Visual. The primary document is:
- APP-143 6.2 Chapter 7 ES Landscape and visual
- 7.2. A full report is contained in Appendix 7a which sets out the full landscape implications particularly on the Kent Downs Area of Outstanding Natural Beauty and its setting.
- 7.3. Appendix 7b covers the impact of lighting and leads to set of asks and clarifications:
- There is a more up to date version of British Standard BS 5489 released in 2020 than that cited in 6.3 Environmental Statement Appendix 8.15. This should be used when finalising lighting designs.
 - Construction lighting would also be designed, positioned and directed to prevent or minimise light disturbance to nearby residents, ecological receptors, as well as motorists and rail and marine operations. This provision would apply particularly to sites where night working or security lighting would be required. It has been assumed that temporary lighting would include tower lighting, mounted on a mast up to a maximum height of 9m, though 3.2.2. of Appendix 8.15 states that these would be at 12m. This should be clarified.
 - A finalised lighting scheme has not been produced as the technology in lighting is expected to change between the time of the application and the likely time of installation of any lights. This is accepted but an appropriate condition would be for the applicant to submit a detailed lighting design for each phase of works prior to each phase of construction.
 - Plate 4.11 of 6.3 Environmental Statement Appendix 8.15 – Construction and Operational Light Spill Calculations appears to show that there would be high lux levels at invertebrate sites at the South of River M2/LTC West Side. No conclusions or additional mitigation appear to be provided for this. It is not clear from the lighting assessment that values would be less than 0.5 lux at these sensitive sites with the vertical calculation figures provided with maximum vertical calculated values at Shorne Woods Ancient Woodland sites along the A2 being up to 59.2 lux. If the assessment is stating that this ancient woodland would exceed 0.5 lux at the first row of trees by the highway and then reduce to 0.5 lux as a result of the shielding effects of the trees behind this then it should be clarified that the effect on the first row of trees is not significant.
 - Plates 4.15 to 4.21 of 6.3 Environmental Statement Appendix 8.15 – Construction and Operational Light Spill Calculations shows the vertical light spill at bat roosts along the M2 corridor. It is not clear where the bat roosts are located on this figure. It is assumed that they would be at the top of the surface where lux levels are modelled to be below 0.5lux and thus unlikely to be affected. It would be beneficial to clarify this with the project ecologist.
 - 6.3 Environmental Statement Appendix 8.15 – Construction and Operational Light Spill Calculations includes light spill calculations for proposed construction compounds within Gravesham. These show that there would be minimal light

spill on to sensitive receptors. Figures in Appendix 8.15 (3.3 to 3.7) at 30m the lux value would be 0.5lx. It would be good to confirm that no sensitive species would be present within 30m.

- 7.4. The Council regards the landscape impacts as major adverse and in the main it is not possible to deal with these by mitigation but requires compensation.

Green Belt

- 7.5. The Project lies almost entirely within the Green Belt as defined by the Gravesham Local Plan Core Strategy (2014) and as shown on the associated Policies Map (2014) and in document APP-203: 6.2 Environmental Statement – Figure 7.7 – Green Belt Settlement Boundaries. Policy CS02 applies national Green Belt policies to this area.
- 7.6. In terms of the NSIP process, Green Belt policy is set out within the NPSNN (2014) paragraphs 5.162 – 5.185 and NPS EN-1 (2011) at paragraphs 5.10.1 – 5.10.24). Both cross-refer to national policy on Green Belts, as now set out in the NPPF (2021) at paragraphs 137 – 151.

National policy and definitional harm

- 7.7. The fundamental aim of Green Belt policy is to prevent urban sprawl by keeping land permanently open; the essential characteristics of Green Belts are their openness and their permanence. Government attaches great importance to Green Belts. Under national policy, Green Belt performs 5 purposes:
1. to check the unrestricted sprawl of large built-up areas;
 2. to prevent neighbouring towns merging into one another;
 3. to assist in safeguarding the countryside from encroachment;
 4. to preserve the setting and special character of historic towns; and
 5. to assist in urban regeneration, by encouraging the recycling of derelict and other urban land.

The extent to which the land in Gravesham performs these purposes and the level of harm caused by the proposals will be discussed further below.

- 7.8. As paragraph 5.78 of NPSNN says inappropriate development is, by definition, harmful to Green Belts and should not be approved unless the applicant can demonstrate very special circumstances that clearly outweigh harm through inappropriateness and any other harms. That paragraph is also clear that substantial weight should be given to any harm to the Green Belt in the decision making process..
- 7.9. The NPPF at paragraphs 149 (new buildings) and 150 (other forms of development) provide a closed list of exemptions whereby certain forms of development are deemed not to be inappropriate. Notwithstanding the point made at NPSNN (2014) paragraph 5.171 that some forms of linear infrastructure may need to pass through Green Belt, this is not in itself sufficient to demonstrate Very Special Circumstances that clearly outweigh harm.
- 7.10. Whilst the main works comprise engineering operations that could be covered by the exemption under paragraph 150(b), their scale and extent is such that they would not preserve openness and would conflict with the 5 stated purposes for including land within the Green Belt. Whilst parts of the proposal form local transport infrastructure, the primary elements of the project are intended to be part of the Strategic Road Network (SRN) for which Development Consent is required.

The proposals therefore fall outside the exemption under paragraph 150(c), notwithstanding that they do not preserve openness and conflict with the 5 purposes of Green Belts. Similarly, paragraph 150(e) in respect of material changes of use of land would not apply.

- 7.11. There is agreement with the applicant therefore that the project comprises inappropriate development in the Green Belt [See APP-495: 7.2 Planning Statement at 6.5.276 – 277 and APP-500: 7.2 Planning Statement – Appendix E - Green Belt]. Those elements of the project lying within the Green Belt should therefore be considered 'inappropriate' in their entirety, including those intended to act as mitigation for the project.
- 7.12. Beyond 'definitional harm', it is also necessary to consider the actual harm of the proposal in Gravesham (and elsewhere) on Green Belt openness and the 5 purposes of including the land in the Green Belt. In undertaking this exercise, the Borough Council has had regard to its Stage 1 Green Belt Study (April 2018) and the more detailed Stage 2 Green Belt Study (August 2020).

Actual harm to openness

- 7.13. In terms of the actual as opposed to definitional harm of the Project on Green Belt openness, it is necessary to consider both spatial and visual dimensions. Given the construction impacts would be temporary these have been set aside for the purposes of this assessment, with the primary focus being permanent operational impacts.
- 7.14. In this instance, once the A122 is in tunnel, it would be underground and not visible save for the portal structure. This section would not therefore have either a spatial or visual impact on openness.
- 7.15. The remainder of the A122 southwards from the tunnel portal to the A2 junction would however be above ground and have a spatial presence. Elements of the structures would be highly visible, particularly the A2/A122 junction in both day and nighttime. Whilst much of the A122 approach road to the tunnel portal would be in cutting or false cutting and would benefit in the longer term by landscape mitigation, it would still have a spatial presence and would be potentially visible from different vantage points. It is also important to recognise that in terms of the visual dimension of openness, it is not only people in the surrounding area that might see it but also the people using the road itself. Given over time these would number in the millions, this is an important consideration.
- 7.16. In terms of the A2 corridor, the proposal would have a spatial impact on openness due to the construction of the complex multi-layered junction and associated local access roads. Whilst efforts have been made to maintain the width of the main corridor through the AONB, to the east of Thong Lane, the increase in the number of running lanes on the approaches to the junction and loss of existing planting to be replaced by highway will have an impact both spatially and visually. Once again, notwithstanding proposed mitigation, the loss of visual openness will be experienced by those having sight of the road and those using the road itself. It should be noted that loss of spatial openness does not depend on the road being visible.
- 7.17. Given the roads are intended to be used by vehicles and that their numbers will increase over time, their presence and impact will also impact on openness.
- 7.18. Other aspects of the proposals (including the relocation of pylons, associated tunnel infrastructure, highway paraphernalia and alterations to the public rights of way network) are also likely to impact on openness both spatially and visually. This is particularly the case with the proposed improved public right of way, to the south of

the CTRL/HS1 and to the east of Brewers Road, where the existing footpath is narrow and unsurfaced and rural in character.

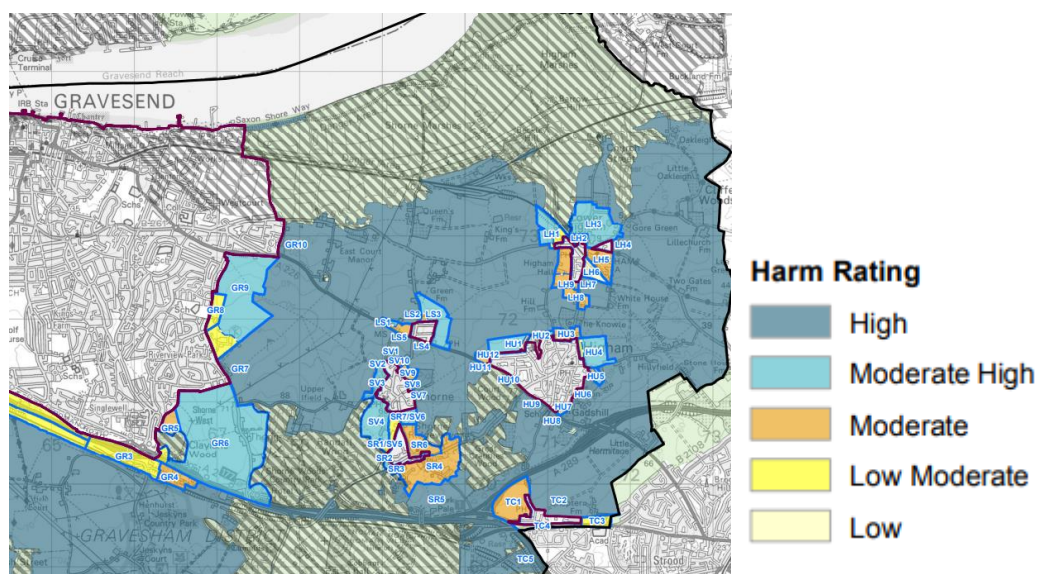
- 7.19. Overall, it is considered that the proposals south of the River Thames would not preserve openness and that the actual impact on openness in both spatial and visual terms would be severe. Whilst the proposed landscaping and planting may (over time) assist in mitigating these impacts, the level of harm would remain extremely high.

Conflict with the purposes of the Green Belt

- 7.20. The applicant does not appear to have undertaken a formal assessment of the Green Belt affected by the Project to inform consideration of potential conflict with the purposes of including land in it. Whilst reference is made to studies commissioned by the Borough Council and others, it is unclear how they have informed the applicant's assessment. For the purposes of this LIR, consideration of conflict with Green Belt purposes uses the Gravesham commissioned studies as a starting point. This is intended to provide consistency of approach between the emerging Local Plan and the assessment of the project.
- 7.21. The intention of the Gravesham Stage 1 and Stage 2 Green Belt Studies⁹ was not to consider the impact of LTC, rather they examined the contribution separate parcels made to Green Belt purposes (Stage 1 and Stage 2) and the level of harm that would be likely to occur should smaller parcels of land designated as Green Belt be released for development (Stage 2).
- 7.22. Both studies subdivided land designated Green Belt into parcels. The parcels in the Stage 1 Study that are affected by the Project are parcels, 2, 6, 7, 8, 10, 11 and 11a, and in the Stage 2 Study are parcels GR3, GR4, GR 5, GR6, GR7, and GR9.
- 7.23. The Stage 2 Study also considered what change LTC would bring about in terms of the level of harm that would occur through the release of land designated as Green Belt for development in the area (parcels GR6a and GR7a).
- 7.24. The Stage 1 and Stage 2 Studies examined the contribution that defined parcels made to Green Belt purposes 1, 2 and 3 only, having determined that that land designated as Green Belt in Gravesham had no role in preserving the setting or special character of historic towns and played an equal role in encouraging the recycling of derelict and other urban land.
- 7.25. In respect of the harm to Green Belt purposes 1-3, the Stage 1 study concluded that land within parcels listed in paragraph 1.19, all made a significant contribution to at least 1 of Green Belt purposes 1 - 3, with parcels 2, 6 and 7 making a significant contribution to all three purposes and parcels 8 and 11a making a significant contribution to 2 purposes.
- 7.26. As the Stage 2 Study was focussed on examining the impact of release of land designated as Green Belt for development on the edge of existing settlements, the assessment parcels did not cover the whole of the Green Belt. Parcels were defined by applying a process that, working out from each settlement edge, assessed and parcelled land out to a point beyond which development would result in a high level of harm to Green Belt purposes.
- 7.27. In respect of the harm to Green Belt purposes 1 -3, the Stage 2 Study concluded that where land was relatively self-contained and/or close to the urban edge

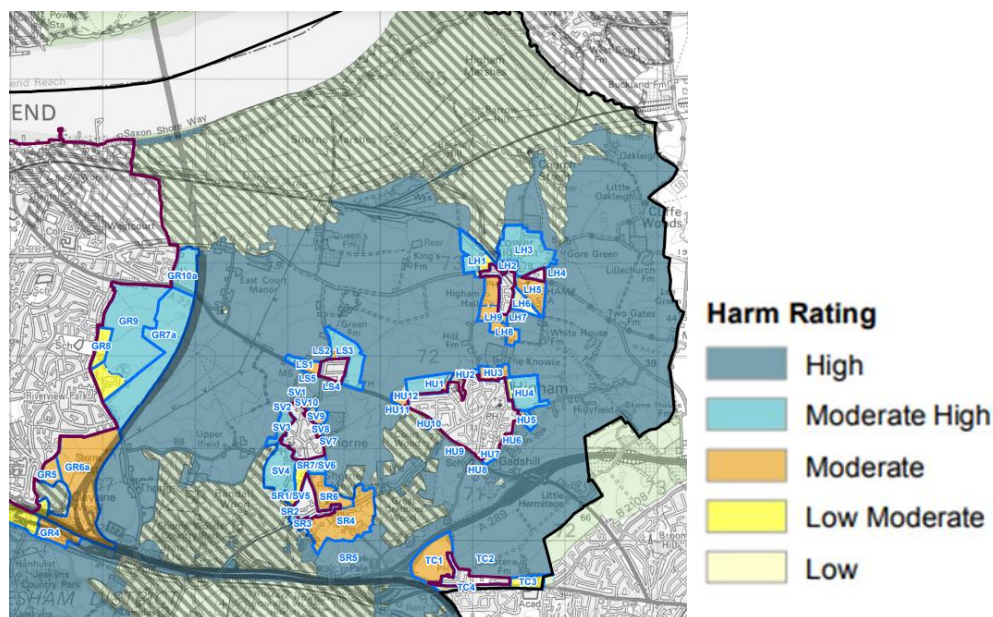
⁹ Stage 2 <https://localplan.gravesham.gov.uk/gf2.ti/f/1210690/83731301.1/PDF/-/Gravesham%20Green%20Belt%20Report%20Final.pdf> and <https://localplan.gravesham.gov.uk/gf2.ti/f/1210690/83731909.1/PDF/-/Gravesham%20Green%20Belt%20Report%20-%20Appendix%20A%20Final.pdf>

(parcels GR3, GR4 and GR5), the level of harm to Green Belt purposes through development was considered moderate to low moderate. This increased to high and moderately high levels of harm moving into more open countryside, east of Thong Lane as shown on the plan below (parcel GR7 and GR9).



Source: Gravesham Stage 2 Green Belt Study (Land Use Consultants, August 2020)

- 7.28. As mentioned above, the Stage 2 study considered what change the Project would bring about in terms of the level of harm to Green Belt purposes that would result from releasing land designated as Green Belt for development to the east of Gravesend. It should be noted once again that this was not an assessment of harm caused by the LTC itself, rather a reflection of the additional containment the road would bring should it be built.
- 7.29. However, should Development Consent for the construction of the Project be granted, this would not in itself be sufficient to constitute 'exceptional circumstances' to remove land from the Green Belt in this location as that is a separate Local Plan issue. The road would continue to pass through Green Belt with no change to the policy status of the land. Given the constraints on development that the Project would bring due to the mitigations and compensation sites, there is also no guarantee that land would be released for development in the future and the potential for the road to form a new Green Belt boundary is not of relevance.
- 7.30. For the sake of completeness, the corresponding plan from the Stage 2 Green Belt Study with the Project in place is reproduced below. It will be noted from the both plans that the alignment of the Project in Gravesham runs through areas which the study concludes would result in High/Moderate High levels of harm to one or more purposes of the Green Belt, should development occur. The only difference would be in parcel GR6a, to the south of Riverview Park, which because of the containment caused by the road would fall to a moderate level of harm. However, this would not be suitable for future development because of proximity to the road and the need for the Project to provide mitigation. This parcel would also be affected by both overhead powerlines and high-pressure gas pipelines, both of which would impose additional constraints.



Source: Gravesham Stage 2 Green Belt Study (Land Use Consultants, August 2020)

- 7.31. The following paragraphs adopt a similar approach to the Gravesham Stage 1 and Stage 2 Green Belt Studies to consider the potential conflict of the Project with Green Belt purposes.
- 7.32. **Purpose 1** is to check the unrestricted sprawl of large built-up areas. Whilst the land to the east of Thong Lane and south of Riverview Park contributes to this purpose to various degrees, the Project is not considered to represent an 'unrestricted sprawl of a large built-up area' in itself. This is a project specific intervention rather than an unplanned extension to the Gravesham urban area.
- 7.33. **Purpose 2** is to prevent neighbouring towns merging into one another. Whilst the Project would lie between the eastern edge of Gravesend, in open countryside, between it and the neighbouring town of Strood in Medway and would cause some loss of separation between the towns, it would not undermine the purpose of preventing neighbouring towns merging into one another.
- 7.34. **Purpose 3** is to assist in safeguarding the countryside from encroachment. This is considered relevant in this instance because the Project represents a significant intervention in an area of largely open countryside. The proposals will therefore cause harm in this respect and conflict one of the key purposes of including this land in the Green Belt.
- 7.35. **Purpose 4** is to preserve the setting and special character of historic towns. Whilst Gravesend is an historic riverside town, the land affected by the Project does not contribute in this respect. The intention of including this purpose in national guidance was specifically intended to relate to a limited number of historic towns, including York, Chester, Bath, Oxford, Cambridge and Durham and not Gravesham, hence both Green Belt Studies determined that land in the Borough designated as Green Belt made no contribution to this purpose.
- 7.36. **Purpose 5** is to assist in urban regeneration, by encouraging the recycling of derelict and other urban land. On this, the Gravesham Stage 2 Green Belt Study (August 2020) concludes that all Green Belt contributes towards this objective equally. However, this should not be taken to mean that the applicant should not demonstrate that reasonable alternatives outside the Green Belt or those which

may cause less harm to Green Belt purposes, have been properly considered through the DCO process.

Other harms

- 7.37. The proposals will clearly result in 'other harms' that will need to be taken into consideration when it is assessed against Green Belt policy. These are discussed elsewhere within this document under specific headings. It is also noted that in several instances the applicant accepts that the impact of 'other harms' will be severe. For the avoidance of doubt, the Council considers that the following 'other harms' should be factors within the planning balance:
- Impact on landscape
 - Impact of cultural heritage
 - Impact on irreplaceable habitat + natural environment
 - Noise and light impacts, particularly within the vicinity of the A122 and the A2 junction.
- 7.38. Adverse impacts on the Public Rights of Way network – including severing links across the land to the west of Thong and the loss of the footpath cycleway adjacent to the A2 northern carriageway to the east of Thong Lane. Whilst the applicant proposes mitigation, the alternatives would be less commodious and therefore a level of harm would persist.
- 7.39. Harm through inappropriate mitigation – the Council argues elsewhere that the proposed mitigation to the east of Thong and the creation of mosaic habitat here is damaging to cultural heritage and has been inadequately justified.
- 7.40. Ongoing impact and harm to the local community through the presence of the road during the operational phase.
- 7.41. Whilst the focus of this part of the LIR is on long-term operational impacts, there will be 'other harms' during the construction phase that the Examining Authority (ExA) will be obliged to consider under Green Belt policy, even if these are only 'temporary'. On this, it is important to recognise that these impacts on the local community are likely to be severe and of significant duration.

Demonstration of 'Very Special Circumstances

- 7.42. It is for the applicant to set out whether sufficient 'very special circumstances' exist that clearly outweigh harm to the Green Belt and any other harms. For the avoidance of doubt, the Borough Council finds the evidence provided to date is unconvincing and lacks both clarity and rigour. It is not therefore considered an adequate basis upon which the ExA can arrive at an appropriate planning balance to make a recommendation to the Secretary of State.
- 7.43. For example, APP-500: 7.2 Planning Statement – Appendix E - Green Belt consistently refers to the Green Belt in the context of the assessment of impacts on landscape character. However, Green Belt is a policy designation and should be assessed separately in its own terms. The impacts on landscape character, in combination with any other harms caused by the project are additional factors to the harm to the Green Belt but the applicant does not treat them as separate 'other harms'.
- 7.44. In addition, visual harm is only considered in the context of impacts of the project from the outside in looking in. However, as noted above, the project will remain in the Green Belt and impacts of visual harm will be experienced by the millions of people travelling on the roads themselves. Impacts of the project in terms of spatial

- and visual openness are therefore likely to be severe when considered from the user's perspective.
- 7.45. As noted above, the assessment of the harm to openness and conflict with Green Belt purposes is not underpinned by any methodology to provide an understanding as to how the conclusions have been reached. Whilst reference is made to local Green Belt assessments, it is not evident how they have informed the conclusions reached by the applicant.
- 7.46. Further, the Council would question the conclusion reached at paragraph E.6.12 of APP-500: 7.2 Planning Statement – Appendix E - Green Belt that the proposed delivery of open space and woodland etc. and assists in safeguarding the countryside from encroachment. To the south of the River Thames most of the route from the A2 to the tunnel portal runs through open countryside. Replacing this with an alternative may bring a range of other benefits in terms of improved public access or ecology but in Green Belt terms and safeguarding the countryside from encroachment, the effect of such mitigation is broadly neutral because it is already countryside. In addition, where improvements are not made directly by the Project itself but through the National Highways Designated Funds route, they should be discounted unless the cost is fully factored into the calculation of the BCR.
- 7.47. In assessing whether very special circumstances exist that clearly outweigh harm to the Green Belt, the Council would suggest that two tests should be applied:
- 7.48. The first is a relative test. Whilst the NPSNN accepts that some parts of linear infrastructure will need to occupy Green Belt locations, it is still necessary to consider the relative harm of reasonable alternatives against relative benefits. Without this, very special circumstances that clearly outweigh harm will not have been properly considered for the preferred option. It is necessary therefore for the applicant to evidence how it has assessed those relative levels of harm against benefits as a process in developing the project and how this has been consulted on in a transparent way. This would include the Dartford alternative, where the rationale for excluding it as not meeting scheme objectives also needs to be evidenced.
- 7.49. The second is an absolute test - even if the project is the best or only option in terms of achieving outcomes in relation to scheme objectives, the applicant must still provide sufficient evidence to show that the benefits clearly outweigh the harm. Just because an option is the only one available does not mean that it is acceptable when evaluated against policy – it can still be refused Development Consent.
- 7.50. Whilst the Council has not specifically raised 'reasonable alternatives' as a key issue, this is particularly relevant to Green Belt because of the need to demonstrate 'very special circumstances' that clearly outweigh harm. In this instance, whilst the applicant has gone through a long process of consultation and engagement and sifted what it considers to be 'reasonable alternatives', the Green Belt issue never featured strongly as something that needed to be addressed other than the applicant effectively assuming the national need for the Project would outweigh any Green Belt harm.
- 7.51. For example, following the preferred route choice in 2016, National Highways published a Lower Thames Crossing: Response to Consultation document in 2017 which simply stated at page 38 that they had considered the Project against national policy and believed the national need would satisfy any policy tests (see - . https://highwaysengland.citizenspace.com/ltc/consultation/supporting_documents/Highways%20Englands%20Response%20to%20Consultation.pdf). This was repeated at the 2018 Statutory Consultation stage at 8.4.3 of the Case for the

Project document, where it was simply stated (without any justification) that National Highways was confident that the strength of the case for the Project would ensure that the policy tests would be met (see – https://highwaysengland.citizenspace.com/ltc/consultation/supporting_documents/LTC%205%20The%20Case%20for%20the%20Project.pdf)

- 7.52. Whilst it is noted that the applicant's document APP-141: 6.1 Environmental Statement - Chapter 3 - Assessment of Reasonable Alternatives sets out how Green Belt was considered at each stage of the process, this was only in terms of stating where it would be affected with no assessment of alternatives against openness or purposes. There appears to have been no formal assessment against policy or any indication of the weight to be accorded the protection of Green Belt compared to performance against scheme objectives.
- 7.53. In determining what are considered 'reasonable alternatives', the Council accepts that these must be capable of achieving the scheme objectives. These are set out at Table 4.1 of APP-495: 7.2 Planning Statement and are reproduced below.

Scheme Objectives	
Transport	To relieve the congested Dartford Crossing and approach roads and improve their performance by providing free-flowing north-south capacity. To improve the resilience of the Thames crossings and the major road network. To improve safety
Community and environment	To minimise adverse impacts on health and the environment
Economic	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

- 7.54. On the above, it will be noted that none of the above scheme objectives are given a particular priority or weighting. In addition, there is no requirement under the scheme objectives for any performance threshold to be met by which a particular option should be discounted. There is therefore no requirement under the scheme objectives that the best performing option, particularly in monetised terms, should be selected when considered against environmental constraints or other policy objectives.
- 7.55. With reference to resilience, it is noted that the applicant makes the case for the project in document APP-494: 7.1 Need for the Project. However, whilst the Project would provide an additional crossing point over the Thames to the east of London and increased capacity, no substantive evidence appears to have been provided to demonstrate the relative performance of this project against reasonable alternatives.
- 7.56. This is important in terms of the 'very special circumstances' case because it is necessary to know whether the benefits of an additional crossing in terms of resilience are capable of being realised given linking highways have limited capacity.

- 7.57. The applicant appears to admit that the project will only be a partial solution to the issue of resilience, allowing traffic to disperse more quickly once an incident is over. However, no robust evidence appears to have been provided to test this beyond supposition and actual impacts on the local highway network remain unknown. In addition, it is legitimate for people affected by the proposal to know what the implications are should an incident occur at either crossing or on the SRN linking them in terms of local highway impacts.
- 7.58. Given the Dartford option was ruled out on the basis that an additional crossing further downstream would be a more resilient solution than providing additional capacity at the existing location, the Council contends that the ExA needs to know what the differences would be and whether these are sufficient to constitute very special circumstances that clearly outweigh harm.
- 7.59. Beyond this, another of the scheme objectives is to achieve value for money. In assessing the project and compiling the business case, the applicant has followed the NPSNN (2014) at paragraph 4.5 by using a WebTAG based approach.
- 7.60. This applies two different types of approach based on whether impacts (positive or negative) can be monetised. Non-monetised costs and benefits should be considered by qualitative assessments, for example by applying an Environmental Capital approach. Whilst scheme promoters are advised not to rely solely on the monetised elements to justify projects, this part is used to calculate the project's Benefit Cost Ratio (BCR). The aim of this is not only to determine whether a project is value for money, but so different schemes can be compared against a level playing field in a Treasury Green Book compliant way.
- 7.61. A large proportion of the benefits of the project are derived from the monetary value of accumulated time savings over millions of journeys that result from the project. Aside from the issue of whether small savings of time should actually be counted, to arrive at this monetary value, WebTAG assigns a value to time on the basis of 'willingness to pay' for units of time saving for different types of journeys.
- 7.62. At a basic level of comparing one project against another using the central (or average) value of 'willingness to pay' is generally acceptable because any variance would be the same for each project – thus ignoring any spatial variations that may occur due to the location of a project and likely users.
- 7.63. However, WebTAG Unit A1.3 on User and Provider Impacts (May 2022) at section 4.2 sets out that there is considerable variation in the willingness to pay and that sensitivity testing should be undertaken to reflect this. This is because the true value of time based on the willingness to pay may lie within quite a wide range. At a 95% confidence level for work-based trips (excluding professional or freight drivers) the sensitivity range suggested is +/- 25% and for non-work based trips, +/- 25% for commuters and +/-60% for other non-work based trips.
- 7.64. The applicant does not appear to have undertaken this form of sensitivity testing.
- 7.65. Given the applicant is required to demonstrate 'very special circumstances' that clearly outweigh harm to overcome any Green Belt policy objection and the true value of time may be at the lowest end of the sensitivity testing range, it is arguable that this should be used to calculate a 'worst case' BCR for the project.
- 7.66. Without this information, it is difficult to see how the ExA can reach a legitimate planning judgement as to whether the proposal meets the 'very special circumstances' test whereby the benefits of the scheme clearly outweigh harm.

Conclusion on Green Belt issues

- 7.67. The Council concludes that the Project is inappropriate development in the Green Belt, which is 'by definition' harmful, and which should only be permitted where the

applicant demonstrates very special circumstances that clearly outweighs harm to the Green Belt and any other harms. The Council has identified significant actual harm to the Green Belt resulting from the Project and conflict with the Green Belt purpose of safeguarding the countryside from encroachment. Significant other harms have also been identified. Whilst the applicant claims very special circumstances that clearly outweigh harm exist, the case put is unconvincing and has not in the view of the Council been properly evidenced. Based on the supporting evidence provided to date, the Council is concerned that the ExA will not be in a position to arrive at a sound planning balance on this matter when making a recommendation on the application.

- 7.68. Ask: The applicant complete a Green Belt assessment that complies with the requirements of the NPPF (and therefore NPSNN) taking into account the matters the Council has set out.

8. Terrestrial Biodiversity

- 8.1. Terrestrial ecology is closely related in this area to Heritage and Landscape aspects. Key application documents are:
- APP-146 - 6.1 ES Chapter 8 Terrestrial Ecology
 - APP-262 - 6.1 ES Figure 8.1 Designated Sites
 - APP-490 - 6.7 Outline Landscape and Ecology Management Plan (oLEMP)
- 8.2. The Council has no inhouse expertise in this area and therefore uses the assistance of the KCC Ecology Service, and has drawn upon information from Natural England, Environmental Agency and other bodies such as the Kent Wildlife Trust who do have the detailed technical knowledge on this matter. It is not clear that the scoping has been sufficiently wide in spatial terms to assess all the impacts, for example from changes in traffic flow. That said there are some clear issues that this report can address, in particular:
- Impact on ancient woodland and veteran trees
 - Impact on SSSI's – direct or indirect
 - Impact on Ramsar/SPA
 - Implications from greater severance across the project
 - Nitrogen deposition compensation sites
 - How far the mitigation & compensation proposed meet those impacts
- 8.3. The comments below focus on the overall picture, not on the detail, for example, of any specific species unless that raises a major issue. The impact on a particular species often depends on their particular characteristics, which can vary considerably.
- 8.4. APP-262 ES Chapter 8 Figure 8.1 shows the relevant designations, though the legend/key appears to be incomplete, for example by not mentioning the notation for SSSI's and other designations shown on the plans. Pages 2 and 3 are the most relevant to Gravesham.

Habitat Loss

- 8.5. ES para 8.6.9 says about habitat loss: *the widening of the A2, along with the unavoidable utilities diversions and the construction of green bridges in this area, would lead to a permanent loss of 5.85ha (2.9%) of habitat within Shorne and Ashenbank Woods SSSI, of which 0.95ha (0.9%) is designated ancient woodland within Shorne and Brewers Woods SSSI. Non-woodland habitat from between the A2/M2 and High Speed 1 (HS1) including landscape planting would be lost from south of the A2/M2.* ((The reference to Brewers Woods is typo as Brewers Wood is the part of Shorne and Ashenbank Woods SSSI east of Brewers Road).
- 8.6. The project would also result in the permanent removal of semi-natural broadleaved and plantation woodland, hedgerows, scrub habitats of County Importance, calcareous, species-poor semi-improved and improved grasslands, open mosaic habitat, swamp and marginal vegetation, arable land, ponds and streams and temporary loss of coastal and floodplain grazing marsh.
- 8.7. Kent Wildlife Trust has commented (Relevant Representation RR-0560) that the project will see the displacement of species through direct habitat loss and

fragmentation and increase wildlife roadside mortalities, including the direct mortality and loss of habitat containing county-level important macro-invertebrates. • Barbastelle, one of the UK's rarest species of bat, was recorded during a bat transect in Brewers Wood. Barbastelle have never been confirmed in Kent, therefore any passes and potential roost sites in Kent are a significant find.

- 8.8. The proposal will therefore have a highly significant impact on the local ecology from its physical footprint as well as any wider impacts. These are compounded by the relationship with heritage and landscape in the Kent Downs AONB. The impact can be assessed as MAJOR ADVERSE.

Trees

- 8.9. The Veteran trees the proposals state that “a minimum of 30 individual specimen trees would be planted as replacement for lost veteran trees”. KCC also has concerns that ratio of 1 to 30 trees is not sufficient for the loss of veteran trees and also there must be a responsibility to retain standing deadwood. For example, all dead wood must not be left in log piles and should instead be strapped to felled mature trees to support invertebrate diversity. One of the first actions of the Cobham Ashenbank Management Scheme (CAMS - that came out of Channel Tunnel Rail Link) was to place both vertical and horizontal dead wood from clearance works in Ashenbank Wood.
- 8.10. Planting is suggested as compensation since it is not possible to mitigate such a loss (but see below on pond habitat). The SSSI however needs to be considered in its overall context. The western edge of the Kent Downs AONB also marks the switch from woodland to agriculture in various forms (and then urban development). Jeskyns, formerly farmland, is new planting from 2009 so when fully mature will provide additional woodland habitat to the south. This is related to the underlying geology as the chalk comes to the surface.
- 8.11. Ashenbank Wood is split between the southern part which is ancient woodland and northern part which was woodland pasture, which is to be found also on the southern side of Cobham Park. Cobham Park itself is a more open Repton landscape around the Hall, but still with substantial number of trees. To the southeast is Cobham Woods, owned by the National Trust, and the nature conservation continues via Ranscombe Farm (managed by Plantlife) towards the Medway at Cuxton.
- 8.12. North of the A2 and further east are Great Crabbles Wood and Court Wood towards Higham as well as Shorne Woods and Randall Wood, which form part Shorne Woods Country Park. As the heritage analysis shows the project is mainly going to be built on land that was part of the former Cobham Estate of the Earls of Darnley. There is therefore a historical integrity to the whole area on how the land was managed and used¹⁰.
- 8.13. The A2 has its extended central reservation of about 5.3 ha (Thong Lane to Park Pale bridges) which currently provides an ecological stepping stone between either side of the A2, and which will be totally destroyed by the project.
- 8.14. The area between the current A2 and HS1 is a mixture of landscape planting (from CTRL (Channel Tunnel Rail Link – now HS1) construction in 2003 or earlier and therefore well established), and remnants of Ashenbank Wood. Historical air photographs (1940) show the A2 running through woods. To the west of Ashenbank

¹⁰ See <https://webapps.kent.gov.uk/KCC.KLIS.Web.Sites.Public/ViewMap.aspx> for mapping of the various habitats, designations etc. in this area

Wood is the avenue that forms the access Scalers Hill House and further west still orchards.

- 8.15. When CTRL was being planned in the mid 1990's the then proposed cutting through Ashenbank Wood turned out to need a gentler slope than had been originally assumed for geological reasons, which therefore resulted in the loss of more of the wood. Hence the approach adopted was of a wider cutting with a gentler upper slope with planting and a steeper slope down to track level. Effectively most planting between A2 and HS1 is going to be removed, increasing the severance effect. Given its age, this has met the establishment criteria for the relevant habitat type set out in Table 4.1 of the oLEMP [APP-490]. A2/M2 widening from Cobham junction east was complete at the same time as HS1 whilst the A2 widening from West Cobham to Pepper Hill was completed in 2008.
- 8.16. The area along the east side of Gravesend is mainly in agricultural or leisure uses currently, and will become occupied by the A2/A122 junction (with planting between the slip roads) and a deep cutting containing the A122 leading down to the portal (28m deep). There is also proposed the creation of a series of 7 drainage ponds cascading down the dry valley that runs north east towards the Thames – see further below on surface water features.

Disturbance to protected sites

- 8.17. APP-146 ES Chapter 8 para 8.6.5 suggest that during construction the whole area between the A2 and A226 will be closed to access except for Thong Lane itself. It suggests that current users of this area will disperse over other sites, with minimal impact. An access link will remain along Thong Lane so from Riverview Park it will be possible to access Shorne Woods Country Park, albeit going through a construction site and crossing a haul road. Residents in the Marling Cross/Singlewell area have options to use Jeskyns and wider countryside accessible via the Hare's Bridges over the A2 (see section 13 for more information). It is not clear how walking and cycling access through the Marling Cross junction will be impacted by construction (which is basically most active at the beginning and end of the project). Those further north along Thong Lane and at Chalk may well be tempted to spend more time on the North Kent Marshes.
- 8.18. Dog disturbance is a major issue on the North Kent Marshes such that it is covered by a SAMMS Tariff¹¹ under the North Kent Strategic Access Management and Monitoring Scheme. This imposes a tariff on all residential development within 6 km of the Ramsar/SPA on the marshes, which some of this is within the area of the project¹². The current fee for a new residential (C3) dwelling is £314.05¹³. The developers of the Lower Thames Crossing is not directly required to pay any tariff as no new residential property is proposed.
- 8.19. An indirect effect during construction therefore may well be to increase pressure on the Ramsar/SPA as alternative to the routes towards Shorne/Thong that are not available for some 5½ years.
- 8.20. Ask: The usage of NG2/NG3 and NG5/NS172 should be monitored to ensure that there are no negative impacts. If there are Birdwise North Kent will be able to advise what appropriate steps should be taken.

Severance

¹¹ See <https://www.gravesham.gov.uk/heritage-conservation/nature-conservation/2>

¹² See <https://www.gravesham.gov.uk/downloads/file/475/samms-6km-buffer-zone>

¹³ See <https://www.gravesham.gov.uk/planning/samms-tariffs>

- 8.21. What will in effect be a continuous construction site stretching from A226 south to the A2 and then east to Three Crutches, will create severance for a substantial period. This will be followed by the permanent severance of the completed roads themselves, which in the case of A122 is new, and in the case of the A2 will be a dramatic increase in built area

Air quality, noise and dust

- 8.22. On the North Kent Marshes the basic concerns are impact of noise and disturbance from Chalk and Milton construction sites and the possible impact on the water table from the tunnelling operations and therefore the birds on the marshes. The Milton site creates a direct vertical connection to the tunnels. The assumption in the ES is that the implementation of best practice guidelines on air quality, dust, lighting, noise and vibration etc. will be sufficient during both the construction and the operational phases of the project.
- 8.23. *Ask:* all aspects of air quality, dust, lighting, noise and vibration should be monitored, and appropriate menu of actions laid out to be implemented if the proposed standards are breached.

Water table

- 8.24. The concern with the water table is that at the surface it is served by rainfall and surface runoff. As the North Kent Marshes is an international habitat for wading birds it is essential that this is maintained. This applies across the area whether it is SPA/Ramsar or Local Wildlife site (Milton Range) as it is all one hydrological system. In addition the Thames and Medway Canal and railway sit above the marsh (with drainage passing beneath) and its integrity needs to be preserved as habitat, as well as a non-designated historic structure (along with the integrity of the North Kent Line).
- 8.25. The obvious risk is that the tunnelling process, either the main bores or the ground protection tunnel could cause the water table to be pierced or impacted by dewatering with potentially serious consequences for natural habitat as well as drainage. Pumping is proposed from the tunnels via the marshes and Denton outfall. If the ground protection tunnel is not needed that risk of this is considerably reduced.
- 8.26. It is noted that has been agreed with Natural England there will be temporary habitat enhancement at the marshes south of the North Kent line. The Council sees no reason why this should not be made permanent.
- 8.27. *Ask:* Monitoring of water table, flow and quality in the drainage system and menu of actions if the standards are breached.

Surveys

- 8.28. Kent County Council and others have raised concerns over whether sufficient survey work has been completed on some species (moths, bats etc.). Given the two year construction delay there is no reason why this work, as agreed with the relevant authorities, should not be completed to the appropriate standard prior to construction commencing.

Reptile receptor Site

- 8.29. KCC also note that only one receptor site has been mentioned in the Outline Landscape and Ecology Management Plan (oLEMP) (APP-490) for reptiles. The area concerned is East of Thong in respect of which the Council has a landscape and heritage objections, dealt with elsewhere. The applicant is currently seeking to advance this (as it is not otherwise directly impacted by construction other than the

removal of an overhead line) by means of a separate planning application, which will need to justify itself in a non-scheme world.

- 8.30. It is noted that the receptor site will require habitat manipulation and then habitat creation to make it suitable, taking an estimated 10 years before the habitat is of the required condition. Mitigation areas need to be in a condition to support the species when required during the construction timetable.
- LE8.1 Open mosaic habitat (oLEMP para 8.22) – includes importing pulverised flue ash which is very alkaline and the creation of a ‘brownfield or previously developed/disturbed land’ (para 8.22.4)
 - LE8.5 Ecological ponds – which are not a normal feature of this sub area as but are a result of the loss of habitat in Shorne Woods along its southern edge
- 8.31. There are ponds within the Shorne, Ashenbank and wider woodlands, many of which appear to have been created by clay extraction or man made for landscape reasons (e.g. Repton ponds in Cobham Park). In the agricultural area surface water is rare, so ponds are not a natural feature, a product of the underlying chalk. In normal conditions there is no flowing water, though a stream does run north from Shorne Woods in exceptionally wet conditions to infiltrate in the fields, with some localised flooding occurring along Shorne Ifield Road.
- 8.32. There is therefore a concern at introducing an unnatural feature into this part of the landscape and the import of a contaminant material, pulverised flue ash. There are substantial quantities of the latter, and the alkaline habitat it creates, out on Swanscombe Peninsula, in the newly designated SSSI as well as on the north side of the River Thames.

Land Bridges

- 8.33. Land bridges proposed to be provided at Thong Lane North (86m width), Thong Lane south (41m) and Brewers Road (32m). These are expected to (see App-NNN Design Principles STR.08 and S1.04 and other references) perform a variety of functions including carrying highway, cycle/walking routes, landscaping and biodiversity connectivity. The Borough Council has consistently pressed for these bridges to be made wider so as to enable them to perform a variety of functions more effectively, which over the consultation process they have done so.
- 8.34. Brewers Road is constrained by HS1 structures on the south side and the SSSI on the north side and the need to fit in a utilities corridor that cannot have trees and shrubs planted on it. The biodiversity concern along the A2 is that the bridges do not adequately connect to habitats on the southside due to the combined effects of the enlarged A2, Darnley Lodge Lane (realigned and extended) and HS1. There is a tension between the various functions for these green bridges as outlined above. The Council has suggested that rebuilding the Park Pale bridge as a green bridge, although not required physically by the project would be one way of addressing this matter, as it connects better to habitats and would assist in landscape terms.

Biodiversity net gain

- 8.35. Biodiversity Net Gain (BNG) calculations for the Project show that it is anticipated to be lower than 3% in Kent compared with 9% north of the River (APP-417 ES Appendix 8.21 Biodiversity Metric Calculations). Overall the net gain is 7% whereas section 99 and schedule 15 of the Environment Act 2021 when they come into force, may make biodiversity net gain (BNG) a requirement for Nationally Significant Infrastructure Projects (NSIPs), with a minimum of a 10% BNG required.

Furthermore, there are concerns that condition assessment information may be inaccurate – a limitation the project ecologists acknowledge.

Light spill

- 8.36. Very minimal information has been provided for the anticipated light spill (APP-199) from the operational phase of the Project, with only a small section highlighting the expected light spill upon key receptors. Without this information interested parties are unable to determine the full extent of the impacts.

Nitrogen deposition sites

- 8.37. The nitrogen deposition compensation sites are a late addition to the project and have therefore not been fully integrated into the overall strategy or assessed for their current ecological, landscape or heritage value. The oLEMP (APP-490) leaves open what the detailed proposals for these sites will be. A process is being proposed for how this will be arrived at but needs to include the views of the local community as well as the technical aspects.

Comprehensive integrated mitigation plan

- 8.38. Whilst appreciating that the ES needs to describe the areas of provided for mitigation or compensation and explain their relationship to what is being lost or disturbed what has not been done is to consider all the compensation sites list in para 2.20 above in the round and look at how these can all work together not just in ecological terms but also taking into account the landscape, heritage and access issues to produce an integrated plan. Ideally this needs to be set into a wider context taking into account the aims and objectives of the landowners and other relevant agencies across the wider area so that as far as possible these all work together.
- 8.39. The Design Principles (APP-516) provide some overall guidance on this but are not detailed enough to provide the necessary certainty or joined up approach. The current information that is provided in relation to the landscape and ecological mitigation measures proposed, significant detail and clarity appears to be deferred to the post consent stage. Such a deferral of important detail increases the uncertainty of the assessment of residual impacts within the application documents and places a significant burden on stakeholders post consent.
- 8.40. Ask: Commitment to a comprehensive plan for the habitats, landscape and heritage across the major compensation and mitigation sites identified in the oLEMP that takes a more nuanced approach than is apparent in that document, whilst meeting the targets that have been identified. This needs to be progressed now so a plan can be signed off by the Borough Council and other relevant bodies and then be implemented when the project commences.

Project funding

- 8.41. As a result of the CTRL (HS1), what became known as the Cobham Ashenbank Management Scheme (CAMS) came into being, which began with an initial £750k (1996 prices) contribution from Union Railways and eventually produced a contribution of the order of £7.5m worth of projects. They included the restoration of many of the Repton landscape features in Cobham Park and the restoration of the Darnley Mausoleum. Work, funded by National Highways Designated Funds but related to the Lower Thames Crossing proposal, has been taking place on the concept of a Super National Nature Reserve with Natural England and other relevant landowners and other interested parties.

- 8.42. Ask: A commitment to supporting a wider environmental project covering ecology, landscape and heritage and other related matters such as access and car parking. This needs to come from the project as Designated Funds do not exist after 31 March 2025 and is in compensation.

9. Marine Biodiversity

- 9.1. The Council has no inhouse expertise in this area and is therefore content to rely on the inputs from Kent County Council Ecology Unit, Natural England, Environment Agency, Marine Management Organisation, Port of London and other Interested Parties with appropriate knowledge.
- 9.2. The primary source of information is:
- APP-147 6.1 ES Chapter 9 – Marine Biodiversity
- 9.3. Given that there is no proposed use of the River Thames from Gravesham the main issues would appear to be:
- Any impacts that may arise from the discharge of water via the Denton outfall into the river
 - Possible implications from a tunnel collapse or similar catastrophic event
- 9.4. The latter point would be an extreme event and would need to be dealt with in the context of a plan that the contractor will need to develop to deal with such an event.
- 9.5. The water outflow issue relates to its quality, which would also impact on the water resources, and therefore terrestrial ecology, of the marches.

Asks

- 9.6. Monitoring regime for the water quality both in the marshes and the Thames and a list of potential actions in the event of any issues arising.

10. Geology and Soils

- 10.1. This section covers agricultural land and unexploded ordnance. The primary source of information is:
- APP-148 6.1 ES Chapter 10 – Geology and Soils

Agricultural land

- 10.2. As explained in Chapter 10 of the ES (APP-148), agricultural land in England and Wales is graded between 1 and 5, depending on the extent to which physical or chemical characteristics impose long-term limitations on agricultural use. Grade 1 land is excellent quality agricultural land with very minor or no limitations to agricultural use, whilst Grade 5 is very poor-quality land with severe limitations. Grades 1, 2 and 3a are defined as Best and Most Versatile (BMV) land.
- 10.3. A summary of the findings of the Applicant's (RR-0264) detailed survey is presented in Section 10.4 of APP-148, while the Agricultural Land Classification Factual Report (APP-425) provides the findings of the detailed survey.
- 10.4. Page 2 of the Agricultural Land Classification Mapping (APP-302) shows that the land affected in Gravesham is predominantly grade 2 with some grade 1 land near the A2 junction, pockets of grade 3a and mainly grade 3b around the southern portal and Milton compound area.
- 10.5. Whilst the Council was advised that the Project design has been optimised to minimise the land take required, in particular where this is higher quality agricultural land, the ES does recognise that a significant amount of BMV land would be taken by the Project as shown by table 10.8 (APP-148). Over 50% (55.2%) of the land within the Order Limits south of the Thames, is considered to be BMV agricultural land.
- 10.6. The National Networks National Policy Statement 2014 advises that where significant development of agricultural land is demonstrated to be necessary, applicants should seek to use areas of poorer quality land in preference to that of a higher quality. It is not clear how this has informed National Highways design for the project from our consideration of APP-516 Design Principles or APP-508 National Design Rationale. In particular in respect to the permanent and temporary land take and the decisions made about where agricultural land will be re-instated.
- 10.7. The loss of this amount of BMV land would be significant and weighs against the proposals as National and Local Planning policies seek to protect this finite resource especially as it is not being mitigated or offset elsewhere.

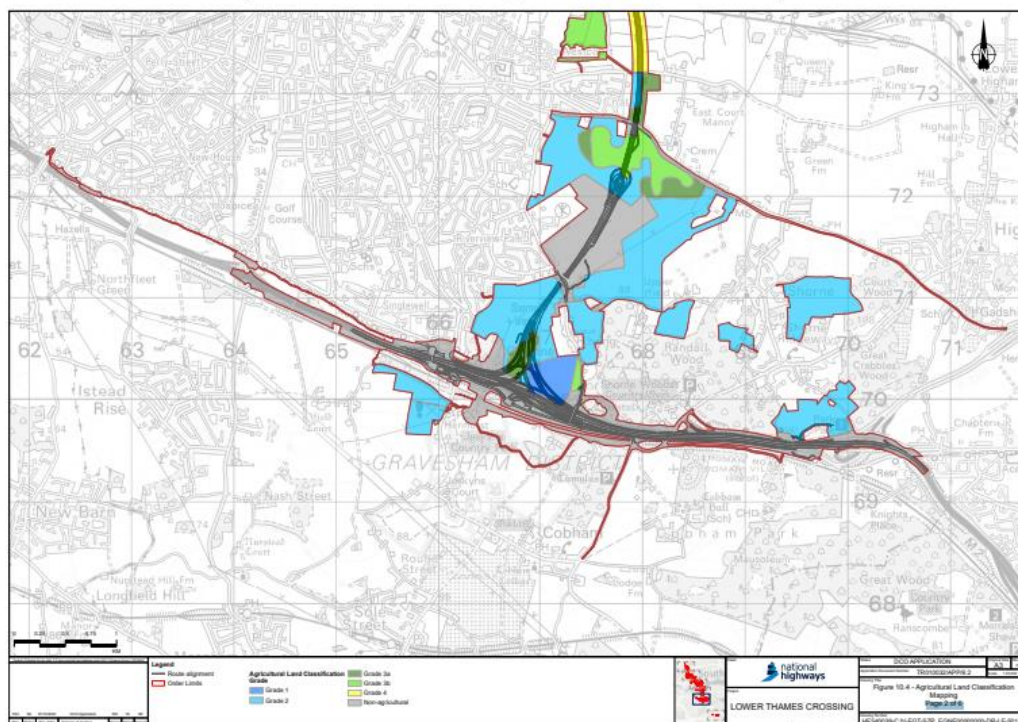


Figure 10.1 Agricultural Land Classification mapping

Table 10.8 ALC grade distribution within the Order Limits – south of the Thames

ALC grade	Area (ha)	Area (%)
Grade 1 (Excellent)	17.22	2.5
Grade 2 (Very Good)	272.92	39.7
Subgrade 3a (Good)	89.35	13.0
Subgrade 3b (Moderate)	53.96	7.8
Grade 4 (Poor)	19.75	2.9
Grade 5 (Very Poor)	0.00	0.0
Other Land/Non-agricultural	234.40	34.1
Total	687.60	100.0

Table 10.1 ALC grade distribution south of the river from Table 10.8

10.8. The loss of high-quality agricultural land, to development or other uses is a clear concern to the public. As the Dicken Country Protection Society have highlighted in their Relevant Representation, this concern is multi-faceted as they are querying using high grade agricultural land for tree planting when they consider it is in the national interest to use it to grow food. They have also raised concerns about the impact on the viability of agricultural holdings (section on population and health in this LIR) and damage existing open landscape (section on landscape in this LIR).

Unexploded Ordnance (UXO)

10.9. An UXO desk-based study was carried out by Zetica for National Highway (APP-433). The executive summary is included within chapter 10 of the ES. Three 3 specific locations relevant to Gravesham are identified:

- River Thames (M2) - Several potential sources of UXO hazard have been identified on the part of the Site encompassing the River Thames. The main anticipated ordnance hazard is from air dropped UXB due to the heavy WWII

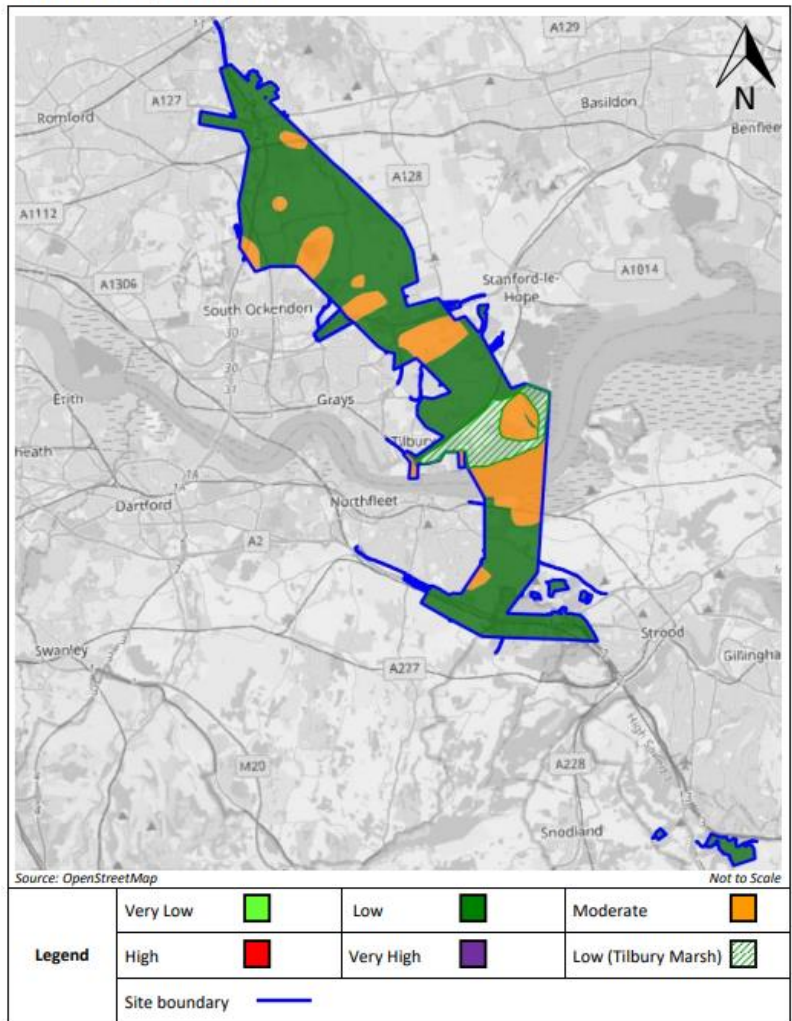
raids in the region and Unexploded Anti-Aircraft (UXAA) shells fired from the numerous gun batteries in the vicinity of the Site. This part of the Site is therefore assigned a moderate UXO hazard level.

- Milton Range (M3) - Part of the Site encompasses Milton Range, which has been in use from the 19th century until the present day. In addition to training with Small Arms Ammunition (SAA), records indicate that the range was used for mortar practice during WWII, providing a potentially significant hazard. This part of the Site is assigned a moderate UXO hazard level due to the potential presence of mortars (and other Close Combat Munitions such as hand grenades) at shallow depths.
 - Pipe Mines at RAF Gravesend (M4) - Canadian Pipe Mines were laid under the runways and perimeter track at Royal Air Force (RAF) Gravesend at the beginning of WWII so that the airfield could be destroyed in the event of a German invasion. Part of the Site encroached upon the area that was pipe mined and records suggest that not all of the mines were removed during WWII and post-WWII clearances. Therefore, it is considered prudent to assign this part of the Site a moderate UXO hazard level to account for the possibility that pipe mines remain in situ.
- 10.10. The report advises that it should be noted that during WWII the Order Limits were located in an area subjected to heavy bombing due to its proximity to Continental Europe and being on the flightpath to important strategic targets and that large parts of the Order Limits comprised marshland during WWII and it possible that bomb and shell impacts may have been missed and gone unrecorded in uninhabited areas. The report therefore concludes in paragraph 10.4.176 that the potential for encountering a UXB or UXAA shell anywhere on the Site cannot be discounted. All of the order limits, therefore, have at least a low hazard level and no areas have a very low hazard level.
- 10.11. Unexploded ordnance is a concern for local residents, schools and businesses. Early in 1990, information came to light which showed that a network of pipe bombs had been buried at the Gravesend airfield during the war and evidence indicated that the original clearance was incomplete. This resulted in many of the residents of Riverview Park being evacuated whilst the Royal Engineers carried out 'Operation Crabstick' to look for and remove any remaining underground explosives. More pipe mines were discovered during works in 2006, possibly because, as set out in the report, pipe mines on airfields could be laid at depths up to 5.0m below ground level beyond the typical detection capabilities of geophysical instruments of the time, and also potentially below post-WWII housing foundations.
- 10.12. The Borough Council's concerns are threefold:
- impact on residents etc. of fear of UXO, even if none found,
 - if UXO is found, that National Highways have plans in place to ensure that disruption is minimal with clear evacuation plans and temporary accommodation plans, and
 - finally, the implications for the Council if UXO are found and National Highways (or their contractors) plans are insufficient and its role in providing rest centres (especially as Cascades would not be available due to its proximity to the incident).

Lower Thames Crossing UXO Desk Study



UXO hazard zone plan of the Site



11. Material Assets and Waste

- 11.1. The basic documents for this area are:
- APP-149 - 6.2 ES Chapter 11 Material Assets and Waste
 - APP-388 - Outline Material Handling Plan (oMHP)
- 11.2. On the assumption that spoil from the tunnels is dealt with north of the River Thames, the key issues are:
- Material from the approach cutting to the southern portal
 - Removal of any contaminated material
 - Import of material for the embankment beside the A122 to A289/A2 (local road) at Thong
 - General movement of material to excavate or build up embankments, cuttings and landscape features
- 11.3. The Council notes that the Environment Agency supported the Project proposals to maximise reuse of excavated materials within the design and limit impacts on the capacity of the local waste management infrastructure and road network. This approach fits with the policies laid out in Kent Minerals and Waste Plan.
- 11.4. Table 11.10 Waste elimination in design includes in the project evolution:
- Moving the South Portal approximately 350m south from the location presented at Statutory Consultation, resulting in a reduced excavation for the road cutting
 - Retention and reuse within the Order Limits of excavated materials and treated tunnel boring machine slurry to fulfil the Project's requirements for fill and landscaping material.
- 11.5. Details of on-site storage and stockpiling arrangements are set out in the Outline Material Handling Plan (oMHP) (APP-338). Section 7.2 of APP-338 provides an overview of excavated material volumes with Table 7.1 – taken from the report - providing a further breakdown of the excavated material volumes including bulk movements of materials between sections within the Order Limits.

Table 7.1 Volume and type of excavated materials (bulked)

Location	Section A – Kent Roads		
South of the River Thames	Material type	Material is anticipated to be Chalk (as dug), with lesser contributions of made ground and Head deposits.	
	Excavated volume (m ³)	~1,400,000	
	Volume for reuse within Order Limits (m ³)	~1,396,500	
	Provision for external import of engineering fill (m ³)	~360,000 ^(Note 1)	
	Imported from within Order Limits and reused (m ³)	~600,000 ^(Note 2)	
	Volume for offsite management (m ³)	Inert/Non-hazardous	0
Hazardous		~3,500	
Section B (South of River Thames) – tunnels & approaches			
South of the River Thames	Material type	Material is anticipated to be Chalk (as dug) with lesser contributions of made ground, Alluvium, River Terrace Deposits and Head deposits.	
	Excavated volume (m ³)	~2,600,000	
	Volume for reuse within Order Limits (m ³)	~2,000,000	
	Exported for reuse within Order Limits (m ³)	~600,000 ^(Note 2)	
	Volume for offsite management (m ³)	Inert/Non-hazardous	0
Hazardous		0	
Section B (North of River Thames) – tunnels & approaches			
North of the River Thames	Material type	Material is anticipated to be Chalk slurry (from TBM) with made ground (landfill), pulverised fuel ash, Peat and Alluvium from the launch ramp and North Portal area.	
	Excavated volume (m ³)	~2,700,000	
	Volume for reuse within Order Limits (m ³)	~1,886,000	

- 11.6. The Council notes that these figures are different from that shown in the draft oMHP published for the Community Impacts Consultation. It must question why the volume of hazardous material for offsite management (m³) which was previously ~24,000 m³, is now only ~3,500 m³? This suggests that 85% of the material previously identified as hazardous from Section A + B (South) is remaining on site or has now been found to be non-hazardous.
- 11.7. Known sources of potentially hazardous material include Cobham North (site has been subject to considerable remedial work) and Cobham South Services, any buildings that may contain asbestos or other hazardous materials, possible contamination from Gravesend Airfield and potentially some on the fill on Southern Valley Golf Course site. Some of the material to make bunkers, greens etc is believed to have come from the Greenwich Peninsula when the course was built, and it is unclear from the Council's records (the matter was handled primarily by the Environment Agency) what this actually was. This is in a context where some of the material from the Greenwich Peninsula was known to be highly toxic.
- 11.8. Whilst no material is shown as being moved from North of the River to South of the River, we note that section, as recorded in section 2, the oLEMP (APP-490)

suggests importing PFA to the site east of Thong. That is both a potential movement from north of the river and the import of contaminated material.

- 11.9. As explained in section 2, the construction of the Project route north of the A2 and south of Thong Lane (near the A2 compound) involves a series of deep cuttings and construction of embankments. This earthwork operation requires approximately 2 million m³ of excavated material to be handled and placed to form the deep cuttings, embankments and proposed Project landscape contours. The earthwork assessment has identified there is a deficit of 600,000m³ of excavated material, which will be sourced from the South Portal site (Southern tunnel entrance compound), just north of Thong Lane, whilst the remaining 1.4 million m³ will be sourced from the cutting operations between Thong Lane and the A2.

	Community Impacts Consultation	Submission
Kent roads excavated material (m ³)	~1,480,000	~1,400,000
Imported from within Order Limits and reused (m ³)	~270,000	~600,000
Lorry movements associated with transporting the excavated material from the South Portal worksite to south of Thong Lane	15,000	35,000

- 11.10. This is a significant increase in lorry movements. Also, as explained in paragraph 7.4.9 of the oMHP, this material would be transported along the internal haul route but would need to cross Thong Lane. The road crossing would be managed under temporary traffic signals or a similar system to manage the traffic flows along Thong Lane. With the increase in lorry movements, this will increase the longevity and / or intensity of the disruption for local residents and users of the new footpath link between Riverview Park and Thong.
- 11.11. The oMHP also refers to provisions that have been made within the Order Limits either side of the proposed project route and associated compounds (A2 compound and Southern tunnel entrance compound) for the stockpiling of material. The Applicants general approach to stockpiling is that it is necessary to include provision for stockpiling of excavated materials during construction works to aid the phasing of construction and the reuse of material across the project. They also explain that, where reasonably practicable, the stockpile locations within the compounds will be positioned to provide mitigation, such as sound or visual barriers, in line with the ES.
- 11.12. Depending on their size stockpiles can be a visual intrusion, create noise (from the HGV movements), light pollution (if lit) and dust. The latter is a particular problem with chalk which is dry and dusty in summer (and wet and unworkable in winter).

12. Noise and Vibration

Introduction

- 12.1. The Noise and Vibration assessment submitted with the Application in APP-150 6.2 ES Chapter 12) considers the potential effects of construction and operation of the proposed road scheme. This includes assessment of the changes in road traffic noise on both new and existing highways because of the scheme, as well as noise from operation of the proposed tunnel ventilation system.
- 12.2. The assessment scoped out vibration impacts from all construction activities other than piling and tunnel boring operations. This was based on historic published findings that vibration levels from general construction activities are below the level of human perception when undertaken at 20m or more from sensitive receptor locations. There are no planned 'general construction activities' to be undertaken within 20m of sensitive receptors in Gravesham.
- 12.3. The analysis in Chapter 12 is based on the traffic predictions provided by the LTAM model, the reservations about which are set out in section 3 above. In the Council's view they therefore represent the minimum case and the reasonable worst case. Without additional analysis following a more realistic set of the assumptions being input into LTAM runs it is not possible to provide greater detail.
- 12.4. The bulk of the text in this section is from the Council's consultants on this area, Bureau Veritas.

The Project

Construction

- 12.5. Within the Gravesham Borough area, the application proposes the construction of a new A-road (A122) connection between the A2 and M2 and a new tunnel portal west of Gravesend. Much of the new road will be constructed within a cutting, down to a depth of up to 25m below local ground level at the tunnel portal location.
- 12.6. Following a period of preliminary works, the main construction works will take place over 60 months (5 years), with the aim to open the new road to traffic in late 2030. Construction will require significant earthworks notably to create the deep cutting to the southern portal and to take the new road under Thong Lane, which will be reconstructed over a new green bridge.
- 12.7. Construction noise threshold levels for the daytime period were derived either from measured levels or, where measurement data was not considered to be representative, from modelled predictions based on the Do-minimum opening year. Where baseline measurements were undertaken during daytime only, the thresholds for evening and night were *derived by subtracting 10 dB and 20 dB, respectively*. This provides a precautionary approach to threshold setting, as the differential for evenings and night-time periods relative to the daytime is likely to be significantly less, as evidenced by the long-term measurement datasets (Table 12.8 in APP-444).
- 12.8. The construction noise predictions assume that Best Practicable Means (BPM) will be implemented, as directed by a more detailed Noise and Vibration Management Plan (NVMP) to be prepared by the Contractor for each part of the construction

- works. Production of the NVMP is a requirement (REAC Ref. NV002) of the Code of Construction Practice (APP-336).
- 12.9. Paragraph 12.6.9 (APP-150) indicates that a 10 dB reduction due to the application of BPM was factored into the noise predictions. Latterly, in Table 12.31 the commentary infers a further 10 dB reduction due to the specific noise control measures being proposed for respective receptor locations. It is not clear whether this is a case of double counting. Notwithstanding this, the detailed noise predictions, including site-specific control measures, to inform the Control of Pollution Act, Section 61 Applications (REAC Ref. NV002) should clarify the situation for all receptors prior to each relevant phase of works commencing.
- 12.10. Construction noise levels were predicted at 37no. receptor locations in the Gravesham Borough area, of which Table 12.31 (APP-150) identifies 13no. receptor locations that are predicted to experience a significant adverse effect during the construction phase. It is important to note that some receptor locations represent several, or more, noise sensitive receptors (notably dwellings) within a given area. For example, CN19 represents the noise exposure experienced by dwellings on Thong Lane, Genesta Glade and Vigilant Way in Riverview Park (potentially up to 18no. dwellings).
- 12.11. No significant construction traffic noise impacts are predicted in the Gravesham Borough area.
- 12.12. Construction vibration levels were predicted at 8no. receptor locations in the Gravesham Borough area, of which Table 12.40 identifies that 1no. receptor location (Kartar House, Watling Street) would potentially experience vibration levels above the threshold (1 mm/s PPV) if a percussive piling technique is adopted for installation of retaining wall RWN0000102 (Plate 3.1 in APP-444). However, the duration of exposure would not be sufficient to cause a significant adverse effect.
- 12.13. The assessment concludes that operation of the Tunnel Boring Machine (TBM) and Micro-TBM will not result in significant ground-borne noise or vibration effects at any sensitive receptor.
- 12.14. The assessment concludes that, due to the existing river traffic, additional vessel movements associated with the Project will not result in significant adverse noise impacts.

Operation

- 12.15. Once built and operational, noise from vehicles using the new route, and new M2/A2 connecting links, will potentially lead to adverse noise impacts on local residents, especially further away from the A2/M2 where existing road traffic noise is much lower.
- 12.16. Table 12.47 (APP-150) concludes that 574no. dwellings (day) and 436no. dwellings (night) will experience a moderate or major adverse noise change in the Opening Year, across the entire Project. Table 12.49 and Figure 12.7 indicate that a significant proportion of these are located in Riverview Park and on Thong Lane. Also, one Other Sensitive Receptor (St. Aidan's Church in Gravesend) is predicted to experience a moderate or greater adverse noise change in the Opening Year.
- 12.17. Likewise, Table 12.48 (APP-150) concludes that 389no. dwellings (day) and 275no. dwellings (night) will experience a moderate or major adverse noise change in the long-term assessment year, across the entire Project. Again, Table 12.49 (APP-150) and Figure 12.8 (APP-316) indicate that a significant proportion of these are located in Riverview Park and on Thong Lane.

- 12.18. Table 12.49 (APP-150) identifies that 4no. dwellings on Henhurst Road, south of the M2 would experience either a moderate or major adverse effect as an indirect impact of the Project. Based on a review of the traffic data assumptions used in the assessment, this is likely due to the predicted 60% increase in forecast HGV traffic using Henhurst Road and Jeskyn's Road. The Council consider that this localised increase in HGV traffic is not justifiable considering that Henhurst Road narrows considerably where it passes through the residential hamlet of Henhurst Hill.
- 12.19. The new tunnels will require continuous operation of a ventilation system controlled via a new control building to the north of the proposed southern tunnel portal. This will house pump rooms and associated electrical supply infrastructure which has the potential to generate environmental noise. The ES concludes that the tunnel ventilation system noise would not exceed the existing background sound level and would therefore not be significant.

Proposed Mitigation and Compensation

- 12.20. In order to reduce the potential impacts of the Project, the Applicant proposes embedded mitigation measures including:
- Construction: Earthworks/bunding established early in the construction programme to provide screening;
 - Construction: 300m restriction zone preventing earthworks taking place during the Summer evening period (up to 10pm); and
 - Operation: Route alignment design away from sensitive receptors, and screened by earthworks (cuttings/bunds).
- 12.21. Good construction practice will be implemented and secured within the Code of Construction Practice (APP-). Further consideration of the Register of Environmental Actions and Commitments (REAC) relevant to construction noise and vibration is discussed in Section 5.
- 12.22. For the operational phase, no acoustic barriers are proposed for the project south of the River Thames. Acoustic barriers had previously been included within the proposals presented in the Preliminary Environmental Information Report.
- 12.23. REAC Ref. NV013 refers to Figure 12.6 (APP-314) which identifies where new and altered roads will be surfaced with a Thin Surface Course or Low Noise Surface (LNS). These are defined as:
- Option 1 - Road Surface Influence (RSIH) = -7.5 dB(A) or better
 - Option 2 - Road Surface Influence (RSIH) = -3.5 dB(A) or better ('Level 3')
 - Option 3 - Road Surface Influence (RSIH) = -2.5 dB(A) or better ('Level 2')
- 12.24. The decibel values relate to the variation in expected surface/tyre noise relative to a standard Hot Rolled Asphalt (HRS) surface (20 mm aggregate) when newly laid.
- 12.25. The Borough Council is concerned that the Applicant is relying on this measure to reduce unacceptable road traffic noise increases due to the Project, when there is insufficient evidence provided to demonstrate that such surfacing products can achieve the required noise reductions, especially in the medium to long-term.
- 12.26. All surfacing products must be approved under the Highways Approval Scheme (HAPAS). Without sight of a test certificate for suitable products, notably that proposed for Option 3 above, and also confirmation of the degradation rate of such, we consider the assessment to be unreliable.

- 12.27. A Highways England collaborative research paper found that the noise reduction performance of a Hot Rolled Asphalt surface decays by approx. 0.2 dB per year. Whilst thin surfaces (low noise) were found to provide between -3 and -8.5 dB tyre/road noise reduction, these are likely to come with higher decay rates (approx. 0.5 dB per year). Therefore, with surface course interventions expected to be required every 10 years (Annex A of Appendix 12.10 (APP-450)), the noise reduction performance would mean that predicted road traffic noise levels would potentially be up to 5 dB higher within its lifespan. Furthermore, this also assumes that all repairs to the surface due to damage would be done so using the same surface material, with no significant deviation at joints which would add to the surface/tyre noise generation.
- 12.28. Table 12.48 (APP-150) suggests that 52no. dwellings and 1no. Other Sensitive Receptor will experience a moderate or major adverse noise change in the long-term assessment year, across the entire Project. The number of affected receptors located in the Gravesham Borough area is not provided, but Figure 12.8 (APP-316) indicates that a significant proportion of these are located in Riverview Park and on Thong Lane. It is therefore the Council's view that, in addition to the proposed low noise road surfaces, acoustic barriers should be reconsidered for this location (identified as barrier Options 1 and 2 in Plate 4.1 of Appendix 12.10 (APP-450)) to provide more reliable long-term road traffic noise mitigation.
- 12.29. It is the Borough Council's view that the calculated TAG values for barrier options presented in Tables 4.1 and 4.2 of Appendix 12.10 (APP-450) are underestimated, as they assume that the road surface noise performance will not reduce over time, as it degrades.

Methodology and assumptions

Baseline Conditions

- 12.30. Baseline noise surveys were conducted at 12 locations, comprising five attended 3-hour measurements, two 24-hr unattended surveys and five unattended 7-day surveys. The Council considers that the scope and spread of the baseline surveys is appropriate and sufficient to obtain reliably inform the existing baseline situation.
- 12.31. In addition to residential dwellings affected by the proposed development, paragraph 12.4.3 of Chapter 12 (APP-150) identifies 26no. Other Sensitive Receptors in the Gravesham Borough area. These include places of worship, education facilities (nurseries through to colleges), hotels and residential care homes.
- 12.32. The baseline surveys identify road traffic on the main highways in this area (A2, M2, A226 and other local roads) as being the predominant noise source affecting the area. Rail traffic on the HS1 line and North Kent railway also contributed to the acoustic climate at some locations.

Construction

- 12.33. The construction noise assessment was undertaken based on guidance provided in DMRB LA111 and BS5228-1: 2009+A1: 2014 which is appropriate. The study area includes all noise sensitive receptors within 300m of any proposed construction works, and construction noise levels for each phase of works were predicted at 37no. receptor locations in the Gravesham Borough area. As highlighted previously, some receptor locations represent several, or more, noise sensitive receptors (e.g., dwellings) within a given area.
- 12.34. Until a Contractor is appointed, the precise construction methodologies, including plant selection, are not known. The ES therefore relies on assumptions of likely

construction plant and methodologies, which is standard practice in accordance with the guidance. Assumptions at this stage typically err on the cautionary side, and the 'Envisaged Construction Plant Itinerary' at Table 2.2 of Appendix 12.4 (APP-445) appears to be reasonable.

- 12.35. The threshold criteria upon which the assessment of construction noise effects is based are reasonable and appropriate. Further assessment based on actual proposed activity information provided by the Contractor, including site-specific mitigation measures, will be undertaken prior to the works to inform respective Section 61 Consent applications to the Council.
- 12.36. The construction vibration (piling and TBM/Micro-TBM activity only) assessment was undertaken based on guidance provided in DMRB LA111 and BS5228-2: 2009+A1: 2014 which is appropriate. The study area includes all vibration sensitive receptors within 100m of any proposed percussive or vibratory piling works, and 500m of any TBM activities. Ground-borne noise was also assessed for TBM works. Piling vibration levels were predicted at 8no. sensitive receptors in the Gravesham Borough area.
- 12.37. The threshold criteria upon which the assessment of construction vibration effects is based are reasonable and appropriate.

Operation

- 12.38. The assessment scopes out consideration of noise from 132kV electricity overhead lines (OHL) due to typically low electrical stresses along the conductors. This is a reasonable assumption.
- 12.39. Intra-project cumulative noise associated with the new road, new/diverted OHLs and tunnel ventilation plant has not been assessed. This is because road traffic noise from the new road is expected to be dominant at all assessment locations where all three elements might contribute. This is a reasonable assumption.
- 12.40. The study area for the assessment of operational road traffic noise along the new Project route was extended from the standard (DMRB LA111) requirement of 600m to 1,200m. This was done to account for "the rural nature of the Project in some places" (paragraph 12.3.48b. of APP-150).
- 12.41. Future traffic flow assumptions, used in the noise prediction modelling that informs the DMRB assessment, were derived from the Applicants transport model. Future baseline traffic flows include wider growth in line with standard industry forecasts, adjusted for local development.
- 12.42. Impact on local residents and businesses (with and without mitigation) is covered in the Proposal Section above.

Asks

- 12.43. Noise and vibration monitoring will be required during the construction phase and should be agreed with the Council prior to works commencing, via an approved Section 61 consent. As a minimum, it is expected that continuous vibration monitoring will be conducted at Kartar House, Watling Street (CV2) during piling of retaining wall RWN0000102 (Plate 3.1 in APP-444). Vibration should also be undertaken at representative locations where properties are within 65m or proposed percussive piling or 45m of vibratory piling.
- 12.44. Where the ES (Tables 12.32 in APP-150) identifies a potential exceedance of the respective construction noise threshold, it is expected that a Section 61 application will be made detailing more accurate noise predictions for the activities proposed

and the measures proposed to minimise noise impacts in accordance with Best Practicable Means (REAC Ref. NV002 in APP-336). Appropriate noise monitoring will be agreed with the Council prior to works **commencing, and**

- 12.45. Whilst the noise reduction performance of certified low noise surface products might be achieved when newly laid, evidence indicates that these surfaces tend to be have less durability and greater deterioration in acoustic performance over time . It is therefore requested that acoustic barriers (Options 1 and 2 in Plate 4.1 of Appendix 12.10 (APP-450)) are reconsidered, based on re-assessment of the Value for Money appraisal assuming the average acoustic performance of a thin road surface over its lifetime.
- 12.46. The Noise Insulation Regulations Assessment (APP-447) should also be reviewed based on the updated road traffic noise predictions.
- 12.47. The Council would also like road traffic noise levels to be continuously monitored over the long-term to demonstrate that the low noise road surfacing proposals achieve the performance assumed in the assessment. This should comprise a single monitoring location in the Riverside Park/Thong Lane area, adjacent to the new road. This data should be audited annually to assess the need for earlier than scheduled intervention (surface replacement).

13. Population and Human Health

13.1. This section considers the following documents:

- APP-151 6.2 Chapter 13: Population and Human Health
- APP-495 7.2 Planning Statement

Gravesham's Economy

13.2. A key objective for the Council under the 'place' heading is to promote a vibrant economy where economic growth and a matching skilled workforce helps to increase the borough's appeal and prosperity, providing increased local opportunities for residents and a reduced need to travel outside the borough for employment. This is articulated in the Corporate Plan 2019-2023¹⁴ which states that the Council wants a strong, resilient and productive economy in Gravesham, providing rewarding jobs and incomes for local people and that to achieve this we need to create the right conditions for major regeneration and sustainable economic growth, both now and into the future.

13.3. From both a planning and practical perspective, it is recognised that Gravesham is not an island, and that delivery of the Council's vision will depend on working in partnership with others in the public, private and voluntary sectors.

13.4. This is particularly the case when it comes to the economy and economic development where strategic cross-boundary issues are involved and where prosperity and growth are equally dependent on supply side factors (such as ensuring we have a workforce with the necessary training and skills) as well as demand for goods and services.

13.5. The Kent Analytics section of Kent County Council regularly publishes statistical bulletins with the facts and figures about economy and employment in Kent. In December 2022, they published Kent Economic Indicators (revised)¹⁵. The charts are taken from those bulletins and so the chart numbers relate to that bulletin, so this is easier to see, these charts have been given a thick black border.

13.6. So that it is easier to compare the ranking of the indicators, the order in which they are ranked has been set so that the higher the score the "better" the outcome. So, for example the earnings indicators are ranked in ascending order where the highest earnings (good) have a percent rank score of 100. In the case of unemployment however, the indicators are ranked in descending order, so that the lowest unemployment rates (good) have a percent rank score of 100. The closer to 100 the percent rank score is the better.

¹⁴ <https://democracy.gravesham.gov.uk/documents/s54789/2.%20Appendix%20%20-%20Draft%20Corporate%20Plan%202019-23.pdf.pdf>

¹⁵ https://www.kent.gov.uk/_data/assets/pdf_file/0006/8187/Kent-economic-indicators-report.pdf

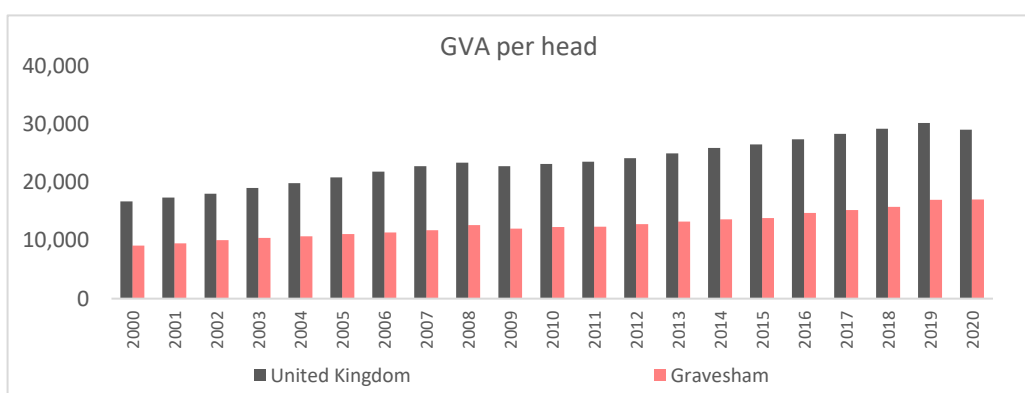


13.7. As can be seen from Chart 7 from the bulletin:

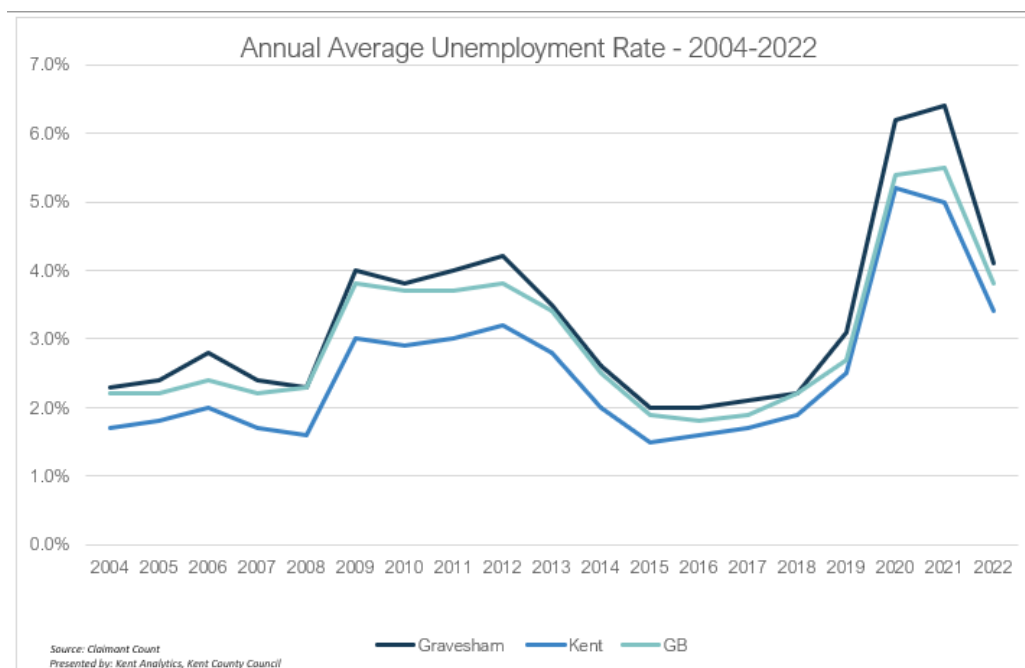
- Gravesham performs above the national median in 4 indicators:
 - median gross weekly workplace earnings;
 - median gross weekly resident earnings;
 - employment rate; and
 - % change in employees
- Gravesham performs below the national median in 8 indicators:
 - job density;
 - unemployment rate;
 - stock of businesses;
 - 3-year business survival rates;
 - GVA per head;
 - percentage of employees in the knowledge economy;
 - percentage qualified to NVQ4 and above; and
 - percentage qualified to NVQ2 and above.

- Gravesham performs best in Kent for the percentage change in employees scoring 93.5 out of 100.
- Gravesham performs worst in Kent for job density and percentage of employees in the Knowledge Economy scoring 5.8 out of 100 for both indicators.
 - Gravesham has a job density of 0.57. A density of less than 1 indicates there are fewer than 1 job per resident. The knowledge economy has been identified as a key sector to drive future economic growth.
 - Whilst the region average is 22% for the percentage of employees in the Knowledge Economy and the England average is 21%, Gravesham’s percentage is just 8.5%.

13.8. The below chart provides the GVA per head for Gravesham compared to the United Kingdom average.



13.9. The below table provides a timeseries of Gravesham’s annual average unemployment rate and how it tracks above the Kent and GB average, whilst the overall employment rate in the Borough is higher than



Business Growth

13.10. The Business Demography dataset is published annually by the Office for National Statistics (ONS) and is based on information from VAT and PAYE administrative systems. This dataset provides information about the births and deaths of businesses and their survival rates. It also provides a count of the number of enterprises which were active throughout the year. The following information is taken from Kent Analytics' January 2023 bulletin¹⁶. The charts are taken from those bulletins and so the chart numbers relate to that bulletin, so this is easier to see, these charts have been given a thick black border.

Births Of New Enterprises 2021	Number	Birth rate	Number change 2016-21	% change 2016-21	Number change 2020-21	% change 2020-21
Ashford	715	10.8	-145	-16.9%	15	2.1%
Canterbury	670	11.3	-50	-6.9%	75	12.6%
Dartford	650	12.1	-75	-10.3%	-95	-12.8%
Dover	430	11.1	-25	-5.5%	-45	-9.5%
Folkestone & Hythe	450	11.1	-105	-18.9%	20	4.7%
Gravesham	590	12.7	-95	-13.9%	5	0.9%
Maidstone	1,265	14.2	335	36.0%	145	12.9%
Sevenoaks	705	9.9	-60	-7.8%	45	6.8%
Swale	620	11.4	-60	-8.8%	70	12.7%
Thanet	660	13.9	80	13.8%	100	17.9%
Tonbridge & Malling	750	11.2	20	2.7%	0	0.0%
Tunbridge Wells	665	10.0	-90	-11.9%	25	3.9%
Kent	8,170	11.7	-270	-3.2%	360	4.6%
Medway	1,425	13.5	-20	-1.4%	-50	-3.4%
Kent & Medway	9,595	11.9	-290	-2.9%	310	3.3%
South East	48,375	10.8	-5,500	-10.2%	690	1.4%
England	324,485	12.5	-34,195	-9.5%	25,370	8.5%
England & Wales	338,430	12.5	-32,005	-8.6%	27,930	9.0%
Great Britain	357,340	12.4	-34,535	-8.8%	29,990	9.2%
United Kingdom	363,995	12.4	-33,545	-8.4%	30,975	9.3%

13.11. In 2021, the Gravesham enterprise birth rate was 12.7% which was slightly higher than the Kent enterprise birth rate of 11.7%, the South East rate of 10.8% and the national rate of 12.4%. In 2021, Gravesham's enterprise death rate at 11.7% was higher than the Kent and national rate.

13.12. A ratio of births to deaths above 1.0 means that there were more enterprise births than deaths. In 2016, Gravesham, along with Dartford, Swale and Folkestone & Hythe, had a ratio in excess of the national average of 1.48. In 2021, Gravesham's rate had reduced to 1.09 which was slightly less than the Great Britain average of 1.11 and Kent average of 1.10.

¹⁶ [Business Demography \(kent.gov.uk\)](https://www.kent.gov.uk/business-demography)

Table 5: Ratio of enterprise births to deaths

Ratio of business births to deaths	2016	2017	2018	2019	2020	2021
Ashford	1.45	1.01	1.46	1.16	1.06	0.88
Canterbury	1.38	0.99	1.18	1.21	1.07	1.24
Dartford	1.63	1.06	1.33	1.64	0.98	0.91
Dover	1.38	1.00	1.16	1.21	1.48	1.10
Folkestone & Hythe	1.59	0.87	1.16	1.04	1.16	1.11
Gravesham	1.59	1.11	1.13	1.23	1.14	1.09
Maidstone	1.21	1.17	1.18	1.28	1.54	1.39
Sevenoaks	1.30	1.07	1.27	1.01	0.93	1.04
Swale	1.49	1.03	1.21	1.16	1.09	1.12
Thanet	1.25	1.12	1.17	1.17	1.26	1.47
Tonbridge & Malling	1.43	1.09	1.23	1.18	1.21	0.97
Tunbridge Wells	1.02	1.02	1.10	0.98	1.06	1.06
Kent	1.36	1.05	1.22	1.19	1.15	1.10
Medway	1.45	1.04	1.12	1.37	1.39	0.89
Kent & Medway	1.37	1.05	1.20	1.21	1.18	1.07
South East	1.33	1.09	1.22	1.17	1.08	0.99
England	1.51	1.07	1.17	1.20	1.12	1.12
England And Wales	1.50	1.07	1.18	1.20	1.12	1.12
Great Britain	1.48	1.07	1.17	1.20	1.11	1.11
United Kingdom	1.48	1.08	1.18	1.20	1.11	1.11

Table 6: Count of active enterprises

Count Of Active Enterprises 2021	Number	Number change 2016-21	% change 2016-21	Number change 2020-21	% change 2020-21
Ashford	6,605	4,589	76.7%	55	0.8%
Canterbury	5,955	-30	-0.5%	135	2.3%
Dartford	5,355	-305	-6.6%	-190	-3.4%
Dover	3,875	-715	-20.4%	90	2.4%
Folkestone & Hythe	4,040	540	13.8%	110	2.8%
Gravesham	4,635	735	17.5%	45	1.0%
Maidstone	8,885	4,695	61.8%	525	6.3%
Sevenoaks	7,110	-490	-7.0%	15	0.2%
Swale	5,460	-1,540	-30.6%	140	2.6%
Thanet	4,760	-265	-6.4%	225	5.0%
Tonbridge & Malling	6,725	2,560	43.2%	145	2.2%
Tunbridge Wells	6,635	710	10.5%	25	0.4%
Kent	70,040	63,250	98.3%	1,320	1.9%
Medway	10,560	-53,770	-579.4%	295	2.9%
Kent & Medway	80,600	71,320	96.9%	1,615	2.0%
South East	449,130	375,520	87.5%	-1,250	-0.3%
England	2,592,840	2,163,670	88.7%	36,590	1.4%
England And Wales	2,698,655	259,395	10.2%	40,315	1.5%
Great Britain	2,875,005	338,805	12.5%	40,215	1.4%
United Kingdom	2,939,675	228,635	8.3%	42,560	1.5%

3-year survival rates	2019 (born 2016)	2020 (born 2017)	2021 (born 2018)
Ashford	57.0	60.4	59.1
Canterbury	56.9	64.8	59.2
Dartford	54.5	61.4	64.2
Dover	48.4	58.2	65.4
Folkestone & Hythe	54.1	58.6	60.7
Gravesham	54.7	57.7	62.6
Maidstone	59.7	61.1	67.6
Sevenoaks	63.4	65.2	60.9
Swale	57.4	58.8	64.3
Thanet	54.3	60.4	58.3
Tonbridge And Malling	64.4	62.5	62.5
Tunbridge Wells	64.2	66.9	60.4
Kent	57.9	61.6	62.2
Medway	52.9	58.9	61.8
Kent & Medway	57.2	61.2	62.1
South East	60.0	61.4	60.6
England	53.6	55.9	57.5
England And Wales	53.7	55.9	57.4
Great Britain	54.0	56.0	57.5
United Kingdom	54.1	56.1	57.6

- 13.13. In 2021, the Gravesham enterprise three-year survival rate was 62.6% which was slightly higher than the Kent enterprise birth rate of 62.2% and the South East rate of 60.6%, and noticeably higher than the national rate of 57.5%.

Percentage of high growth enterprises	2016	2017	2018	2019	2020	2021
Ashford	4.9%	3.9%	5.8%	3.7%	3.7%	3.7%
Canterbury	3.6%	5.3%	3.5%	4.3%	4.3%	3.4%
Dartford	5.7%	5.9%	4.7%	3.5%	4.7%	3.4%
Dover	2.9%	4.4%	4.3%	2.8%	4.3%	2.8%
Folkestone & Hythe	2.8%	4.2%	4.1%	5.4%	4.3%	4.1%
Gravesham	4.8%	1.6%	3.1%	3.1%	6.3%	5.6%
Maidstone	5.5%	6.1%	5.5%	4.1%	3.5%	2.8%
Sevenoaks	5.1%	5.7%	5.0%	5.7%	4.2%	4.2%
Swale	3.2%	4.2%	5.2%	3.1%	4.1%	3.9%
Thanet	4.9%	5.1%	5.0%	4.9%	3.8%	2.5%
Tonbridge & Malling	4.4%	4.9%	5.6%	5.6%	4.7%	3.7%
Tunbridge Wells	4.9%	5.0%	5.8%	4.3%	2.8%	2.8%
Kent	4.5%	4.9%	4.9%	4.3%	4.1%	3.5%
Medway	4.6%	3.8%	4.5%	3.9%	4.5%	3.8%
Kent & Medway	4.5%	4.8%	4.9%	4.3%	4.2%	3.6%
South East	5.1%	4.9%	5.1%	4.6%	4.3%	3.7%
England	5.0%	4.8%	5.1%	4.6%	4.4%	3.9%
England And Wales	5.0%	4.8%	5.0%	4.5%	4.4%	3.9%
Great Britain	5.0%	4.8%	5.0%	4.5%	4.4%	3.8%
United Kingdom	5.0%	4.7%	5.0%	4.5%	4.4%	3.8%

- 13.14. A high growth enterprise is defined as a business with ten or more employees which has seen at least 20% employee growth each year for the previous three-year period. These data are shown as the number of enterprises and as a proportion of all active enterprises with 10 or more employees in the area. Data is available from 2016. Gravesham had the highest proportion of high growth enterprises with 5.6% of enterprises classed as high growth.

Tourism

- 13.15. Tourism entails the movement of people to countries or places beyond their usual environment for personal or business/ professional purposes¹ and takes three basic forms – domestic tourism, inbound tourism and outbound tourism. ‘Tourism product’ includes visitor accommodation, hospitality, transport services, guided tours and tourist guides, travel agencies and other reservations services, cultural services, sports and recreational activities and retail.
- 13.16. Gravesham Borough Council Tourism and Heritage Strategy¹⁷ – Destination Gravesham outlines our action plan for 2021 - 2026. The strategy identifies the strategic aim, priorities and activity areas that the partners will pursue over coming years. As explained in the foreword, this strategy and the underpinning action plan gives some clear direction to ensure that our local tourism economy is supported and is able to grow.
- 13.17. In 2019, Tourism was worth an estimated £124 million to the Gravesham economy and supported an estimated 2793 jobs. Despite that benefit to the local economy Gravesham attracts a disproportionate low share (approximately only 4%) of Kent’s visitors and hence their expenditure and derived employment. This is primarily due to Gravesham having a small stock of visitor accommodation and a limited number of commercial visitor attractions, both of which would help to attract visitors and increase expenditure in the Borough.
- 13.18. The potential for tourism to contribute more to the local economy is recognised by us within our Corporate Plan. The overall aim of the strategy is:
- "To be proud of and promote and preserve Gravesham’s identity, history, heritage, art and culture, including its assets, in order to develop and enhance our tourism offer that can contribute towards economy and safeguard our heritage for future generations."*
- 13.19. The area of Gravesham has many advantages due to its location including “High quality landscapes, characterful villages and heritage interest within the Kent Downs Area of Outstanding Natural Beauty (AONB) and surrounding countryside. Gravesham is well placed to benefit from tourism, primarily for day visitors but with the potential to increase short stay visits, in guest accommodation and stays with friends and family.
- 13.20. Whilst progress is being made to develop Gravesham’s offer to visitors, it has yet to fully capitalise on the advantages of its location. These advantages make it possible for the area to become better known as a destination and as a base for a visit to London and Kent. Together they comprise a unique offer for visitors to the area.
- i. The Thames riverside and its history around shipping, immigration from overseas (Sikh population) etc.
 - ii. Strong associations with important historic figures, including Charles Dickens, Pocahontas, General Gordon and others.

¹⁷ <https://www.gravesham.gov.uk/downloads/file/155/tourism-and-heritage-strategy-accessible->

- iii. A unique 'cluster' of defence heritage, associated with the protection of London - New Tavern Fort, Shornemead Fort, the Woodlands Cold War bunker, Gravesend Blockhouse.
 - iv. Industrial heritage derived from its Thames-side position and as a cradle of innovation in cement, paper, power and engineering.
 - v. Exceptional countryside with the Kent Downs Area of Outstanding Natural Beauty, Thames Estuary and popular country parks at Shorne Woods, Trosley, Camer Park and Jeskyns Forestry Park.
 - vi. Historic landscapes at Cobham Park, Ashenbank Woods and Mausoleum, Cobham Hall.
 - vii. Characterful rural settlements at Cobham, Luddesdown, Lower Higham, Sole Street and Meopham.
 - viii. Gad's Hill Place – the home of Charles Dickens.
 - ix. Cultural diversity with a range of cultural and community and the largest Sikh Gurdwara complex in Europe.
 - x. A strengthening cluster of arts and cultural activity.
 - xi. An expanding 'experiential' visitor offer, including the open air multi-sport centre at Cyclopark and Panic Room's cluster of escape rooms in Gravesend Town Centre.
 - xii. Gravesham's leisure and entertainment facilities – in particular the Cascades Leisure Centre on Thong Lane
- 13.21. Unfortunately, much of this offer will be negatively affected by the Lower Thames Crossing both in its construction and operational phases.
- 13.22. Other parts of this LIR have provided, in more detail, the impacts that LTC will have on heritage but places like Cobham, Chalk and Gad's Hill, with clear links to Charles Dickens, will be fundamentally affected by construction (item iii and item viii above (BB_ NNN Higham PC Relevant representations too)). Similar situation for the historic landscapes in item 6. Item 5, as well as the impact on the AONB, Shorne Woods, Jeskyns Forestry Park will be directly affected by LTC. Trosley and Camer Park will also be affected if our concerns about A227 and rat-running are realised. Similar situation for item vi.
- 13.23. Item ix, for a Borough of its size, Gravesham hosts a diverse variety of events and festivals. Many of these are community focused events, but a number have the potential to attract visitors from further afield, such as St George's Day Parade (April), Vaisakhi parade (April), Riverside Festival (July), the annual Fireworks display (November) and Christmas events. These are a big draw which generate spend in the local area, but these may not be so successful if not supported by visitor accommodation (see section later on housing and worker accommodation concerns). The Borough's experiential visitor offer (item xi) could be at risk if there is a reduction in visitors due to concerns over congestion impacts.
- 13.24. Kent County Council produces a range of research and information including its "Tourism Industries in Kent"¹⁸ bulletin which is dated April 2023. The charts are taken from those bulletins and so the chart numbers relate to that bulletin, so this is easier to see, these charts have been given a thick black border.
- 13.25. Chart 1 shows the proportion of tourism in local authorities in England. The coastal districts of Thanet, Folkestone & Hythe, Canterbury, and Dover are all within the top

¹⁸ https://www.kent.gov.uk/data/assets/pdf_file/0020/105743/Tourism-Industry-in-Kent-report.pdf

20% of all English local authorities with the highest proportion of tourism enterprises (10.6% or more). Gravesham is in upper middle of the 309 local authorities in England.

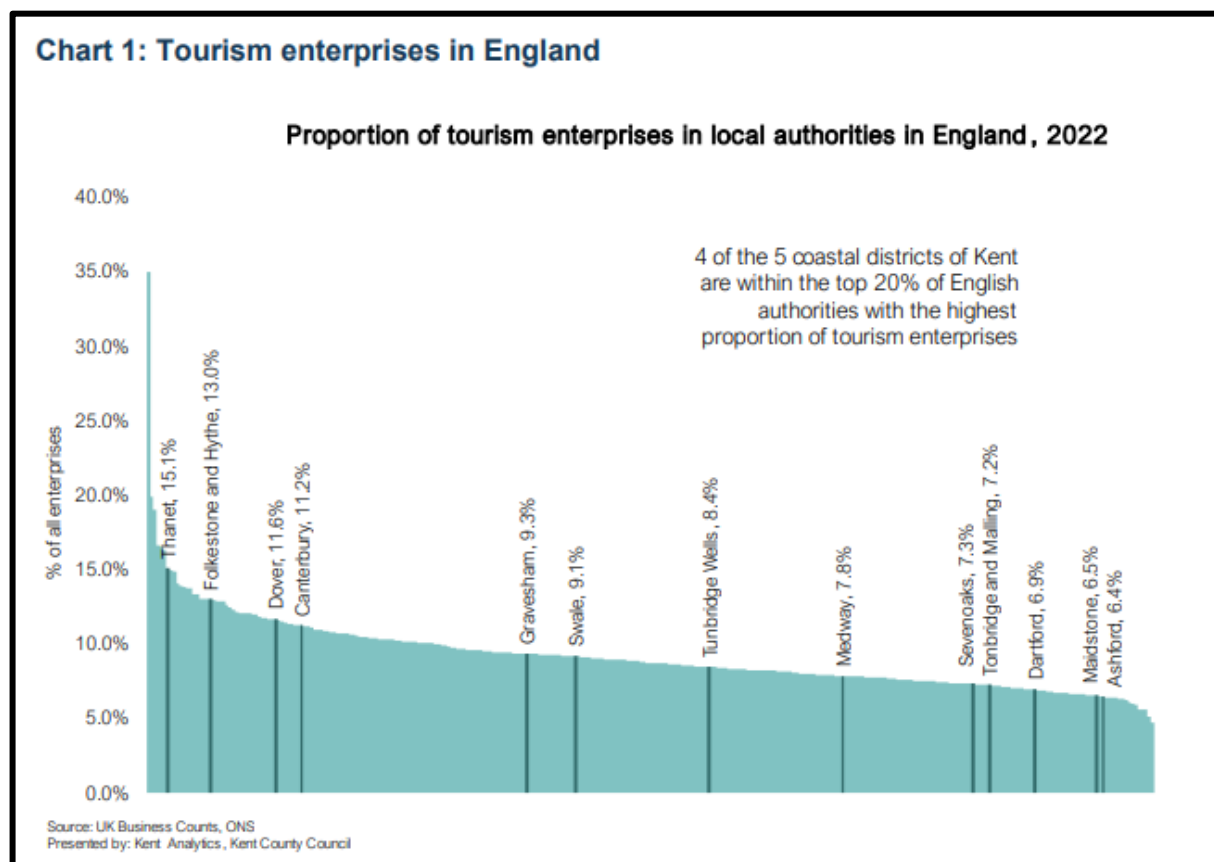


Table 2: Tourism enterprises in Kent districts

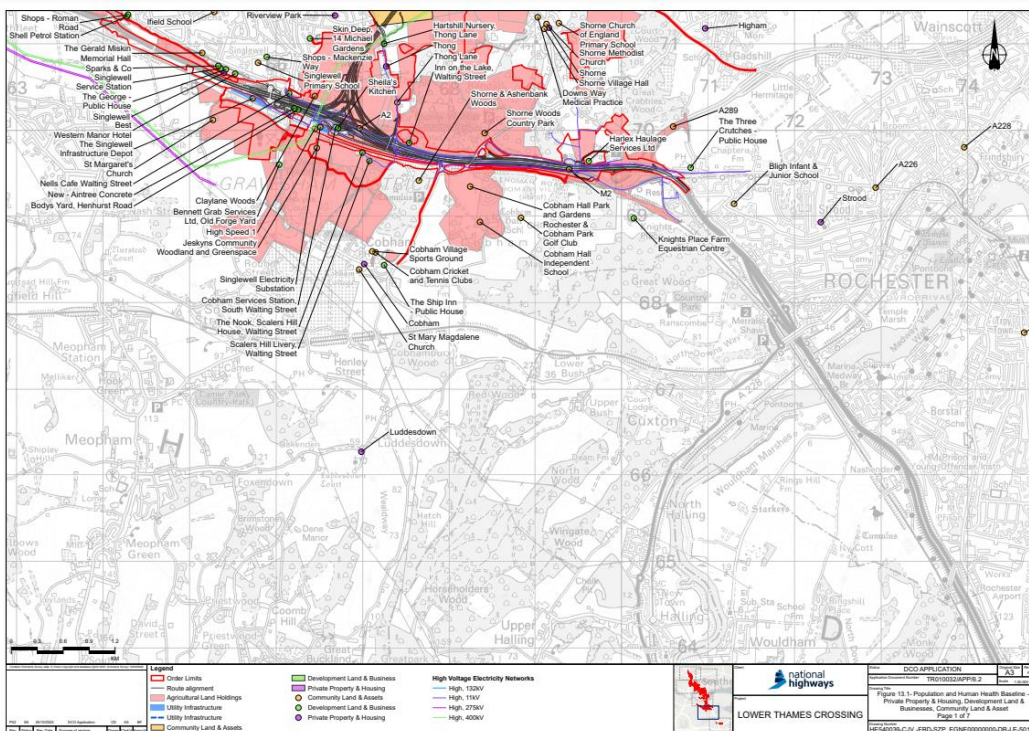
2022	Number of tourism enterprises	% tourism enterprises	1 year change	1 year % change	5 year change	5 year % change
Ashford	415	6.4%	5	1.2%	35	9.2%
Canterbury	625	11.2%	30	5.0%	55	9.6%
Dartford	320	6.9%	-40	-11.1%	55	20.8%
Dover	430	11.6%	10	2.4%	45	11.7%
Folkestone & Hythe	500	13.0%	30	6.4%	45	9.9%
Gravesham	380	9.3%	40	11.8%	60	18.8%
Maidstone	540	6.5%	20	3.8%	65	13.7%
Sevenoaks	485	7.3%	20	4.3%	15	3.2%
Swale	470	9.1%	35	8.0%	40	9.3%
Thanet	660	15.1%	40	6.5%	150	29.4%
Tonbridge & Malling	440	7.2%	0	0.0%	50	12.8%
Tunbridge Wells	525	8.4%	25	5.0%	35	7.1%
Kent	5,795	8.9%	220	3.9%	655	12.7%
Medway	700	7.8%	20	2.9%	45	6.9%
Kent + Medway	6,495	8.8%	240	3.8%	695	12.0%
South East	34,200	8.3%	880	2.6%	2,720	8.6%
England	218,785	9.1%	7,100	3.4%	24,680	12.7%



- 13.26. The tourism sector is made up of four main subsectors: accommodation for visitors; food and beverage serving activities; passenger transport, vehicle hire and travel agencies; cultural, sports, recreational and conference activities. The bulletin explains that food and beverage serving activities account for the largest proportion of tourism enterprises in all Kent districts, accounting for anywhere between a half (51.5% in Sevenoaks) to over two thirds (Gravesham 69.7%) of tourism enterprises.
- 13.27. In Kent, 90.2% of enterprises are micro enterprises and 8.1% are small. Tourism enterprises tend to be slightly larger with a lower proportion being micro (82.2%) and a larger proportion being small (15.9%). This pattern is also seen in Gravesham – 81.6% micro, 15.8% small.

Businesses and business disruption

- 13.28. Businesses located within the study area are shown on Figure 13.1 Private Property & Housing, Development Land & Businesses, Community Land & Asset (APP-317).
- 13.29. As explained in the applicant's Planning Statement (APP-495), National Highways are seeking compulsory acquisition or temporary possession of land that they consider is needed for the project. There is supported by a Statement of Reasons (AS-040).



- 13.30. The proposed works will result in the displacement of a number of businesses for which alternative locations have often not been agreed. There are likely to be significant effects associated with moving business locations including loss of custom and the costs and expenditure associated with relocation.
- 13.31. The anticipated loss of Southern Valley Golf course, without like for like or alternative active leisure replacement, has been an issue that the Council has raised in its representations. This also relates to the loss of the pitch and putt course at the rear of the Cascades site, which is also a compulsory purchase issue as Gravesham Borough Council is the ultimate landowner.
- 13.32. As Swing Rite Golf Ltd have explained in their relevant representation (RR-1042):
- The adjacent Southern Valley Golf Club, which was an 18-hole course with clubhouse, has permanently closed to make way for the route of the LTC. It was a predominantly pay and play based golf venue which opened around 1999.
 - We believe that the specialist golf needs assessment carried out in recent years regarding the potential loss of Southern Valley Golf Club did not deem the 18-hole course and clubhouse to be “surplus to requirements”. Thus, given its significant loss to golf needs in the locality together with the disruption to Gravesend Golf Centre as it currently is, we ask that the Secretary of State considers whether further mitigation by LTC is required by way of “new, improved or compensatory land or facilities”.
- 13.33. Another company affected are Baylis Landscape Contractors who are a longstanding family-owned landscape construction company. They operate from purpose-built offices, workshops and nursery on Thong Lane. We note from their relevant representation (RR-0091) that they contend the following:
- The Applicant has given insufficient consideration to a possible land swap with adjacent land that could have accommodated replacement buildings for those that are having to be demolished as a result of the diverted High Pressure Gas Mains arising from the enabling works.

- Instead of balancing loss of employment and likely extinguishment of a business, the applicant considers extensive environmental mitigation and public open space as being of greater priority.
 - The Applicant has failed to consider a temporary solution and a potential land swap in order for the Interested Party to continue to operate. Representations were submitted to the various design consultations suggesting solutions, but as it was felt that this was too difficult, the Applicants design has culminated in the entire area being permanently acquired.
 - Whilst discussions continue for a possible acquisition by agreement, the lack of alternative sites to move to will almost certainly result in a business extinguishment case.
- 13.34. This is just one example of a business that might be lost. However, it is not just the businesses within or close to the order limits that will be affected.
- 13.35. There is currently no statutory compensation for businesses affected by road works i.e. from loss of business or additional costs incurred caused by roadworks, or other disruptions on the highway. Successive governments have taken the view that businesses should not have the right in law to any particular level of passing trade, and that traders must take the risk of loss due to temporary disruption of traffic flow along with all the other various risks of running a business. Therefore, there is no statutory provision for compensation by the Highway Authority (as opposed to a utility) if a business is affected by roadworks.
- 13.36. National Highways' policy, 'Your property and compensation or mitigation for the effects of our road proposals'¹⁹, simply refers to and re-states legislation that provides LTC with options for mitigating scheme impact both to the environmental and to local residents. The measures for local residents include options in respect of increased noise (including planting, noise insulation and noise payments), expenses for suitable temporary moves and off-line discretionary home purchase. The policies, in most cases, do not go further than the statutory position and provide limited comfort due to their discretionary nature and lack of specific details (including application process, response timeframe and support etc.). Further no support is offered for local businesses or other property uses outside of residential.
- 13.37. The view appears to be that the businesses should acquire relevant business interruption insurance to cover such losses. Business interruption risk refers to the financial loss a company suffers when its operations are disrupted. This loss includes both observable components, such as reduced sales and increased cost of working, and hidden components, such as loss of future revenue streams due to potential reputational damage.
- 13.38. Unfortunately, guidance from the Association of British Insurers (ABI) is that business interruption insurance covers a business for loss of income during periods when they cannot carry out business as usual due to an unexpected event. The problem is that impacts from the construction of the Lower Thames Crossing would not be considered as unexpected as the proposal has been in the public domain for many years. The Borough Council would also query whether different considerations apply because of the duration of the construction works. Business interruption insurance will compensate the business for:
- any (pre-tax) shortfall in profits
 - any increased costs of running their business as a result of the event

¹⁹ <https://nationalhighways.co.uk/media/doseci3z/your-property-and-compensation-or-mitigation-for-the-effects-of-our-road-proposals.pdf>

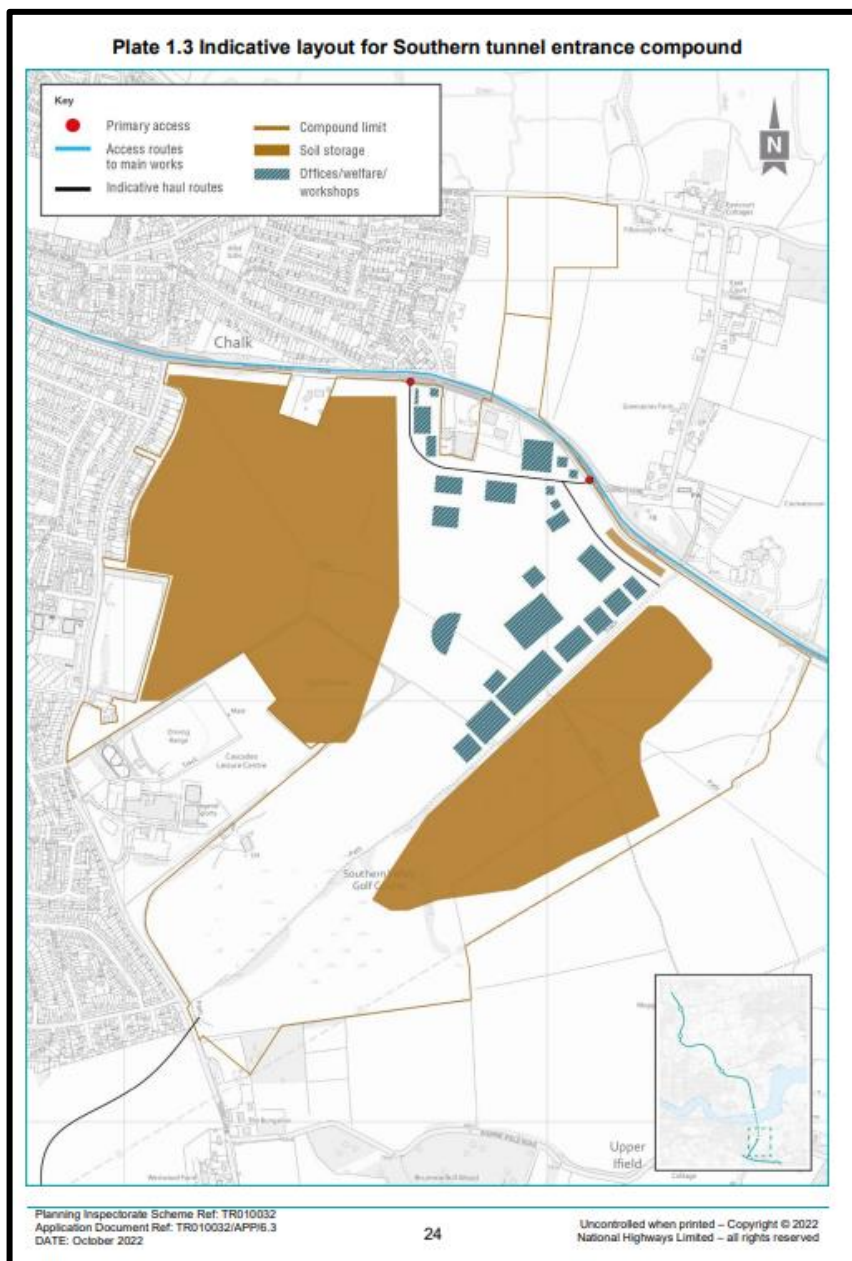
- 13.39. When developing the Sizewell C project, EDF Energy recognised that their project, with its large increase in local employment and business opportunities during the construction phase, offered significant opportunities to maximise and support the uptake of local socio-economic benefits through targeted enhancement, initiatives and support. However, EDF Energy also recognised that there is also the potential for the Project to cause local disruption which could have adverse socio-economic impacts, prior to mitigation.
- 13.40. It realised that additional transport movements in the local area may well create road congestion which will have a direct impact on the local economy if the movement of businesses, workers and customers is impeded. It is also recognised the impact of the perception of congestion on the local economy, as customers are discouraged from visiting businesses in an area that they believe will be congested. Evidence is emerging that transport congestion is leading to negative economic impacts in the local area around Hinkley Point C.
- 13.41. The Silvertown tunnel project also understands this and requires that socio-economic monitoring is undertaken²⁰.
- 13.42. Transport and congestion will be dealt with as a separate major issue, and the need for mitigation to minimise transport disruption is clear.
- 13.43. Gravesham has a high proportion of SMEs and SMEs can be especially vulnerable against potential risks and unforeseen events. Therefore, not providing mitigation is likely to have a significant impact on local businesses. The Council in its s106 asks has suggested a mechanism for business disruption and support (AS-070).
- 13.44. Year on year the council has been receiving less funding from Central Government and since 2019 there has been no further direct grant funding, with the expectation that the council will become self-sufficient in its' funding from local sources. A greater part of business rates (75% of growth in National Non-Domestic Rates) can be retained locally, placing an even greater incentive on the council to create the conditions for business growth, which we are doing but the Borough Council recognise that all this effort could be lost because of the impact of LTC

Private property and housing (including traveller sites)

- 13.45. As set out in APP-151, residential areas within 500m of the Order Limits include the outskirts of Strood, the villages of Shorne, Thong and Cobham and eastern suburbs of Gravesend (notably the Singewell, Riverview Park and Chalk areas), together with isolated rural properties. APP-319 Properties and Businesses at Risk of Demolition sets out what will be lost in Gravesham.
- 13.46. Paragraph 13.4.6 advises that two privately owned traveller sites have been identified to the south-east of Chalk, at the point where Rochester Road becomes Gravesend Road. The two sites are next to each other but each with its own access. Whilst the majority of both sites are outside the Order Limits, a 10m strip of each property's title fronting Rochester Road is within the Order Limits to allow for the diversion of utilities. Plate 1.3 in the Construction Supporting Information (APP-335) shows the indicative layout for Southern tunnel entrance compound. This does show both sites are surrounded by offices / welfare and workshops with the indicative haul route running to the rear of their properties. This is concerning as the structures and their inhabitants are likely to be more vulnerable than bricks and mortar to noise and vibration impacts. Plan 1.3 also shows that Polperro, which is also located off the Rochester Road, will be surrounded by soil storage.

²⁰ <https://content.tfl.gov.uk/stt-socio-economic-year-1-combined-report-2021.pdf>

- 13.47. Table 13.68 in APP-151 is a human health assessment of the construction phase. Within the section of that table looking at the housing and community services, is a highlighted section on the 'Impacts on Traveller Communities'. Whilst its focus is the site in Thurrock which is being permanently acquired for the project, it does note other traveller communities impacted during construction include privately owned sites at Gravesend Road sites (Gravesham). It determines that the nature of the impacts at these locations are, for the two sites accessed from Gravesend Road, impacts associated with residential amenity due to the proximity of construction activity.
- 13.48. National Highways' health outcome is that health impacts relating to traveller communities are likely to be primarily associated with mental wellbeing, and it determines that the health outcome is considered to be neutral. This is because the ES is only looking at significant effects rather than the fact that for those affected families, the impacts will be huge.



Agricultural Land Holdings

- 13.49. The development of the DCO site will result in the loss of Grade 1, Grade 2 and Sub-Grade 3a agricultural land which would be considered best and most versatile land. This is not just to the roads and immediate environs but also to the extensive areas of planting for mitigation and compensation. There appears to be that there would be no mitigation for the loss of this land so major adverse effect on agricultural land resource. In these circumstances due consideration should be given to the loss of this land on the rural economy.
- 13.50. Table 13.20 (APP-151) details the agricultural land holdings affected within the Order Limits – south of the River Thames
- 13.51. Paragraph 13.4.90 explains that the agricultural land use south of the River Thames is predominantly arable with limited areas of pasture. There are a total of 27 identifiable agricultural landholdings or groupings of landholdings south of the River Thames, as detailed in Table 13.20. These range from very small landholdings (single fields) to landholdings in excess of 350ha in size.
- 13.52. Paragraph 13.6.122 say during the construction phase, 27 landholdings would be temporarily affected, of which 20 would experience moderate to very large adverse effects, which would be considered significant. Overall, following the reinstatement of land required temporarily by the end of the construction phase, 20 landholdings agricultural use would be permanently affected, of which 11 would experience moderate to very large adverse effects, which would be considered significant.
- 13.53. Paragraph 13.6.123 says compensation would be payable in accordance with the Statutory Compensation Code. Consultation with landowners, occupiers and agents would continue as the Project develops to manage and reduce impacts on property owners as far as reasonably possible
- 13.54. The PEIR summary 2018²¹ noted that the “loss of agricultural land and disruption to agricultural business operations” would be an issue for the construction phase. It then advised that where possible, land needed for construction will be returned to agricultural use once construction is complete. This has not been the case in some areas in Gravesham.

Loss of Cobham Services

- 13.55. When in 1968 when the A2 was widened, a service station soon opened on each side of the road by and opposite Scalers Hill, Cobham. Both sides had an Esso petrol station and a Little Chef positioned close to it. The eastbound Little Chef closed in 2007 and when the A2 was widened in 2009, and the eastbound petrol station and restaurant were both demolished. It is worth noting that another petrol station – westbound at the Tollgate – was also demolished at this time.
- 13.56. The westbound Cobham Services restaurant closed in 2007 too. The westbound filling station was then rebuilt in around 2011, taking over the abandoned building to make way for a much larger forecourt. The site was sold to MRH in June 2015 and an extensive refurbishment was carried out to the shop in Autumn 2017 to expand the offer.
- 13.57. When National Highways undertook their statutory consultation for LTC in 2018, they published a “Lower Thames Crossing - Design, construction and operations” document²². This document advised that Cobham Services on the A2 would be

²¹ [LTC 6 Preliminary Environmental Information Report PEIR Non Technical Summary.pdf-1 \(citizenspace.com\)](https://highwaysengland.citizenspace.com/ltc/consultation/supporting_documents/LTC%203_4%20Design%20Consultation%20and%20Operations.pdf)

²²

https://highwaysengland.citizenspace.com/ltc/consultation/supporting_documents/LTC%203_4%20Design%20Consultation%20and%20Operations.pdf

removed as part of the Project and that it “cannot be replaced due to lack of available land and unsuitable access”.

- 13.58. In paragraph 12.4.5, they had included the potential provision for a rest area in the form of a rest and service area (RaSA) accessed from the Tilbury junction south of the Tilbury loop railway near East Tilbury. The proposed RaSA, if built, would be to the north-east of the Tilbury junction and would be combined with a maintenance depot.
- 13.59. The strategic need and reasoning for providing a RaSA was then set out in paragraph 12.4.6 and included:
- d. Refreshments are an important part of any rest break when undertaking a journey. The RaSA would include facilities for hot and cold refreshments, which would allow customers to obtain food and drinks. This would provide important nutrition, reducing fatigue for drivers when continuing their journey.
 - e. The nearest sites are at Medway on the M2, Maidstone on the M20, Clacket Lane, Thurrock and South Mimms on the M25 and Birchanger on the M11 as shown on Figure 12.3.
 - f. A fuelling station on the A2 (Cobham) will be removed as part of the Project and cannot be replaced due to lack of available land and unsuitable access.
 - g. Hence the absence of an RaSA for journeys along the Project’s route would mean exceeding the advised journey times between sites.
 - h. There is a government commitment to provide frequent electrical charging points due to the increasing use of electric and hybrid vehicles

Figure 12.3 Existing service and rest areas



- 13.60. National Highways has removed the proposal for a RaSA at Tilbury but has not proposed replacement facilities for those being lost at Cobham. This is concerning considering the bullet points in the Statutory Consultation document about rest breaks and driver fatigue, exceeding journey times, electrical charging points etc have not changed.

- 13.61. A junction, albeit not connected to the local road network for normal use, has now been reintroduced at the northern portal in Thurrock, but no proposals have been made to reintroduce a service area.

Walking and Cycling

- 13.62. These two topics go hand in hand since they are about leisure and recreation, and how these are accessed. Taken together these are important part of the facilities which provide opportunities for a healthy lifestyle.

Walking and Cycling Networks

- 13.63. The Public Rights of Way network is an important part of the means whereby the local community can access other places for functional or leisure trip purposes and is made up of much more than what is shown on the Definitive Map. National Highways also uses the term WCH (Walkers, Cyclists and Horse riders). By functional trips it is meant those from one place to another for a specific purpose, e.g. work, school, shopping etc. Leisure trips, which predominate, are very important for health and wellbeing of local residents, and also include activities like dog walking.
- 13.64. The following application documents are the most relevant to this matter in Gravesham:
- APP-140 ES Chapter 2: Project Description
 - APP-151 ES Chapter 13: Population and Human Health
 - APP-169 ES Figure 2.5: Construction Information – Pages 2 - 4
 - APP-318 ES Figure 13.2: Population and Human Health Baseline PROW and WCH routes
 - APP-320 ES Figure 13.4: Population and Human Health Baseline Proposed WCH links
 - APP-025 2.7 Rights of Way and Access Plans Vol B
 - APP-028 2.8 Street subject to Temporary Restrictions of Use Vol B
- 13.65. The actual walking network is a function of not just the routes on the Public Rights of Way Definitive map, but also footways along public highways, public highways without footways, and informal or permissive routes that exist, particularly in open spaces. Local Highways without footways can legally be walked along but may feel unsafe depending on the volume of traffic. For example Thong Lane south of Thong does not feel safe whilst Shorne Ifield Road does. Shorne Woods Country Park, Jeskyns and Ashenbank Wood are the obvious examples of open spaces, where given their ownership (KCC, Forestry England and Woodlands Trust) it can be assumed that informal routes will remain in the long term. There are also some routes through HS1 landscaping to the south past Gravesend which have no formal status. The network therefore depends on both knowledge of the area and perceptions of safety. The perception of that will vary from user to user.
- 13.66. Overlain on the walking network is the cycling network made up of some specific cycle routes, the normal highway network (except where prohibited) and offroad options for those with suitable bicycles. Certain routes are also usable by horse riders. There is also a distinction between what people actually do and what legally there are supposed to do (e.g. cycling along footpaths).
- 13.67. It is important also to factor into account the accessibility of routes for those with mobility difficulties or who use wheelchairs. That applies as much to those pushing

a buggy as well who need smoother surfaces and absence of obstacles such as a stile. This does create a potential conflict between accessibility and the misuse of facilities. A good example of this is illegal use of motorbikes on the North Kent Marshes.

- 13.68. Gravesham Borough Council has had a Local Walking and Cycling Infrastructure Plan²³ published, which considers the existing networks and top links for development. APP-318 Figure 14.4 pdf pages 2 & 3 gives the base line of the existing PROW network.

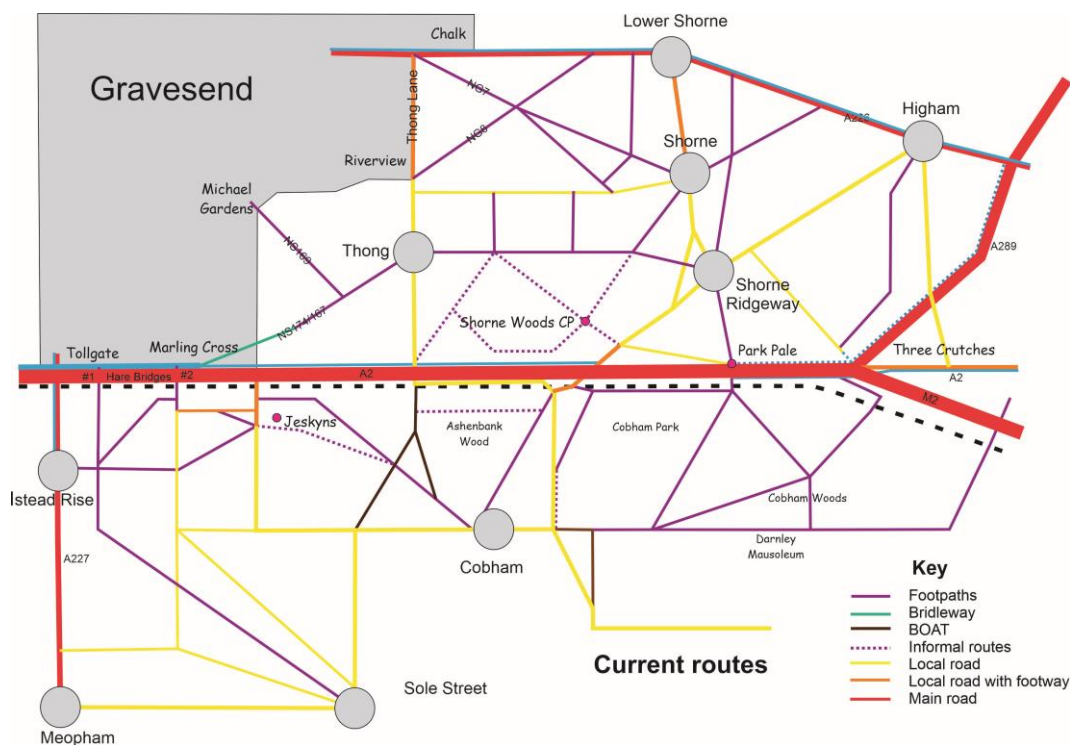


Figure 13.1 Diagrammatic representation of access network 2023

- 13.69. The figure above is a diagrammatic representation of the local walking and cycling network from the user's point of view in the vicinity of the project. For clarity not all routes are shown, but it does indicate roads with footways and some informal links to give an overall picture of the actual network. This helps explain the impacts locally. The urban area has a network of footways and other access routes which is taken as given, and the detail inside the rural settlements is not shown for clarity.
- 13.70. Note a potential source of confusion around the use of the term Park Pale. Park Pale is both a location (Park Pale Farm - now Harlex Haulage), an area (either side of the A2 bridge) and a local road from Brewers Road to that point on the north side of the A2. That road services Harlex and the Rochester and Cobham Park Golf Club, which occupies East Park. The actual Park Pale, the medieval boundary to Cobham Park, was where HS1 now is.
- 13.71. Based on evidence on the ground most PROW in this area are well used, that is they are not overgrown and show evidence of steady use. The extracts below from figures 5.9 and 5.10 of the Gravesham LCWIP are of the Strava maps of usage in the Lower Thames Crossing area. A number of caveats need to be applied to this data, the most obvious being that it is only from people who use that app and record

²³ Gravesham LCWIP

https://democracy.gravesham.gov.uk/documents/s73202/06370%20Gravesham_LCWIP_Report_FINAL_W_Appendices.pdf

their trips. A lot of usage on the immediate urban edge is from dog walkers who are unlikely to record their trips in this way

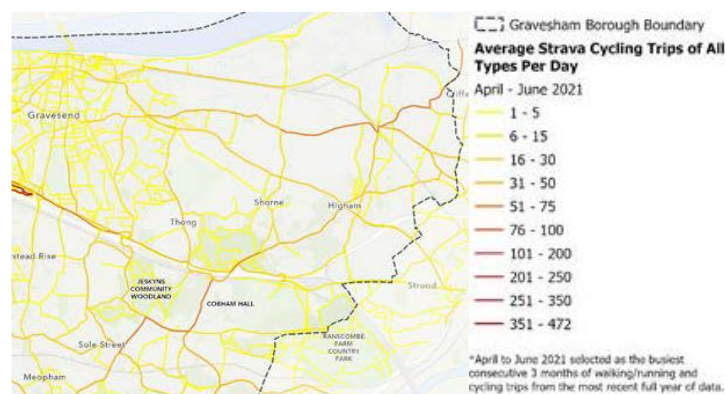


Figure 13.2 walking trips (extract from Stava data in Figure 5.10 of Gravesham LCWIP)

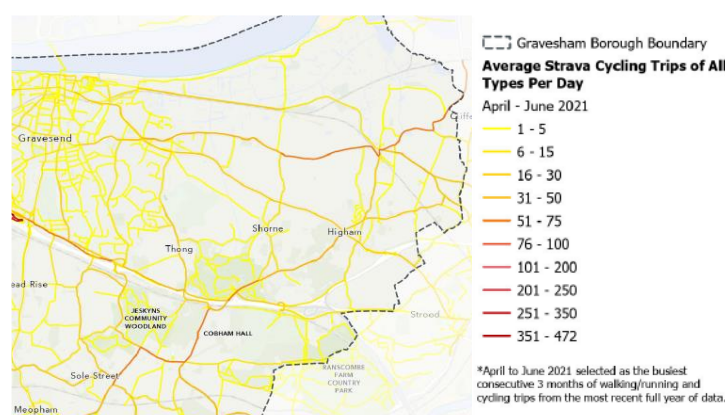


Figure 13.3 Cycling trips (extract from figure 5.9 of Gravesham LCWIP)

13.72. Major cycle routes are to be found along the Thames & Medway Canal Towpath, A226 and A2 itself:

- NCN177, which is a combined walking and cycling route, runs along what was the old A2 past Gravesend and Northfleet eastwards from Pepper Hill, then along what was the A2 footway between Marling Cross and Brewers Road, alongside Brewers Road, along Park Pale, over Park Pale bridge and then along the A2 slip into Strood at Three Crutches.
- The A226 has narrow cycle lanes marked in paint, which disappear through Higham as the road narrows at Forge Lane, by Gads Hill House (Grade I – Charles Dickens House). There is a footway along the north side of this road. This road was originally 4 lane dual carriageway without any central reservation.
- NCN1 runs along the Thames & Medway Canal tow path from Gravesend to Lower Higham. It is a footpath, but the cycle route exists by means of a legal arrangement between Sustrans and Network Rail, who own the canal.

13.73. The evolution of the A2 since 1920's from a country lane to what it is now resulted in it having footways (in a variety of forms) both north and south sides through Gravesham until the last rebuild and also the cutting of long standing north-south links due to the lack of provision of crossing points to an even wider and busier road. The last phase of this process resulted in an offline A2 past Gravesend/Northfleet closer to HS1, and the old A2 alignment becoming NCN177, landscaping and Cyclopark. From Marling Cross to Brewers Road, the old footway

was upgraded to form a widening footway/cycleway. It also resulted in the so called Hare's bridges over the A2 matching those already provided by HS1.

Changes in potential trip lengths

13.74. Table below sets some trip distances in metres to act as a guide, rounded to nearest 10m as measured on GIS system. It is intended to give overall feel for length and in some cases there are multiple route options. Construction and operation figures are explained further below. For Shorne Woods Country Park and Jeskyns it is the distance to the visitor centres. Riverview Park means an arbitrary point in the south east corner of the estate on Thong Lane and Marling Cross is arbitrary point by the junction north roundabout.

#	Route	Current	Construc.	Operation
A	Marling Cross to Shorne Village	4,010	4,500 ^a	4,570 ^b
B	Michael Gardens to SWCP	3,680	4,110	4,110
C	Marling Cross to Cobham	2,800	2,800 ^c	2,860 ^d
D	Jeskyns to SWCP via Ashenbank	3,670	3,670 ^e	3,670
E	Riverview Park to Rochester Road	1,570	3,140 ^f	2,630
F	Thong Ln/Rochester Rd to Shorne Village	2,280	3,110	2,550
G	Thong Ln/Rochester Rd to SWCP	3,860	5,040	5,350
H	Marling Cross to Three Crutches (NCN177)	5,240	6,920 ^g	6,090
Notes	a. Uses Shorne Ifield Road b. Uses Shorne Ifield Road and new route close to A122 c. Assumes route through Marling Cross Junction remains d. New road layout results in slightly longer route but more slip roads to cross e. Uses Brewers Road bridge so during closure would have to be via Thong Lane and internal routes in Shorne Woods CP f. Via Thong Lane and A227 footways g. Starting from Marling Cross and using junction, using Hare's bridge #2 gives 6,150m			

13.75. There is viewed in these terms a comprehensive network of routes that provide access links from the urban area east towards to Thong, Shorne Woods Country Park and Shorne Village (or the other way round). There are then the north south links across the A2 at Hare's bridge #2, Marling Cross Junction, Thong Lane, Brewers Road and Park Pale Bridge. Note that both Hare bridges have parapets over the A2 that allow for cycles and horse riders whereas the HS1 bridges required the latter to dismount.

Construction

13.76. The project construction process results in:

- Closure of all existing PROW routes between A2 and the A226 including NCN177 in the construction area
- Loss of footpath NS367 linking Henhurst Road with A2 (and thereby Cobham South Services) – this is not shown on the plan to avoid clutter
- A new footpath within one month of closure from Marling Cross to the corner of Riverview Park round the back of the existing development replacing NS169 & NS174

- From the corner of Riverview Park where will be temporary path parallel with Thong Lane to the village thereby maintaining a link to the rural area from Riverview Park. This link will be finalised when the Thong Lane north Green Bridge is complete. In the interim it will be crossed by a haul route connecting the works together. The existing road has no footway, but as the Strava data shows well used.
- A226 is disrupted by construction of the works site accesses and by the additional construction traffic that will use it to access the construction sites
- NCN177 is diverted south via Jeskyns and Ashenbank Wood and then NS179 to Park Pale (between HS1 and Cobham Park) with appropriate surfaces (which are removed post construction)
- The use of Hare’s’ bridge #2 is proposed. The parapets on the A2 bridge were designed (2007) to allow pedestrians, cyclists and horse rides to cross. The bridge over HS1 however is lower and horse riders need to dismount – so ideally the parapets need raising. These are stainless steel capping on the basic concrete structure following the HS1 house style (same situation applies at Hare Bridge #1).
- NCN177 west of Marling Cross along the old A2 may suffer some minor disruption whilst the new underground electricity cable is installed
- NCN1 (NG2) Thames & Medway Tow Path is disrupted whilst access is obtained to the Milton Construction site and to remove the tunnel boring machine
- NG3 it is assumed is not affected by mitigation works on the marshes

13.77. Note that Brewers Road is closed for 19 months thereby cutting north south communications in that area for all users. At that time it is essential that a Thong Lane Bridge (old or new) along with Park Pale is available for use by pedestrians, cyclists and horse riders.

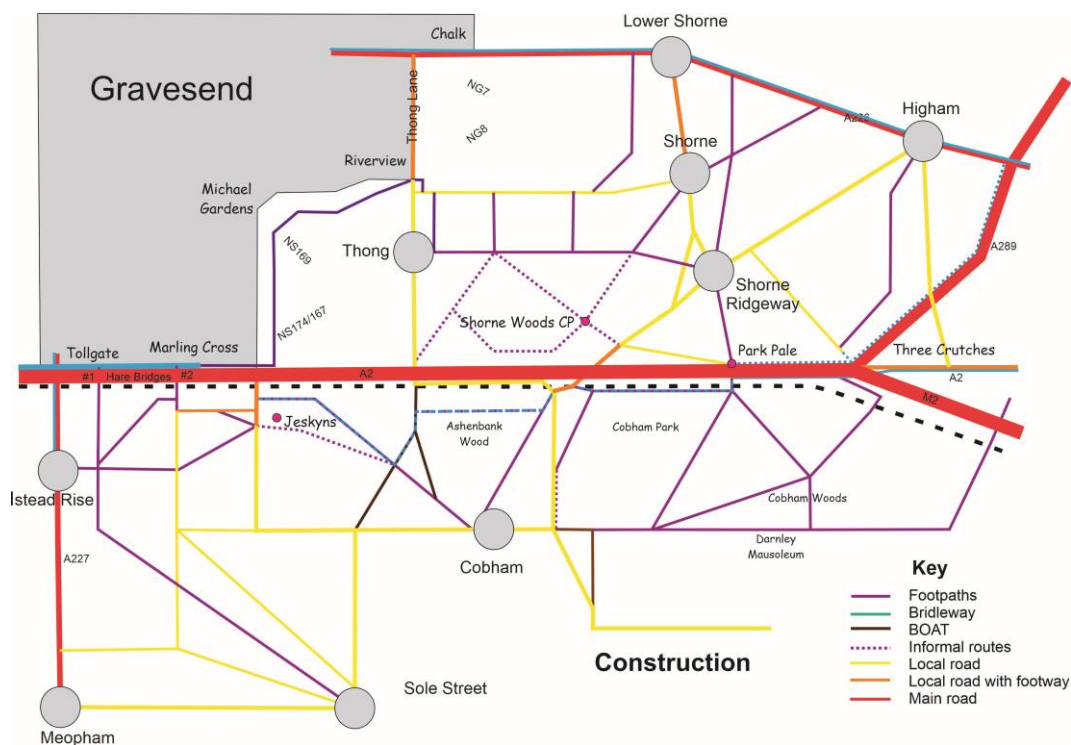


Figure 13.4 Access network during construction

- 13.78. Riverview Park to Rochester Road is the worst affected with 100% increase in length all of it on footway. Other routes significantly affected are from the Thong Lane/Rochester Road junction to the southeast. NCN177 is diverted on a convoluted route via Jeskyns, Ashenbank wood (SSSI) and NS179 which runs between HS1 and the boundary of Cobham Park. The Council has major concerns over the impact of the installation of surfaces in the latter two locations (even if they are removed later). The overall impact, taking length of time into account is MAJOR ADVERSE.
- 13.79. It should be noted that the two new routes in the construction area may be subject to considerable disturbance from that activity and may be rerouted whilst specific activities are undertaken (e.g. gas pipeline or electricity line diversion). It has been assumed that a Thong Lane bridge (existing or new) will be available at all times to reach Shorne Woods Country Park off Thong Lane. This is particularly important as an alternative to Brewers Road when that is closed. Also that a walking and cycling route through Marling Cross junction to the south is maintained. There may need to be some very short term closures during the construction process.
- 13.80. On the basis of the current information it is assumed that the picture given above will exist for at least 5 ½ years. The implications are not therefore short term but subsist over a substantial period. Access to some facilities could of course be by car (Shorne Woods CP or Jeskyns or little Woodlands Trust car park on Halfpence Lane). This is not very sustainable and will subject to the disruption brought about by the construction works, including the Brewers Road closure.

Operation

- 13.81. Operation brings various new links into operation, the precise timing of which is difficult to know so a round 5½ years has been taken but the detail may well vary when the detail construction programme is worked out by the contractor:
- NCN177 – moves to run along the extended Darnley Lodge Lane from Marling Cross to the junction with Thong Lane and on to Brewers Road
 - NS161 at Park Pale is slightly diverted
 - Cycle/Footway on the south side of Park Pale bridge is diverted
 - Brewers Road bridge – separate cycle/footway to east side with connection through what is currently verge to Halfpence Lane roundabout. It is therefore necessary to cross Brewers Road to gain the existing cycle/footway on the west side
 - Thong Lane south Green Bridge – separate cycle/footway to the east side with an extension north to start of a new bridleway and access into Shorne Woods Country Park. It also accesses the proposed new car park on Thong Lane about which the Council has a number of reservations [cross refer]
 - New bridleway from Thong Lane running west of Thong (with the existing link into Thong) to the south end of Thong Lane north Green bridge
 - An additional link to the route behind the housing between Marling Cross to Riverview Park following more of the A122 alignment
 - Thong Lane North Green Bridge – to the east and west sides connecting various routes together
 - From Thong Lane north Green Bridge to A226 just west of Lower Shorne (and east of the Crematorium) to the east of A122

- Riverview Park/Thong Lane north Green Bridge along west side of A122 to join up with a diverted NG7
- Tunnel Portal – NG7 footpath link diverted round and over the portal.
- An additional link south across Chalk Park to Thong Lane north of Thamesview School and a spur to Thong Lane just north of Cascades

13.82. Quality of user experience is also important –for example walking/cycling adjacent to the A2 from Marling Cross to Brewers Road is not overly pleasant due to the volume of passing traffic but it does serve a useful function. NCN177 is well used and has the advantage of being, to a reasonable extent, lit by borrowed light from the A2.

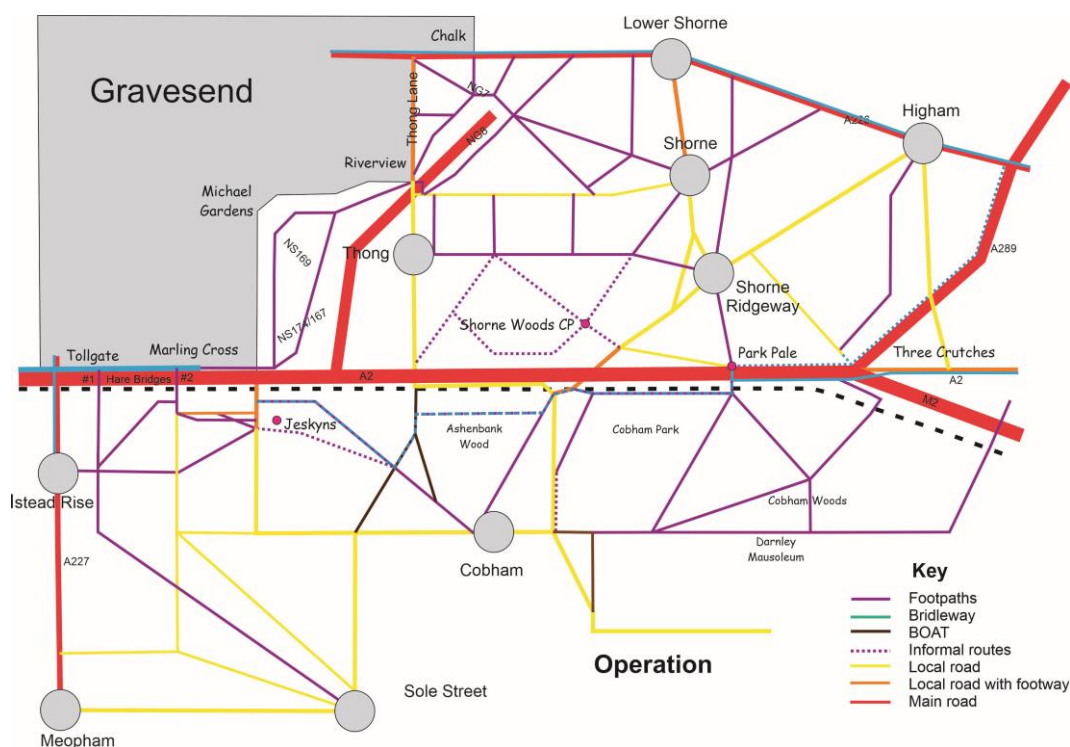


Figure 13.4 Access network during operation

- 13.83. Operation impact is much less and is combined with the creation of a number of new routes. These are of course impacted by noise and disturbance from both the A2 and the A122. The major diversions are to NS174/NS167/NS169 south of Riverview Park, to NG7 from the junction of Rochester Road/Thong Lane and NCN177.
- 13.84. During consultation there was an option for a footpath link across the northern part of the A122 junction, south of Riverview Park, but this resulted in a convoluted route with significant changes in level to pass over/under slip roads. It was felt on balance diversion via Thong Lane north Green Bridge was preferable.
- 13.85. NG7 originally was to cross the A122 over cutting leading to the tunnel portal on a bridge, however it was feared that because of its height it could become attractive to those wished to commit suicide. When the tunnel portal was moved further south an alternative diversion was produce round the portal and over the tunnel.
- 13.86. NCN177 is reroutes to run alongside the extended Darnley Lodge Lane, but still next to the A2/A122 junction with its numerous slip roads. This involves a complicated route through Marling Cross Junction and the crossing of Darnley

Lodge Lane at a point where is carrying slip road traffic. This is a significantly worse route than the current one.

13.87. Key assumptions are:

- All links shown on the plans are constructed for the operational phase, albeit precise alignments may vary
- Agreement has been reached on the precise legal status and surface of the various new routes
- All routes and structures (where appropriate) are designed to LTN1/20 standards and appropriate safe provision is made at crossing points of the highway network as appropriate to the volume and speed of flow

13.88. Overall assessment is MINOR ADVERSE.

Highway safety

13.89. Safety information associated with the existing Affected Road Network (this describes the network of roads impacted by the Project) – this is covered in chapter 3 transport and traffic.

Access to work, community, recreational, education and healthcare facilities

13.90. In table 13.68 “Human health assessment – construction” of ES Chapter 13 (APP-151), National Highways recognises that access to jobs, services and community infrastructure may be impacted as a result of increased journey times during construction.

13.91. They consider, however, this will be managed through measures set out in a Traffic Management Plan (TMP) and appropriate communication with local residents and affected communities.

13.92. National Highways does recognise that negative effects may be experienced by more vulnerable populations who are more dependent on public transport use and therefore may have less choice around mode of transport and route. Whereby increased journey times for buses using the local road network may have an impact in relation to accessing services and employment for these groups, although it is noted that these impacts would be temporary in nature (although long-term, i.e. longer than two years).

13.93. The link between being able to access jobs, services and social opportunities and people’s health and wellbeing is well documented. At the same time, reducing health inequalities and promoting opportunity is a widespread aim, but both of these areas can be influenced by changes in accessibility and how it may affect populations disparately. Earlier in this section, we have provided information on the low level of ‘percentage change in employees’ and this is partly due to the lack of alternative employment opportunities within the Borough. We want National Highways to support employers in dealing with these issues for mutual benefit i.e. to keep both their business running and reduce impacts on their workers. This will be especially important for employers, such as the Port of London Authority, who are delivering a service of national importance.

13.94. Whilst National Highways recognise that the number of people potentially impacted by changes in accessibility during the construction period is likely to be high, relating to communities along the route and within a wider geographical area, there

- response is limited and focuses on communication. The Council does not consider that this is sufficient.
- 13.95. The Outline Traffic Management Plan for Construction (oTMPfC)(APP-547) was included within the project's submission documents following feedback from the Planning Inspectorate. It is intended to provide a framework of principles and mechanisms to inform how detailed secondary consent traffic management plans will be developed.
- 13.96. The proposed Traffic Management Plan for Construction (TMP) must substantially accord with this oTMPfC. It will be legally secured under Requirement 10 in Schedule 2 to the draft DCO. National Highways will have to submit the TMP to the SoS for approval before commencing the relevant part of the Project if the Development Consent Order (DCO) is granted. The Contractor must consult with the relevant authorities, listed in Table 2.1 of the oTMPfC which includes Gravesham Borough Council as Local Planning Authority, and must give due consideration to any representations made in response to that engagement regarding the TMP for construction. If approved by the SoS, the TMP must be implemented by National Highways and its Contractors.
- 13.97. Table 2.3 of the oTMPfC includes a schedule of stakeholder considerations that would need to be made in production of the Traffic Management Plan (TMP) for secondary consents. It recognises that a range of groups and organisations will be affected, including the emergency services, and how they will be affected may be different. It then lists a number of factors will need to be considered when producing the TMP, including:
- Journey time reliability
 - Safety during journey through traffic management
 - Advance communication / warning
 - Breakdown recovery
 - Access for deliveries / visitors / workers
 - Clearly signed and segregated diversion and access routes
- 13.98. This recognition is welcomed but the Council does not consider that it goes far enough. The construction period is lengthy and the distress and damage caused by the construction period has the potential to disrupt the lives of local people and businesses to a huge extent. For example, local schools are listed with issues such as "Access/egress for staff and students" and "unhindered and safe WCH routes", but this is only a fraction of the issues that we have identified that need to be addressed. We do note that in Table 13.68 'Human health assessment – construction' in chapter 13 (APP-151) it advises that a range of measures are in place to ensure that active travel routes for children are not adversely impacted by the Project and to enable communication and engagement with individual schools. However, these are not articulated in the documents.
- 13.99. The Council, in AS-070, has raised concerns over construction disturbance with increased journey times making affected schools less attractive to staff and also cause problems for parents picking up / dropping off children. The Council has suggested National Highways funding extended opening hours of schools so that children can be dropped off earlier and picked up later, whilst also highlighting that, in some cases, children may need alternative ways to get to school i.e. bus pass, cycle, taxi. This is particularly important when potentially life impacting events, such as examinations, are taking place and the children need to be supported to realise their potential.

- 13.100. The Thames View Crematorium is considered within Chapter 13 (APP-151) as it is located on Gravesend Road and attracts trips from across a wider area, including routes potentially affected by the Project. It is also just 10m for the Order Limits. Table 13.23 “Minor roads and other WCH routes affected by the Project – south of the River Thames” notes that one of the facilities accessed via Gravesend Road includes the Thames View Crematorium and Cemetery. The oTMPfC (APP-547) highlights cemeteries and crematoria specifically as stakeholders who may have particular requirements and outlines how these would be addressed in the TMP as a minimum, including:
- For access and egress to be maintained throughout the construction period with the exception of night-time and weekend closures when required for specific planned works
 - Advance warning and particular sensitivity around significant events particularly at evenings and weekends.
- 13.101. When a loved one dies, it is a time of grief, confusion and upset. As the Council’s elected members have highlighted at various briefings with National Highways, the closeness of the works to the Thames View Crematorium and Cemetery raises multiple concerns. Key within those concerns have been traffic congestion leading to uncertain journey times, with the uncertainty itself potentially adding to the impact of the loss on the affected parties. This is not a purely hypothetical view as Members have verbally advised of the delays that have occurred when issues on the strategic road network have led to severe congestion and rat running in the urban area. The primary access to the A226 Gravesend Road compound will be from the A226 Gravesend Road, which also is the only route for accessing the Thames View Crematorium and Cemetery.
- 13.102. The Thames View Crematorium and Cemetery has a 27-acre Memorial Park which includes the crematorium, a formal cemetery, a woodland burial area and extensive areas laid aside for wildlife. Currently it is a very tranquil setting to enable relatives and friends to grieve, and this will be degraded as a resource for the grieving process by the nearby works. The works will also impact on the important role that St Mary’s Church at Chalk has within the community and the well-being support and guidance it provides.

Work and training

- 13.103. Gravesham’s draft Economic Growth Strategy²⁴ has been developed alongside the Corporate Plan 2019-2021 – ‘Delivering a Gravesham to be proud of’. Its core objective is ‘Place: a dynamic borough defined by a vibrant and local economy taking advantage of growth in the area, supported by its strong and active community’. The action plan in support of this strategy is developed around seven key themes. The fifth theme’s focus is on skills to ensure that the local workforce is equipped with appropriate skills to access employment opportunities. It highlights that interventions are required to address Gravesham’s relatively high unemployment, low skills and limited access to better paid work. Businesses speak of a gap in specific skills which have to be sourced from further afield. Whilst the Council does not have direct responsibility for skills and training, it can champion the needs of local businesses, set an example as a good employer and encourage co-ordination to address skills gaps.
- 13.104. Access to work and training are a key influence on how people live, including how they participate in the economy, achieve future aspirations and alleviate socioeconomic deprivation. This can have a direct impact on health and wellbeing,

²⁴ <https://www.gravesham.gov.uk/downloads/file/218/draft-economic-growth-strategy-accessible->

socioeconomic opportunity and quality of life. Accessibility is determined by several factors, including:

- Availability of employment opportunities in accessible locations;
- The range of employment opportunities across different skills levels;
- The availability and frequency of training opportunities;
- A range of contractual arrangements to accommodate flexibility;
- Provision of childcare facilities; and
- Provision of 'bridging' services to facilitate the transition from education to employment.

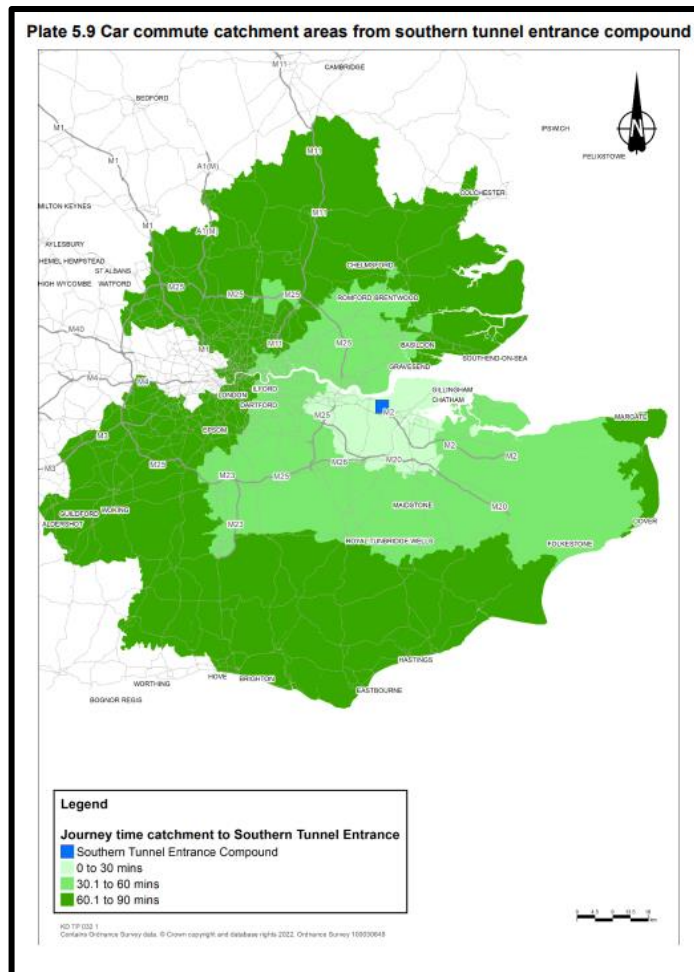
- 13.105. As the Council has highlighted in its relevant representation, it is often difficult to see what benefit Gravesham gains from the scheme, both during construction and operation. During construction, on the plus side, there is the possibility of new jobs, training opportunities, openings for existing and new businesses.
- 13.106. Equally the ward profiles published for the Community Impacts Consultation highlighted the opportunity to work on the project as a benefit, but very limited information was provided in the consultation which would underpin this. This was unhelpful and felt like "jam tomorrow" i.e. a pleasant event in the future, which is never likely to materialize.
- 13.107. National Highways has now published a Skills, Education and Employment Strategy. This is included in appendix B of the Section 106 Agreements – Heads of Terms (APP-505). The document advises in section 7 that National Highways will undertake best endeavours to implement the principles and measures set out within the Skills, Education and Employment Strategy ('the SEE Strategy'). It also advises that The SEE Strategy is to be updated every two years to ensure it responds to changing needs and priorities.
- 13.108. Commitments to the upskilling and employment of the local community are an important aspect of health, equalities, and wellbeing, as their implementation contributes towards the local economy and therefore the financial resilience of the local community. Financial security also impacts on local deprivation rates and the associated health outcomes, with poorer communities less able to access healthcare and wellbeing opportunities (such as private healthcare, exercise facilities, social care, and education regarding healthy choices).
- 13.109. The construction jobs are claimed as a major benefit, which they may be, but only if there is a proactive strategy for getting people the training necessary. As shown earlier, there are low levels of qualification attainment with both percentage qualified to NVQ4 and above; and percentage qualified to NVQ2 and above, below national levels.
- 13.110. As a result of the amorphous nature of the offer, the Council has been asking for a skills and training hub in Gravesham to allow local people to take maximum advantage of construction job opportunities.
- 13.111. Asks:
- National Highways needs to satisfy the Council that it will ensure appropriate training is provided to enable local people within the Borough are able to access the employment opportunities.
 - Equally, National Highways also needs to demonstrate that measures will be put in place to develop local supply capacity and capability to maximise opportunities for local supply chain businesses

Housing and Community Related Impacts

- 13.112. Given the number of workers required for the construction of the tunnel and the connecting roads and structures, and the other major projects in the area, the lack of provided accommodation for workers is a key concern for this Council. It is assumed that 35% of workers would be employed locally and therefore would not require accommodation provision.
- 13.113. There is a wealth of research from the UK and wider that:
- A lack of temporary accommodation for construction workers often forces those workers to rent any houses available on the private market, consequently reducing availability for residents.
 - Trade worker's ability to pay above-market rent to secure rental accommodation exacerbates inflation in the housing market.
 - The impact of tradespeople monopolising available accommodation has a negative impact on tourism
- 13.114. The Council considers that there is a significant risk that if the workers take accommodation in the private sector this will lessen the opportunity to prevent homelessness or housing stress to the residents in Gravesham. Workers are at an unfair advantage that they will be a working status and be able to pay fees up front.
- 13.115. The Applicant's Code of Construction Practice (APP-336) has a section on sleeping accommodation. It advises that the nature of the tunnelling means that specialist personnel will be required during construction, so it is anticipated that sleeping accommodation, for up to 400 construction personnel, would be required within the northern tunnel entrance compound. It also advises that during the tunnelling works there will also be a need for hyperbaric accommodation at the northern tunnel entrance compound for an additional 80 people who will remain under pressurised conditions for extended periods to facilitate emergency access to the tunnel head. No sleeping accommodation will be provided within the other compounds or ULHs.
- 13.116. The document does advise in paragraph 6.6.4 that the Applicant would employ measures to reduce the impact on the local accommodation market and associated social services. The Applicant and its Contractors will implement travel plans to encourage sustainable travel from home. The Applicant will also help workers to find accommodation and would implement an accommodation helpdesk to align need with supply, therefore benefiting local accommodation providers and the local economy. It explains that further details on workers accommodation are detailed in the Workers Accommodation Report (APP-551).
- 13.117. It is worth noting that the report primarily uses data from the 2011 Census – for example Table 6.3 sets out the number of PRS homes and bedrooms by the areas of each local authority within the 60-minute areas, based on 2011 Census data. This is important as the number of households living in the private rented sector (PRS) has grown by 1.1 million in ten years across England and Wales i.e. they don't have the security that owner occupation gives them. Also, as has been widely reported, there has been a significant decline in the number of homes available to rent. In 2019, there were 225,000 homes listed to rent across Britain's rental market whereas the most recent data shows that this number has now declined to little more than 134,000, representing a three-year drop of 40%, or 91,000 homes. These declining numbers are represented across the whole of Britain with every single region seeing their rental markets shrink considerably. A 40% nationwide

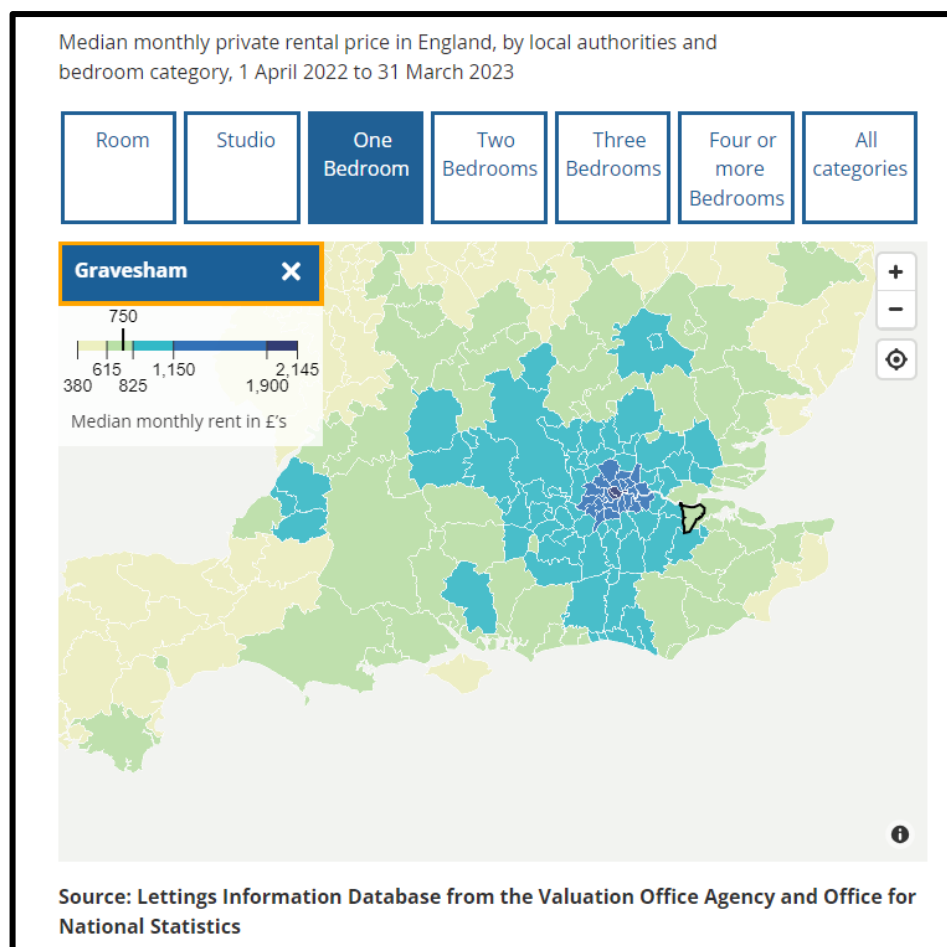
decline in available rental homes in just three years is remarkable and more than a little concerning. It means that demand is going to be incredibly high leading to a very competitive market which will inevitably lead to rising rent values which is going to add additional stress to those who are already struggling to stay afloat. Demand for PRS is already an issue in Gravesham as we will articulate in this section.

13.118. The below chart is taken from the Workers Accommodation Report (APP-551). This shows the car commute catchment of up to 90 minutes. Paragraph 5.9.3 of APP-551 advises that this WAR has assumed that workers who have to move to the area to work on the Project would aim to find accommodation within a travel time of up to 60 minutes to site. This therefore equates to the 2 lightest green colours in the below chart.



13.119. The ONS publish Median monthly private rental price in England, by local authorities and bedroom category²⁵ and the below map shows that Gravesham (and Thurrock) are one of the more affordable locations in the region.

²⁵ [Private rental market summary statistics in England - Office for National Statistics \(ons.gov.uk\)](https://ons.gov.uk)



13.120. This is a similar situation for mean rents as shown by table XX

Area	All categories				
	Count of rents	Mean	Lower quartile	Median	Upper quartile
ENGLAND	466,090	960	625	825	1,150
EAST	65,390	989	735	900	1,177
Thurrock UA	2,460	1,036	850	975	1,200
Essex	13,830	1,046	800	975	1,213
LONDON	45,510	1,751	1,250	1,500	1,950
Inner London	19,820	2,112	1,420	1,797	2,400
Outer London	25,690	1,473	1,150	1,375	1,650
SOUTH EAST	89,000	1,100	810	998	1,295
Medway UA	2,600	912	750	895	1,050
Kent	13,640	995	715	900	1,200
Dartford	930	1,197	950	1,178	1,400
Gravesham	1,030	1,012	800	975	1,200
Sevenoaks	760	1,519	1,050	1,300	1,675
Tonbridge and Malling	740	1,248	950	1,150	1,400

Source: VOA's administrative database as at 31 March 2023

Table 13.1: Summary of monthly rents recorded between 1 April 2022 to 31 March 2023 by administrative area for England

- 13.121. Paragraph 5.9.1 of the WAR advises that, in summary, the workforce for the Project would reach a peak of 4,514 in Phase 6. They estimate that the north and south sections peak at different times, with the north peaking in Phase 6 with 3,802 workers and the south peaking in Phase 7 (September 2027 - March 2028) with 885 workers. Please note that these timeframes do not take into account the delayed construction programme.
- 13.122. As noted earlier, this WAR assumes that 35% of workers would be employed locally and therefore would not require accommodation provision. Apart from the 480 workers to be accommodated onsite (in Thurrock), the Project has assumed that the remainder of workers would take a variety of different accommodation types including home ownership, PRS, visitor accommodation and latent. The majority of staff would use PRS, with an estimated 305 workers requiring PRS accommodation at the peak in the south, representing 34% of the total workforce in the south.
- 13.123. Table 13.68 'Human health assessment – construction' in chapter 13 (APP-151) advises that "The health outcome for affected communities / populations as a result of construction workforce impacts on accommodation during construction is considered to be neutral". The Council disagrees with this conclusion.
- 13.124. No direct provision is proposed by National Highways as their strategy predicts demand, potential spare capacity and the location of demand will be distributed across a broad area.
- 13.125. The Council does need to highlight that similar views were held for Hinkley Point C. Somerset Council has a webpage on the Hinkley accommodation strategy and housing projects²⁶ as, notwithstanding that view that demand would be spread and use existing capacity, EDF Energy were funding a range of interventions for Hinkley to manage the impacts of Hinkley Point C workers on the housing and rental markets in the area. The webpage includes the following statement:
- "However, in reality, the majority of demand has been in the Sedgemoor area, in close proximity to the main bus routes and the main site".
- 13.126. The below is an extract from the Hinkley Point C Housing Strategy Phases 3 that was shared with National Highways in July 2022:

²⁶ [Hinkley Housing Projects \(somerset.gov.uk\)](https://www.somerset.gov.uk/hinkley-housing-projects)

Somerset West and Taunton**Hinkley Point C Housing Strategy (Phase 3 - 2020- 2023)****Strategic Context**

The construction of the Hinkley Point C (HPC) nuclear reactor is one of the largest construction projects in Europe, employing (at peak) 5,600 workers on site. Peak construction is estimated to occur during Summer/Autumn 2021. The majority of the workers are not Somerset residents, and so there is an impact on the local housing market as workers seek accommodation, particularly in the private rented sector. These pressures have been building since construction commenced, and have resulted in predicted effects such as limiting availability of accommodation for local residents, exacerbating rentals, and in some instances, the displacement of current tenants.

Through Section 106 legal agreements, EDF have made available funding to mitigate the impact of the HPC project. Funding was first released in 2012 and other monies have been made available since. Previously, West Somerset Council and Taunton Deane Borough Council agreed HPC housing strategies (Phases 1 and 2), using EDF money to mitigate the impact of HPC construction on the local housing market. This mitigation took the form of creating new bed spaces and providing services for those who were struggling and in need of advice and support.

The previous HPC housing strategy (phase 2) was approved in early 2017. The rapidly- changing nature of the local housing market is such that it is now timely to undertake a review. Also, we have a revised set of strategic policies that are relevant to help inform interventions within the housing market.

- 13.127. This was produced in advance of the announcement in April 2022 that Hinkley Point C will require 3,000 more workers than first estimated, which is putting pressure on accommodation facilities i.e. 8,500 rather than 5,600 workers.
- 13.128. Sizewell has committed to make available a housing fund to mitigate potential adverse effects on the local housing market caused by workers using accommodation that would otherwise be used by local residents, by encouraging extra capacity to be brought forward, and making more efficient use of existing capacity. Part of the housing fund is provided as a reactive contingency which the Local Authorities could draw upon to mitigate any potential effects of the construction workforce on vulnerability to housing need and homelessness.
- 13.129. Information on tourist accommodation has been provided as part of our socio-economic background in this LIR. As highlighted in the earlier section, Gravesham has a small stock of visitor accommodation. Of the tourism enterprises in Gravesham, only 3.9% are for accommodation for visitors. Our neighbours - Medway at 2.9% and Dartford at 1.6% - are even lower, highlighting limited provision in the area.
- 13.130. The Council's Overview Scrutiny Committee were recently presented with a report that was taken to Cabinet and provided an overview of the rationale to create a not-for-profit Social Lettings Agency (SLA) in Gravesham. The Director (Housing Services) and the Service Manager (Housing Options) highlighted the following key points:
- As a Local Authority, Gravesham Borough Council (GBC) has a statutory responsibility to provide temporary accommodation.
 - There has been a significant increase in those accessing the service, which has resulted in financial pressure with a sum of £1.8m being spent last year on temporary accommodation.
 - Housing Services have struggled to access the private housing sector, and have been looking at ways to reduce the impact to the Council and provide a better outcome for those in temporary accommodation.

- In 2022/23, Housing Services had over 1900 presentations from households requesting a service as they are in threat of being homeless and there are over 200 households in temporary accommodation.
- Private renting was increasing in cost, making it harder for residents to access. There are considerable gaps between the market rent and the local housing allowance leaving large top ups to find for households dependent on welfare benefits.
- With the Renters Reform Bill, they have seen an increase in landlords leaving the market, but the SLA provides them with an option to hand their property over to be managed by the SLA and with guaranteed rent and may encourage them to continuing being a landlord.

13.131. The above is very much focused on the Council's concerns about PRS but paragraph 5.8.4 of the WAR (APP-551) recognises that some staff may move to the area for a substantial length of time (potentially several years) and they may seek permanent owner-occupied housing in the area and bring their families with them. It advises that other major projects...estimated 30%, 8% and 22% respectively of workers that would relocate into the area. Balancing the fact that there is a relatively higher cost of housing in the Project area and the more transient nature of construction in the region with the growing level of construction activity, a lower percentage of 8% has been assumed for the Project. We consider that this needs to be treated with caution. Gravesham, and Gravesend in particular, has for some been identified as an attractive place to live²⁷. National Highways is not currently proposing to mitigate the added pressures from these workers and their families and hence the inclusion of mitigation in our draft section 106 asks (AS-070).

Asks

13.132. As highlighted above, the Council considers that National Highways approach to construction has the potential to be highly detrimental to the area if it is wrong on its assumptions on workers. As the Council has stated in its PADSS (AS-069):

The Council does not believe that there is sufficient capacity in the local housing market to accommodate additional demand from the construction workforce in a very constrained supply situation. Regular monitoring of workforce to see where they are living and how they are travelling so mitigation measures can be adjusted to suit.

13.133. The Council has set out a range of practical solutions to National Highways in our s.106 draft heads of agreement (AS-070) including:

- Initiatives to increase the supply of bedspaces in private housing and tourist accommodation – for example, by enabling the delivery of units which otherwise would not be delivered, for example by assisting with cashflow on stalled sites.
- The Council recognises that LTC does not want a housing legacy from the project and there are multiple ways that this can be avoided if they work in partnership with GBC i.e. LTC's contribution is primarily financial and GBC manages the delivery of the additional units for use by LTC workers for the construction phase but retains ownership.
- Additional capacity in GBC's housing advice and homelessness prevention service and initiatives to facilitate access to PRS for local residents (such as

²⁷ [The London exodus: top schools, the best areas and new homes for first-time buyers in Gravesham | Homes and Property | Evening Standard](#) + [Wallet-friendly places to live near London | Drivers & Norris](#) +

schemes that allow people to move into private rented accommodation without having to pay a deposit)

- The Council is developing a Social Housing Letting Agency to manage Private Rented Sector properties on behalf of Landlords to provide a long term, high standard, and affordable housing within the private rented sector. We are developing this it will help us break down barriers that may be experienced by some client's in accessing private rented properties and help reduce the waiting time for those waiting to be housed. LTC can provide assistance with this.
- initiatives to reduce impact on existing communities such as development of Article 4 for HMOs
- Coordinator(s) and Accommodation Working Group
- An obligation to conduct regular workforce surveys which will be shared with working group in order to provide information to the Accommodation Working Group in relation to the estimated number of home-based and non-resident workers, their use of accommodation of different types and the location of their accommodation. This will also ask information about any family members which have re-located with them i.e. children.
- The Council has also asked for clarity on what arrangements LTC would put in place if they had to temporarily move people due to construction impacts i.e. noise, air quality. Could be very short-term i.e. unexploded ordnance or long-term if air-filtration equipment or triple glazing was needed to be fitted to residential properties.

Mental Health and Wellbeing

13.134. The National Networks National Policy Statement (NNNPS) includes a section of health including the following extracts from paragraphs 4.79 to 4.82:

- National road and rail networks and strategic rail freight interchanges have the potential to affect the health, well-being and quality of life of the population. They can have direct impacts on health because of traffic, noise, vibration, air quality and emissions, light pollution, community severance, dust, odour, polluting water, hazardous waste and pests.
- New or enhanced national network infrastructure may have indirect health impacts; for example if they affect access to key public services, local transport, opportunities for cycling and walking or the use of open space for recreation and physical activity.
- As described in the relevant sections of this NPS, where the proposed project has likely significant environmental impacts that would have an effect on human beings, any environmental statement should identify and set out the assessment of any likely significant adverse health impacts.
- The applicant should identify measures to avoid, reduce or compensate for adverse health impacts as appropriate. These impacts may affect people simultaneously, so the applicant, and the Secretary of State (in determining an application for development consent) should consider the cumulative impact on health.

13.135. Paragraph 13.5.33 of Chapter 13 of the ES (APP-151) explains that an iterative appraisal of the Project design, taking into account the design principles and good practice, was undertaken to identify any potentially significant effects that would

require essential mitigation. This identified that effects on population and human health could be significant and therefore required further consideration for essential mitigation. The following were identified:

- Neighbourhood amenity during the construction phase, as a result of a combination of effects arising from changes in air quality, changes in noise levels and visual impacts
- Potential negative effects on the capacity of primary healthcare services to cope with the influx of construction workers
- Negative health outcomes for communities (including sensitive populations such as older people and children) associated with construction and operational noise impacts and mental health and wellbeing (arising from anxieties around construction activities) / quality of life
- Negative health outcomes arising from traffic-related severance effects.

13.136. In section 7 of the Code of Construction Practice (CoCP) (APP-336) is the Register of Environmental Actions and Commitments (REAC). This includes worker healthcare provision with a reference back to paragraph 13.5.33. The commitment is for the provision of healthcare services for Project construction workers by the Contractor:

The Contractor will provide an appropriate range of medical and occupational healthcare services (including on-site facilities) to meet the physical and mental health needs of the construction workforce. The range of services will be agreed with National Highways, following engagement with Integrated Care Partnerships.

13.137. This is a positive commitment albeit it does not deal with effects on the capacity of primary healthcare services to cope with impact of the construction of LTC from people other than construction workers i.e. existing residents as identified in the 3rd bullet point above. The Council does not consider that proposals for engagement and communication with local residents and communities as described in the CoCP (APP-336), although a welcomed concession, will be sufficient in managing community anxieties and uncertainties about construction activities and associated environmental effects (for example the commitment to providing information about timing of particularly noisy activities).

13.138. The 3rd bullet point above highlights ‘negative health outcomes for communities (including sensitive populations such as older people and children) associated with construction and operational noise impacts’. The Council recognises that noise can have a significant impact on how people live, including how they sleep, perform daily activities, and socialise. This can have a direct impact on health and wellbeing, socio-economic opportunity and overall quality of life. Noise impacts are determined by a number of factors, including:

- The time of day and duration of noise;
- The quality of sound insulation within residential houses; and
- Type of construction practices and associated mitigation measures.

13.139. Therefore impacts relating to construction noise and vibration are likely to vary across the sites, depending on the method of construction and proximity to people and social infrastructure. There a number of adverse impacts associated with noise disturbance, including disrupted sleep, physiological effects, stress, and a range of

other physical and mental health problems. There are a number of communities with protected characteristics who likely to be more sensitive to impacts of noise pollution arising from the site and Table 13.5 identifies sensitive receptors particularly vulnerable to noise impact. Kent Public Health have identified that wards such as Westcourt have populations with vulnerabilities and increased levels of sensitive receptors.

Asks

13.140.

- National Highways to more comprehensively address the negative health outcomes for communities associated with construction and operational noise impacts and mental health and wellbeing (arising from anxieties around construction activities) / quality of life, including ensuring that additional health and well-being services are funded to address these additional needs
- The Council has also asked that the well-being of the affected communities are monitored to see if additional interventions are needed. We have suggested that this can be simple – like the post-natal maternity checks on well-being. Such health surveillance is a means of detecting any harmful changes to someone's health, and importantly at an early stage to help identify if further corrective action is needed.

Information sharing

13.141. Coping with major change is difficult for most people but people are more able to accept difficult changes when they feel like they understand the reasons and they have access to on-going information. The Council considers that the Silvertown Tunnel approach to monitoring and mitigation sets a good precedent. The Silvertown DCO advises that:

“the monitoring and mitigation strategy” means the document of that description set out in Schedule 14 certified by the Secretary of State as the monitoring and mitigation strategy for the purposes of this Order and which in particular contains commitments in respect of—

- (a) traffic monitoring;
- (b) air quality monitoring;
- (c) noise monitoring;
- (d) socio-economic monitoring; and
- (e) the implementation of mitigation;

13.142. TFL's webpage for Silvertown²⁸ includes the following:

- Since December 2020, we've been monitoring air quality and specifically nitrogen dioxide (NO₂) to ensure that the impacts of the Silvertown Tunnel are fully understood, and we get the overall air quality improvement expected.
- As part of this work, we installed 38 new air quality monitors at 35 locations in the boroughs of Greenwich, Newham, Tower Hamlets, Southwark and Lewisham.

²⁸ <https://tfl.gov.uk/travel-information/improvements-and-projects/silvertown-tunnel>

Three of the 38 air quality monitors are continuous monitors which sample the air around the unit in 15-minute intervals and the data is reported live on the [London Air Quality Network website](#).

- Extensive monitoring, particularly around air quality, done both before and after the opening of the tunnel. Regular reports will be published online and if readings suggest impacts are worse than originally anticipated, we will review what else we can do to address them

Emergency Planning and Incident control

13.143. Gravesham Borough Council is a member of the Kent Resilience Forum and as the Council raised in its response to the Community Impacts Consultation:

3.19. A particular concern is what happens in times of disruption where the impacts of congestion on the A2 and incidents on the A282 are well known with rat-running and widespread congestion throughout the Borough. The Emergency Services have significant concerns over their access to incidents on the strategic network and carrying out their day-to-day business in construction and operation phases.

14. Road drainage and the Water Environment

- 14.1. Document APP-152 6.2 Chapter 14 is the main source.
- 14.2. This chapter of the ES considers the likely significant effects on local and catchment-wide water quality, surface water and groundwater resources, land drainage and flood risk.
- 14.3. Whilst these are issues of concern to the Borough Council, it is clear from the stakeholder engagement log that the Council's direct involvement has been limited with the requisite technical engagement taking place with the Environment Agency, Southern Water Services, Kent County Council (including as Lead Local Flood Authority), North Kent Marshes Internal Drainage Board and Natural England.
- 14.4. The chapter explains that in the section of the Project between the A2 and the South Portal, there are currently few surface water features. Some ponds and a stream flow through Shorne Woods and there are also dry valleys in this location. Moving north from the South Portal, the Project crosses beneath the South Thames Estuary and Marshes SSSI, Shorne Marshes RSPB reserve and the Thames Estuary and Marshes Ramsar site. These areas are drained by a network of main rivers and ordinary watercourses, which ultimately discharge to the River Thames via the Denton New Cut which has a flapped outfall to the Thames. The EA states that these designations are influenced by freshwater flows and may be vulnerable to groundwater abstraction.
- 14.5. As tunnelling below the groundwater table influences the hydraulic regime in the surrounding ground, the Council therefore have longstanding concerns about the impact of the project on the area's hydrology. These concerns increased when the ground stabilisation tunnel was added to the project.
- 14.6. The Council notes from the stakeholder log that there have been a number of joint meetings with Natural England and EA to discuss a range of issues including:
 - the water balance sustaining the Thames Estuary and Marshes Ramsar site and the potential for ecological effects due to Project-induced changes in the groundwater regime.
 - options for the disposal of surface water runoff from the southern tunnel entrance compound.
- 14.7. A Hydrogeological Risk Assessment to understand the baseline water balance of the Thames Estuary and Marshes Ramsar site has been undertaken (APP-458 & APP-459). The study has concluded that rainfall is the main input, with a smaller and less certain input from leakage from the Thames and Medway Canal.
- 14.8. About 70% of the water that Southern Water Services supplies comes from groundwater (water stored underground in aquifers), with 23% abstracted from rivers and 7% comes from their reservoirs. Therefore, the EA must protect groundwater sources used to supply drinking water from pollution. They do this by defining Groundwater Source Protection Zones (SPZs) which are zones which show the level of risk to the source from contamination. A positive aspect of the project is, as noted in paragraph 14.4.69 that the Project route does not cross the inner protection zone (SPZ1) of any of the public water supply wells.
- 14.9. We note in paragraph 14.6.4 that rainfall runoff from the southern tunnel entrance compound will be discharged to a ditch, referred to as the western ditch, in

Filborough Marshes. The ditch, and wider interconnected network of watercourses, would convey the runoff to the River Thames via an existing outfall. Impacts on baseline water quality would be prevented through provision of a treatment system at the compound that would, for example, remove suspended sediments and chalk fines.

- 14.10. The quality of the discharge would be governed by the conditions of an EA discharge consent. The water quality attribute of the ditch network is assigned high importance, and a negligible magnitude of impact is assessed, due to the provision of treatment measures as described above. The overall significance of effect is classified as temporary slight adverse, which is not significant.
- 14.11. The ditches highlighted are part of the Thames Estuary and Marshes Ramsar ditch network. The Borough Council understand that the discharge would be subject to an environmental permit but considering the sensitive and international importance of the Ramsar ditch network, we are concerned about what happens if there is an extreme weather event as has just happened in South Korea²⁹. The water will need to go somewhere, and it is clear from recent water company cases the impact that extreme weather events can have an overwhelming impact.
- 14.12. We appreciate that consideration has been given to the Thames & Medway canal. Water levels in the Thames and Medway Canal are maintained using water that is abstracted from an extraction pool on the Denton New Cut.

²⁹ [South Korea floods: Dozens die in flooded tunnel and landslides - BBC News](#)

15. Climate

- 15.1. APP-153 6.2 Climate
- 15.2. In June 2019, this Council passed a motion pledging to make its operations net zero by 2030. More recently, in December 2021, the council adopted its Climate Change Strategy for the period 2022-2030.
- 15.3. This is a complex area which has been a developing area of Government policy, most relevantly in this context in the proposed changes to the NPSNN. The decision making will take place in a context where there is a requirement to move towards net zero. That begs a question as whether a major new section of road should be constructed on this scale at all due to both the embedded carbon and that which will come from the projects operation (see section 3 for a discussion on the additional traffic flows).
- 15.4. The Applicant has accepted that the project needs to move as much as possible towards being as carbon neutral as possible, with initiatives such as potential use of hydrogen as fuel for construction vehicles³⁰.
- 15.5. The Project will make the Government's commitments to addressing the climate and biodiversity crisis more challenging with total net greenhouse gas emissions of approximately 6.596 million tonnes of carbon dioxide equivalent (tCO₂e). The Applicant's assessment against the Government's carbon budgets does not account for the recently announced delay in the likely start of construction and it is unclear what effects this would have on the figures presented in the Environmental Statement (Table 15.17). If these figures are not to be updated in any event as a consequence of Action Point 1 following ISH1, the Council would request that the Applicant be invited to provide this information.
- 15.6. The Project will undermine the Government's commitments to addressing the climate and biodiversity crisis with total net greenhouse gas emissions of approximately 6.596 million tonnes of carbon dioxide equivalent (tCO₂e). The Council notes from the relevant representation by Friends of the Earth London that such an amount "is greater than the entire annual emissions of e.g. Cyprus, Uruguay or DRC".
- 15.7. The London Cycling relevant representation has referenced that the Welsh government has recently reassessed major 'road building' schemes in light of modelled climate emissions from not just construction but arising changes in motor vehicle use (including applying a test of the potential impacts to the 'well-being of future generations') and they consider that the English government should do the same in general and specifically in regard to the Lower Thames Crossing.
- 15.8. The Council notes that on 28 June 2023, the Climate Change Committee in its 2023 Progress Report to Parliament³¹ advised parliament that the Welsh Government's acceptance of its independent roads review was a welcome step.
- 15.9. Whilst the Council understand that carbon impacts are experienced at a more than local scale, given the global nature of climate change, nonetheless, the Council does have concerns regarding the impacts during the operational phase on ecological receptors and statutory and non-statutory designated sites, including nitrogen deposition resulting in degradation of habitats.

³⁰ <https://nationalhighways.co.uk/article/national-highways-to-use-hydrogen-powered-construction-machinery/>

³¹ <https://www.theccc.org.uk/wp-content/uploads/2023/06/Progress-in-reducing-UK-emissions-2023-Report-to-Parliament.pdf>

- 15.10. The Council are concerned about the cumulative impacts of the Project, and the risk of an increase in development encroachment on protected wildlife sites and mitigation areas. The Council is not yet persuaded that the local implications have been adequately assessed.

16. Chapter 16: Cumulative Effects

- 16.1. This chapter (APP-154) presents the assessment of the likely significant cumulative effects of the A122 Lower Thames Crossing (the Project) during construction and operation.
- 16.2. Two types of cumulative effects have been considered:
- Intra-project effects – the combined action of a number of different environmental effects caused by the Project on the same resource or receptor.
 - Inter-project effects – the combined action of one or more other projects in combination with the A122 Lower Thames Crossing Project on the same resource or receptor

North Kent Strategic Access Management and Monitoring Strategy (SAMMS)

- 16.3. The north Kent coast between Gravesend and Whitstable is internationally important for wildlife. The Thames, Medway and Swale estuaries and marshes are protected under international designation as Special Protection Areas (SPAs) and Ramsar Sites. Every year, around 250,000 waders and waterfowl travel thousands of miles to spend winter on the north Kent coast, feeding and resting on the marshes in preparation for the long return journey to their breeding grounds in the spring. Research shows that recreational visitors can cause disturbance to these birds, reducing their chances of successful breeding. The North Kent Strategic Access Management and Monitoring Strategy (SAMMS) was prepared in 2014, setting out a package of strategic measures for resolving the additional disturbance issues to wintering birds, arising from new housing development.
- 16.4. Bird Wise is a set of strategic measures designed to mitigate disturbance to birds caused by recreational visitors to the coast.
- 16.5. Dogs getting too close to birds causes them to fly away which wastes energy the birds cannot afford to lose. Many birds have migrated huge distances to get to our coastal habitats so they must spend as much time as possible feeding and resting to replenish lost energy. Repeated disturbance reduces the time available for this and results in birds not being in good enough condition to breed successfully if they make it back to their breeding grounds, some may not even make it there
- 16.6. Research shows that over 50% of all recreational visits to the countryside involve a dog. It has been demonstrated that dogs walking alongside their owner under close control or on a lead do not pose a threat to wildlife when kept to paths and a safe distance from wildlife. The advice that is given is that if the dog needs off-lead exercise there are places more suited for that purpose, away from sensitive wildlife
- 16.7. As highlighted in the earlier information on tourism and walking and cycling networks, the Lower Thames Crossing project will impact on people's access to key locations for recreational activities i.e. the country parks and walking routes. Many of these are frequented by dog walkers. The Council is concerned that these assets being less accessible, will increase recreational visitors to the coast. This may also increase the most damaging off-lead use when key off-lead locations like Jeskyns will be less accessible.
- 16.8. Table 16.2 of APP-154 considers the potential for intra-project effects on receptor groups from other topics. This table shows for each receptor group where other topic effects could result in potential intra-project effects (represented by a Y). It is concerning that the intra-project effects for the 'population and health' chapter on

biodiversity receptors has not been considered (represented by a N), when National Highways are aware of the Council's concerns about the potential impact on the North Kent Marshes and its bird populations from changes in people's recreational offer during the construction phase but no mitigation has been proposed. Chalk Park is not a consideration as this is not delivered until the end of the construction phase.