

14

Chapter 14: Tilbury St Chads

This chapter summarises the activities in Tilbury St Chads ward relating to the project's construction and its operational phase (when the new road is open). It also explains the measures intended to reduce the project's impacts on the local area. For more information about the assessments in this chapter and other information available during this consultation, see chapter 1 which also includes a map showing all the wards described in this document.

Within this document, we sometimes advise where additional information can be found in other consultation documents, including the Construction update, Operations update, You said, we did, Register of Environmental Actions and Commitments (REAC), Code of Construction Practice (CoCP), Outline Traffic Management Plan for Construction (OTMPfC) and the Design principles. To find out more about these documents, see chapter 1. References to these documents provide an indication as to how our proposals to reduce the project's impacts will be secured within our application for development consent.

14.1 Overview

14.1.1 About this ward

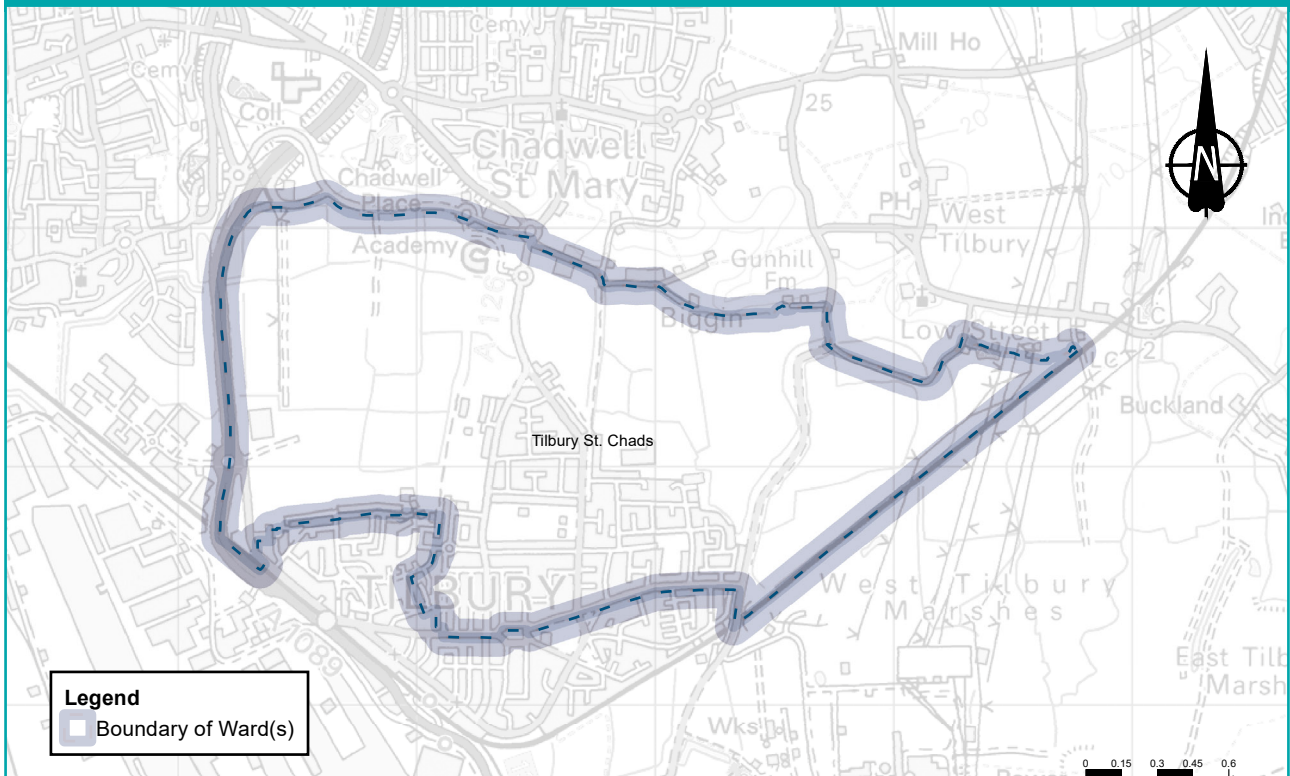
Tilbury St Chads is located to the west of East Tilbury, and north of Tilbury Riverside and Thurrock Park in the borough of Thurrock. The ward is around 3.9km² in area and has an estimated population of 6,733¹

Around half of Tilbury town falls within the ward, from the north of Brennan Road. The remainder of the ward is mostly agricultural. The Gateway Academy in the north of the ward, is located to the west of St Chads Road. Manor Primary and Olive AP Academy are also within the residential area of Tilbury. A high-pressure gas mains runs through the centre of the ward following Feenan Highway. A small section of high voltage overhead line crosses the A126 and travels south. There are Environment Agency designated main rivers in Tilbury St Chads, together with public parks, open spaces and allotments.

The A1089 runs north-south along the western side of the ward.

¹ Office for National Statistics, 2018 ward-level population estimate

Figure 14.1: Ward boundary map for Tilbury St Chads



14.1.2 Summary of impacts

Table 14.1: Summary of impacts during the project’s construction and operation

| Topic | Construction | Operations |
|--------------------------------|---|---|
| <p>Traffic</p> | <p>Impacts</p> <p>There would be delays to traffic along some roads while traffic management is in place.</p> <p>There would be additional cars and HGVs on the A1089 which may lead to an increase in journey times through the Asda roundabout.</p> <p>Mitigation</p> <p>There are several mitigation measures to reduce construction impacts on local residents such as minimising the use of local roads by construction vehicles. Further information about mitigation measures can be found in the Traffic section of this chapter.</p> | <p>Impacts</p> <p>The predicted change in traffic flows, as a result of the project in this ward, would occur westbound along Marshfoot Road to the junction with the A1089, mainly carrying additional traffic that has left the A13 at the Orsett Cock junction. Further details of the impacts of the project can be found in the Traffic section of this chapter.</p> <p>Mitigation</p> <p>Throughout the design process numerous mitigation measures have been implemented to reduce the operational impact on local residents. Details can be found in the traffic section of this chapter.</p> |
| <p>Public transport</p> | <p>Buses</p> <p>Additional traffic along the A1089 may impact journey times for the 66, 77, 77a, Z2, Z4 and 99 bus routes.</p> <p>Rail</p> <p>Throughout construction there may be some increases in journey times to Tilbury Town station, associated with increased traffic through the area and traffic management on the local roads.</p> | <p>Buses</p> <p>There would be no changes to bus routes through the ward once the project opens and no discernible predicted change to most bus journey times.</p> <p>Rail</p> <p>There would be no discernible changes in local access times to Tilbury Town station. It would be quicker to access Ebbsfleet International Station once the project is operational.</p> |

| Topic | Construction | Operations |
|--|---|--|
| <p>Footpaths, bridleways and cycle routes</p> | <p>There are no footpaths, bridleways or cycle routes in Tilbury St Chads ward, so there would be no construction impacts. For other potential impacts, see the other topic areas in this chapter, such as Visual and Noise and vibration.</p> | <p>There are no footpaths, bridleways or cycle routes in Tilbury St Chads ward, so there would be no operational impacts.</p> |
| <p>Visual</p> | <p>Impacts</p> <p>Residential properties on the eastern edge of Tilbury would be screened from views of construction activities by vegetation along the Tilbury Loop railway line with limited views of taller elements of construction activities within the Northern Tunnel Entrance Compound. Overhead power line diversions and the construction of Tilbury Viaduct may be visible from these properties and Parsonage Common.</p> <p>Mitigation</p> <p>Given the limited views of the project from this ward, no specific mitigation measures are considered necessary. The visual impacts would be controlled through a range of good practice measures in the project's CoCP and REAC.</p> | <p>Impacts</p> <p>There would be little change in views from residential properties on the eastern edge and Parsonage Common, with distant partial views of Tilbury Viaduct. Overhead power line diversions would not noticeably alter the views.</p> <p>Mitigation</p> <p>The landscaping design of the Lower Thames Crossing would help integrate the new road into the surrounding landscape.</p> |

| Topic | Construction | Operations |
|-----------------------------------|--|---|
| <p>Noise and vibration</p> | <p>Impacts</p> <p>The construction of the northern tunnel entrance and utilities work are expected to create noise impacts. There would also be a change in road traffic noise which would be negligible on most roads, apart from Coopers Shaw Road during construction years 2, 3, 4 and 5, when there would be a minor increase.</p> <p>Mitigation</p> <p>Noise levels would be controlled through mitigation measures presented in the REAC, see REAC ref numbers NV001 to NV009. There are also measures presented in the CoCP.</p> | <p>Impacts</p> <p>This ward would be approximately 400 metres west of where the new road is proposed, and so noise changes would be confined to its eastern edge. The change in noise would be a result of the predicted change in traffic flow and speed, vehicle type and physical alterations on the existing road network. The change in noise is predicted to be negligible in the west of the ward, with major increases in the east.</p> <p>Mitigation</p> <p>Low-noise road surfaces would be installed on all new roads. The road has been kept low in the environment using cuttings and bunds. Noise barriers would be installed in some areas alongside the new road.</p> |

| Topic | Construction | Operations |
|---------------------------|--|---|
| <p>Air quality</p> | <p>Impacts</p> <p>There is likely to be dust and emissions from construction equipment and traffic during the construction phase.</p> <p>Analysis of the construction phase traffic flows associated with the project indicate that there are no roads where the long-term change in traffic flow and exhaust emissions between 2024 and 2029 would lead to a noticeable change in air quality.</p> <p>Mitigation</p> <p>The contractor would follow good practice construction measures which are presented in the CoCP and REAC to minimise the dust. Construction vehicles would need to comply with emission standards. An Air Quality Management Plan would be designed in consultation with the relevant local authorities. The plan would include details of monitoring which would ensure measures are effectively controlling dust and exhaust emissions.</p> | <p>Impacts</p> <p>Air quality modelling shows there would be a minimal increase in pollutants as a result of project-associated changes in traffic flows and the new road.</p> <p>Mitigation</p> <p>As our traffic modelling indicates a minimal increase in pollutants, no mitigation is required.</p> |

| Topic | Construction | Operations |
|----------------------|---|---|
| <p>Health</p> | <p>Impacts</p> <p>The construction phase of the project would present opportunities to access work and training. There are likely to be changes in the area that may result in negative impacts on health, including mental health and wellbeing. These include changes in accessibility of local resources, amenities and open space. Much of the footpath network in neighbouring wards to the east would be temporarily blocked during construction. There is also likely to be perceivable changes in the levels of road traffic noise on Coopers Shaw Road.</p> <p>Mitigation</p> <p>The negative impacts would be mitigated through the good practice construction measures presented in the CoCP and REAC relating to dust emissions, working hours and visual screening, traffic management measures and community engagement. This includes the establishment of Community Liaison Groups.</p> | <p>Impacts</p> <p>The project would improve access to work, and training and access to open space and accessibility of local resources and amenities. This specifically includes further education colleges and primary schools, employment opportunities and open space, including new recreational areas outside Tilbury St Chads. Some residents may experience impacts on mental health and wellbeing as a result of the project such as anxiety around perceived changes to air quality or as a result of changes to the noise environment.</p> <p>Mitigation</p> <p>No essential mitigation is required for health other than those measures described in the noise mitigation section.</p> |

| Topic | Construction | Operations |
|------------------------------|---|--|
| <p>Biodiversity</p> | <p>Impacts</p> <p>The construction of the project would involve the removal of areas of habitat, both temporarily and permanently for the new road. These habitats support a number of protected and notable species which would be impacted including badger setts, water vole and reptile habitats.</p> <p>Mitigation</p> <p>Vegetation clearance would be undertaken in winter to avoid impacting breeding birds. Protected species would be relocated, carried out under a Natural England licence. Boxes to support bats and birds would be erected. Habitat lost for temporary construction works would be reinstated following construction.</p> | <p>Impacts</p> <p>There is the potential to cause mortality of species by encountering road traffic as well as habitat fragmentation and disturbance from traffic.</p> <p>Mitigation</p> <p>Landscape planting is designed to provide strong links for animal movement and foraging. Impacts would also be managed through the range of good practice measures set out in the CoCP and REAC. Newly created habitats would be managed to retain structure and function for the species present.</p> |
| <p>Built heritage</p> | <p>There are no buildings of historic relevance within Tilbury St Chads ward that would be affected by the project.</p> | |
| <p>Contamination</p> | <p>There are no known medium or high-risk sources of contamination that could be at risk of being disturbed during construction or operation of the project within Tilbury St Chads ward.</p> | |

14.2 Project description

14.2.1 Construction

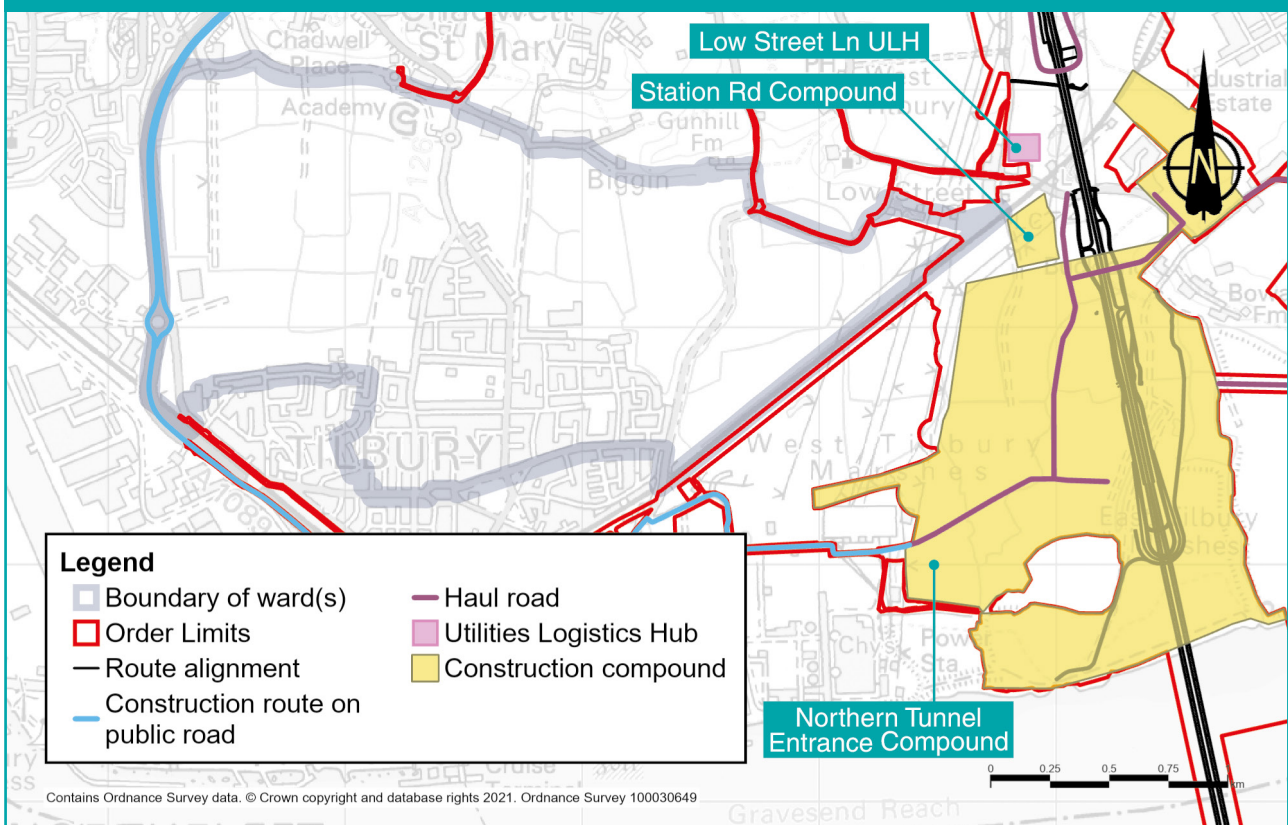
Construction activities

More information about how the area would look during construction, including visualisations, can be found in the Construction update. You can also view a video fly-through of the project during construction by visiting our consultation website.

Only a small section of the project's Order Limits (the area required to deliver the project) lies within Tilbury St Chads ward and little construction activity would take place within this ward, compared to neighbouring wards.

A proposed temporary access for utility companies would be built along the eastern boundary of the ward parallel to the railway line. An area at the north-eastern edge of Tilbury St Chads ward would be used for utility works. Further information about the utility works within Tilbury St Chads can be found in chapter 5 of the Construction update.

Figure 14.2: Main construction areas in Tilbury St Chads ward



Utilities

There would be no Utility Logistics Hubs within Tilbury St Chads ward. Works to provide temporary power for the compounds would be installed along A126 Marshfoot Road. Permanent water supply for the northern tunnel entrance would be installed in Coopers Shaw Road from Gun Hill and through the fields to the east of the ward. Connection and installation of a pipeline would be required at the western end of Dock Road for the temporary tunnel boring machine (TBM) water supply.

Chapter 2 of the Construction update provides an overview of how existing utilities would be affected by our plans to build the new road, with further detail including maps in chapters 4 and 5. Chapter 2 of the Operations update also describes the project's impacts on utilities, including a map showing the utilities that would be repositioned to accommodate the new road.

Construction routes on public roads

The HGV traffic access to the Northern Tunnel Entrance Compound and the Station Road Compound would pass through this ward, eastbound along the A1089 to Fort Road and then the Port of Tilbury's Substation Road. Construction related staff vehicles may use local roads within the ward such as Marshfoot Road, Gun Hill Road and Coopers Shaw Road to access the Northern Tunnel Entrance Compound and the Station Road Compound. This route runs along the northern boundary of the ward.

The number of vehicles predicted to go to the Northern Tunnel Entrance Compound and the Station Road Compound are shown in table 14.2. These are the number of vehicles going to each compound and there would be the same number of vehicles, on an average weekday, leaving each compound.

Table 14.2: Average daily vehicle numbers going to compounds located near Tilbury St Chads ward

| Time period | Northern Tunnel Entrance Compound | | Station Road Compound | |
|---------------------------------|-----------------------------------|------|-----------------------|------|
| | HGV | Cars | HGV | Cars |
| January to August 2024 | 90 | 377 | 2 | 27 |
| September 2024 to February 2025 | 105 | 580 | 13 | 38 |
| March to May 2025 | 133 | 593 | 20 | 35 |
| June to October 2025 | 133 | 466 | 20 | 35 |
| November 2025 to March 2026 | 133 | 506 | 18 | 35 |
| April to August 2026 | 132 | 611 | 21 | 35 |
| September 2026 to March 2027 | 132 | 670 | 16 | 24 |
| April to November 2027 | 131 | 720 | 4 | 18 |
| December 2027 to March 2028 | 131 | 684 | 0 | 0 |
| April to July 2028 | 122 | 619 | 0 | 0 |
| August 2028 to December 2029 | 39 | 73 | 0 | 0 |

Construction equipment and materials are expected to arrive via the Port of Tilbury and Tilbury2 ferry terminal, reducing the amount that HGVs would need to travel on public roads. However, some HGVs would service the construction site via the strategic road network, through Tilbury2 and the temporary haul road. Impacts on the road network are presented in the Traffic section below, with additional information in chapter 7 of the Construction update.

Construction schedule

Construction of the entire project is scheduled to last for around six years from 2024 to 2029. To deliver our construction programme efficiently, we would divide activities into coordinated packages of work. Maps and programmes for the packages north of the river can be found in chapters 4, 5 and 6 of the Construction update.

Construction working hours

Most construction in this ward would take place during core construction hours, from 7am to 7pm on weekdays, and from 7am to 4pm on Saturdays. If necessary, additional repair and maintenance would take place on Sundays from 8am to 5pm. There would be circumstances when working hours may be extended. Typically, this would be to reduce the impact on road users by working at night. Activities that would require longer working hours include carrying out traffic management measures, joining new roads to existing ones, and resurfacing existing carriageways. For safety reasons, we would also need to undertake work close to railway lines outside core hours when trains are not in service. More information about working hours is set out in the Noise and vibration section below and in the CoCP.

Traffic management

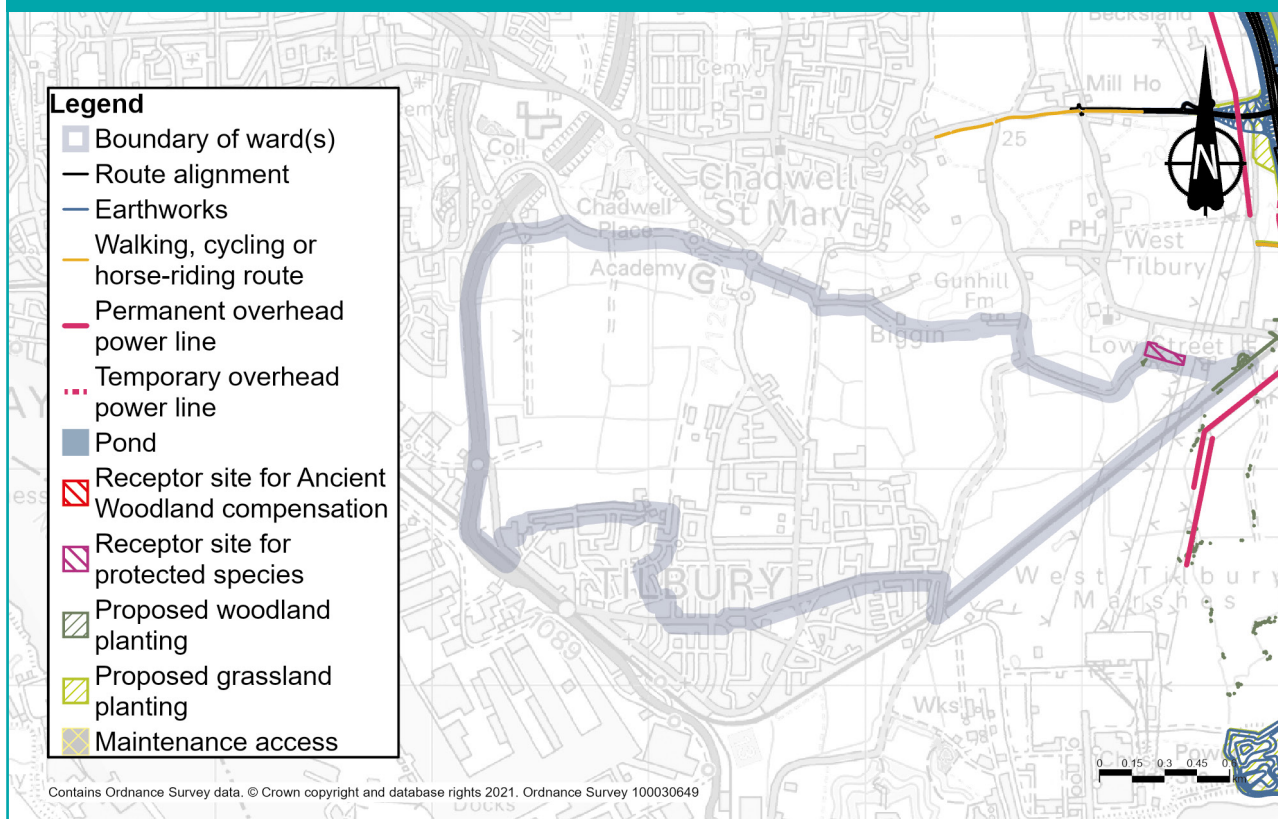
The main traffic management measures for Tilbury St Chads ward are listed below. All traffic management measures are based on an indicative construction programme which would be finalised by the appointed contractor. The contractor's final traffic management plans would be subject to final approval by the Secretary of State for Transport, following consultation with the local highways authority.

Table 14.3: Main traffic management during construction in Tilbury St Chads ward

| Road(s) affected | Proposed traffic management | Purpose | Duration |
|---|--|---|--|
| Marshfoot Road, Chadwell Hill and Brentwood Road | Lane closure and traffic lights | To install power supplies for the project's compounds located around the A13 junction | 12 months |
| A1089 | Closures | For specific works including bridge works, tie in works and utilities | Nights and weekends over short periods associated with specific works activities |
| Coopers Shaw Road / Gun Hill / Fort Road | 3-way traffic lights | To facilitate modifications to utilities | 2 weeks |
| Coopers Shaw Road | Lane closures and traffic lights in 300-metre sections | To facilitate modifications to utilities | 4 months between September 2024 and February 2025 |

We have sought to minimise traffic management measures wherever practical. However, measures would be necessary in some locations to allow construction traffic and local communities to move around safely, and to provide construction workers with sufficient space to operate. An overview of the traffic management required across the project can be found in the Outline Traffic Management Plan for Construction.

Figure 14.3: Main features of the operational project in Tilbury St Chads ward



14.2.2 Operations

The completed project

This section sets out the elements of the project that would feature permanently in Tilbury St Chads ward once construction is complete and the new road is open. For more information about the completed project, see the Operations update, as well as the figures in Map Book 1: General Arrangements.

- Permanent works within Tilbury St Chads ward would be limited to underground utility diversions along local roads. As such, there would be no visible elements of the project in this ward once it is operational.

Changes to the project since our design refinement consultation

As part of our ongoing design development, including discussions with utility companies, we have made several changes to the project and its Order Limits since our design refinement consultation in July 2020. Within this ward the proposed change would be as follows:

- Our ongoing discussions with the utility companies have enabled us to remove the area of farmland south of the Condovers Scout Activity Centre from the Order Limits as it is no longer required for utility diversions.

Impacts on open space and common land

Within Tilbury St Chads ward we propose to acquire permanent rights over an area of land at Walton Common and Parsonage Common for utility works required for the northern tunnel entrance. The land would also be used for temporary access and construction purposes. This area is designated as common land and provides scrub and grassland habitat which is valuable for wildlife. During construction we would need to take possession of the land for up to six months for installation of a power supply and then we would reinstate the land. The power supply would later become the permanent supply to the tunnel operations. The proposed works would be underground in this location and the rights are required in connection with the maintenance, access and protection of these plants. These rights would not affect the current use of the land.

Within Tilbury St Chads ward there are no proposed changes to open space or common land as previously consulted. More information about our proposals for compensating for impacts on open space and common land (which includes special category and recreational land), including proposals we have consulted on previously, can be found in chapter 3 of our Operations update.

14.3 Traffic

We carried out traffic assessments to understand how construction and operation would affect nearby roads, compared with the situation if the project was not implemented. For more information, see chapter 4 of the Operations update.

14.3.1 Construction

Construction impacts

There would be delays to traffic along the Coopers Shaw Road while the lane closure is in place. The traffic management on Marshfoot Road may also lead to delays to traffic. Gateway Academy has two access points, one onto Marshfoot Road and one on St Chad's Road (A126). The St Chad's Road access will provide access to the school when traffic management is implemented on Marshfoot Road.

There would be additional cars and HGVs on the A1089 which may lead to an increase in journey times through the Asda roundabout.

Measures to reduce construction traffic impacts

Our approach to construction has been refined after further investigations and feedback. A summary of the measures we propose to use to reduce the volume of construction materials transported in and out by road, can be found in chapter 2 of the Construction update.

To reduce the construction traffic impacts in Tilbury St Chads, we would carry out the following measures:

- Minimise use of the local road network as far as practicable through construction of temporary offline haul roads directly from the strategic road network.
- Our proposals allow for re-use of excavated materials, and would substantially reduce the need to dispose of excavated material via the road network, thereby reducing the number of HGV movements from the public road network during the construction phase.
- Where practicable, new bridge structures have been designed so that they can be built offline to avoid the need to close local roads for extended periods. Where offline construction is not possible, and space is available to do so, the existing road would be temporarily realigned to facilitate construction of new bridges.
- Following discussion with local authorities, and where possible, HGVs associated with construction of the project may be banned from using some local roads.
- Stockpile material within the Order Limits to allow material to be managed on-site rather than offsite, reducing the number of HGVs journeys needed.

14.3.2 Operations

Operational impacts

Traffic modelling has been carried out to predict the change in traffic flows on roads in the area, including those within or on the boundary with Tilbury St Chads ward for the first year of operation, 2029.

Figures 14.4, 14.6 and 14.8 below show the predicted changes in traffic in the morning peak (7am to 8am), interpeak (an average hour between 9am and 3pm) and evening peak (5pm to 6pm) measured in Passenger Car Units (PCUs per hour), where 1 PCU is equivalent to a car, and 2.5 PCUs is equivalent to an HGV. Figures 14.5, 14.7 and 14.9 below show the predicted percentage changes in traffic flow during the morning, interpeak and evening peak. For information about how we assessed operational traffic impacts, see chapter 1. For more information about how we carried out our traffic modelling, see chapter 4 of the Operations update.

The A1089 along the western boundary of the ward would experience an increase in traffic flows of between 50 and 250 PCUs northbound in the morning and evening peak hours. This would be less than a 10% change in flows. Southbound, the changes in flows would be less than 50 PCUs in each of the modelled hours. On Marshfoot Road westbound there would be an increase in traffic of between 50 and 250 PCUs in each of the modelled hours. This would be an increase of between 20% and 40% in the morning peak hour and an interpeak hour and more than a 40% increase in the evening peak hour. Eastbound there would be a decrease in traffic of between 50 and 250 PCUs in each of the modelled hours. This would be a decrease of between 20% and 40% in the morning peak hour and between 10% and 20% in the interpeak and evening peak hour.

On St Chad's Road the change in traffic flows would be less than 50 PCUs an hour in all modelled time periods in both directions. On Fort Road, north of the junction with Brennan Road, there would be a decrease in traffic flows of between 50 and 250 PCUs northbound in the evening peak hour. This would be a decrease of between 20% and 40%. Southbound, there would be an increase in traffic flows of between 50 and 250 PCUs in the morning and evening peak hours, which would be an increase in flows of over 40%.

Figure 14.4: Predicted change in traffic flows (PCUs) with the project during the morning peak in 2029

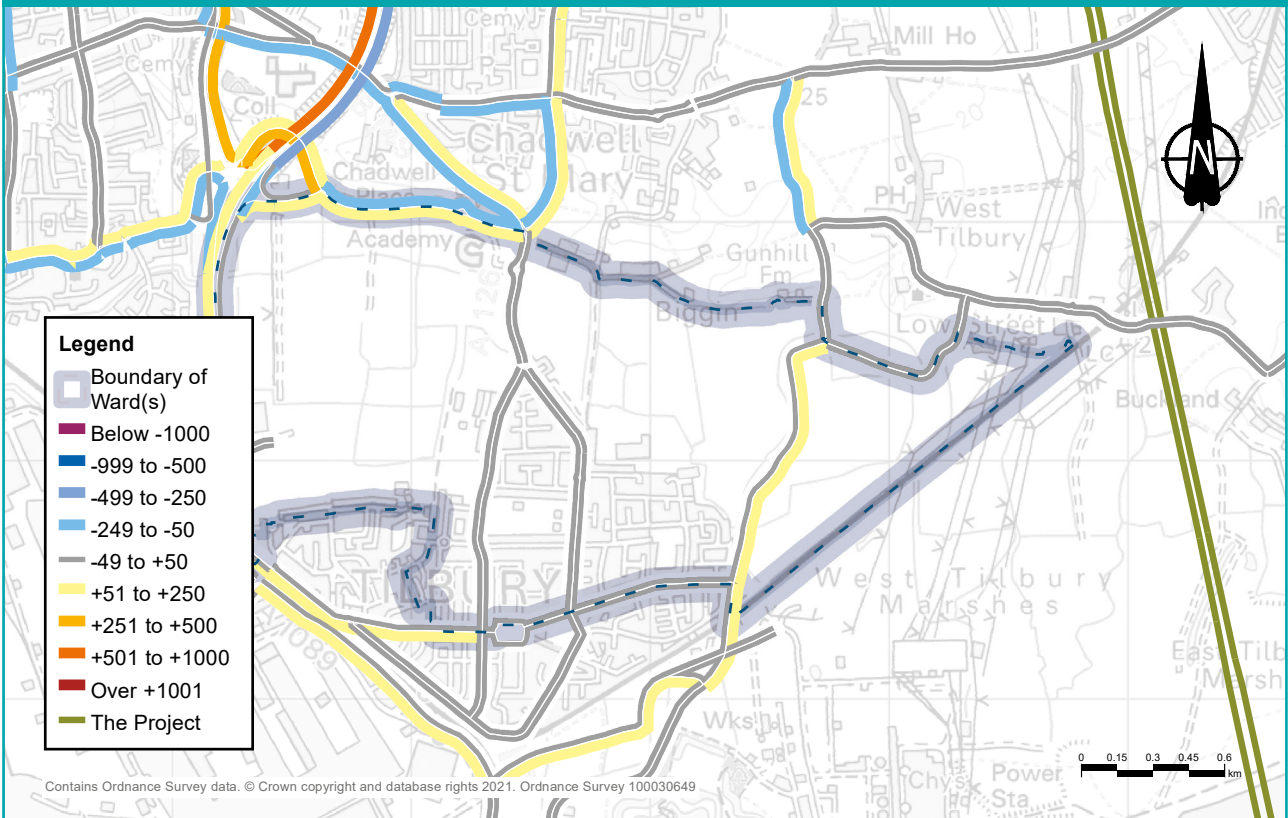


Figure 14.5: Predicted percentage changes to traffic flow during the morning peak in 2029

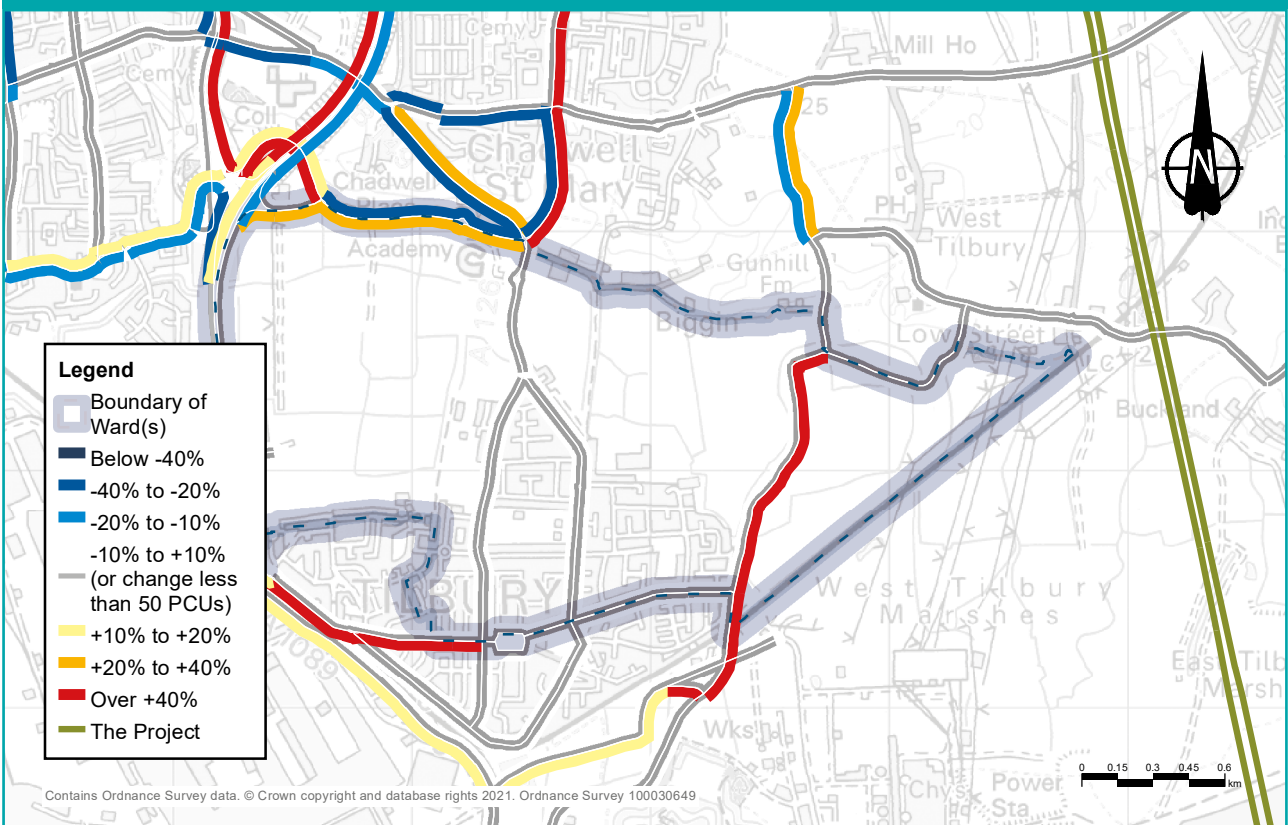


Figure 14.6: Predicted change in traffic flows (PCUs) with the project during the interpeak in 2029

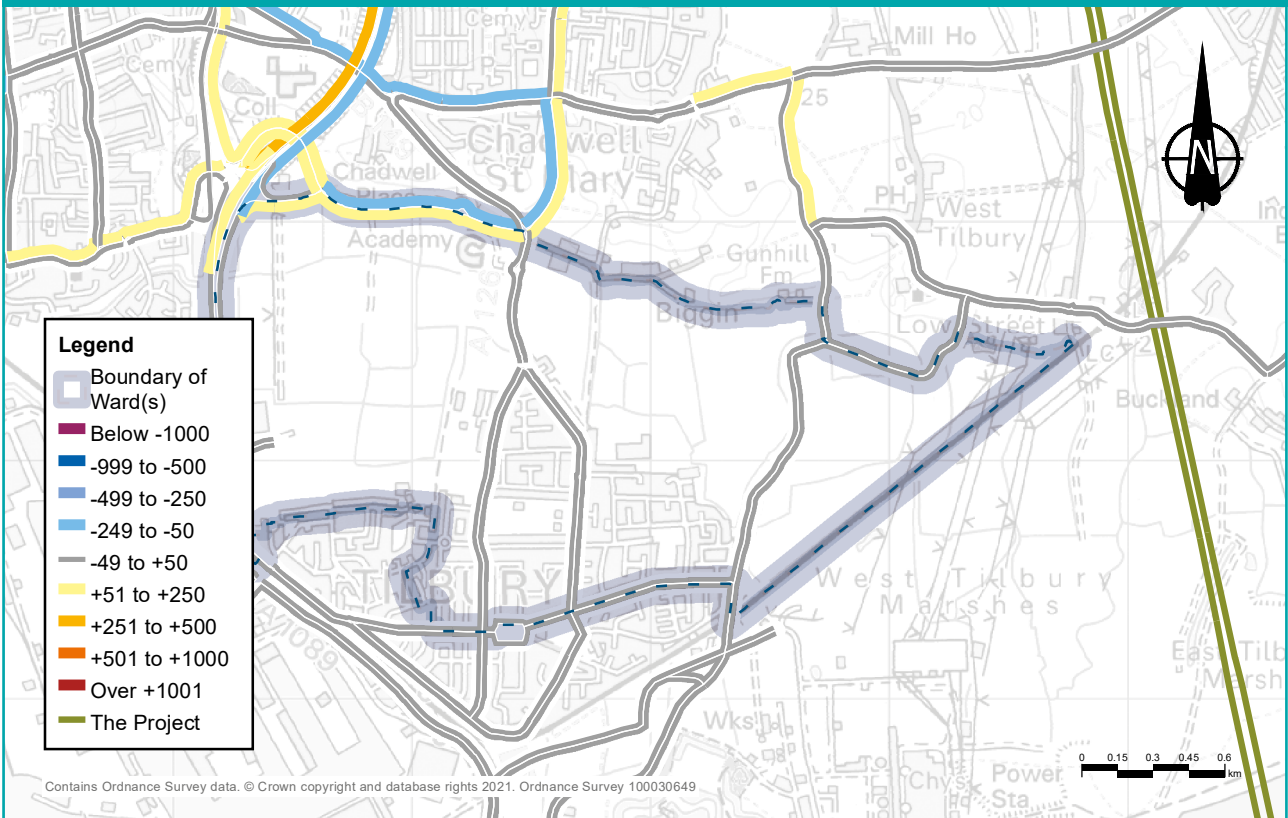


Figure 14.7: Predicted percentage changes to traffic flow during the interpeak in 2029

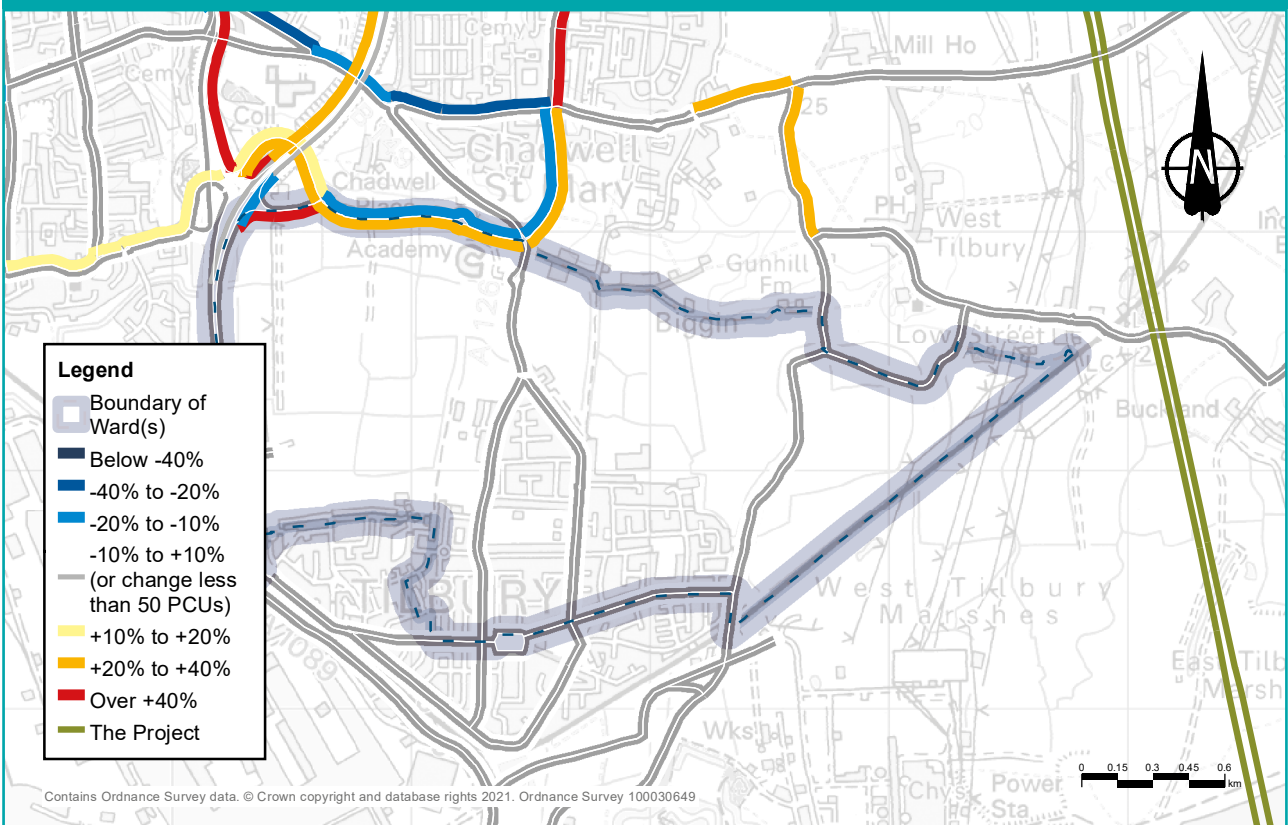


Figure 14.8: Predicted change in traffic flows (PCUs) with the project during the evening peak in 2029

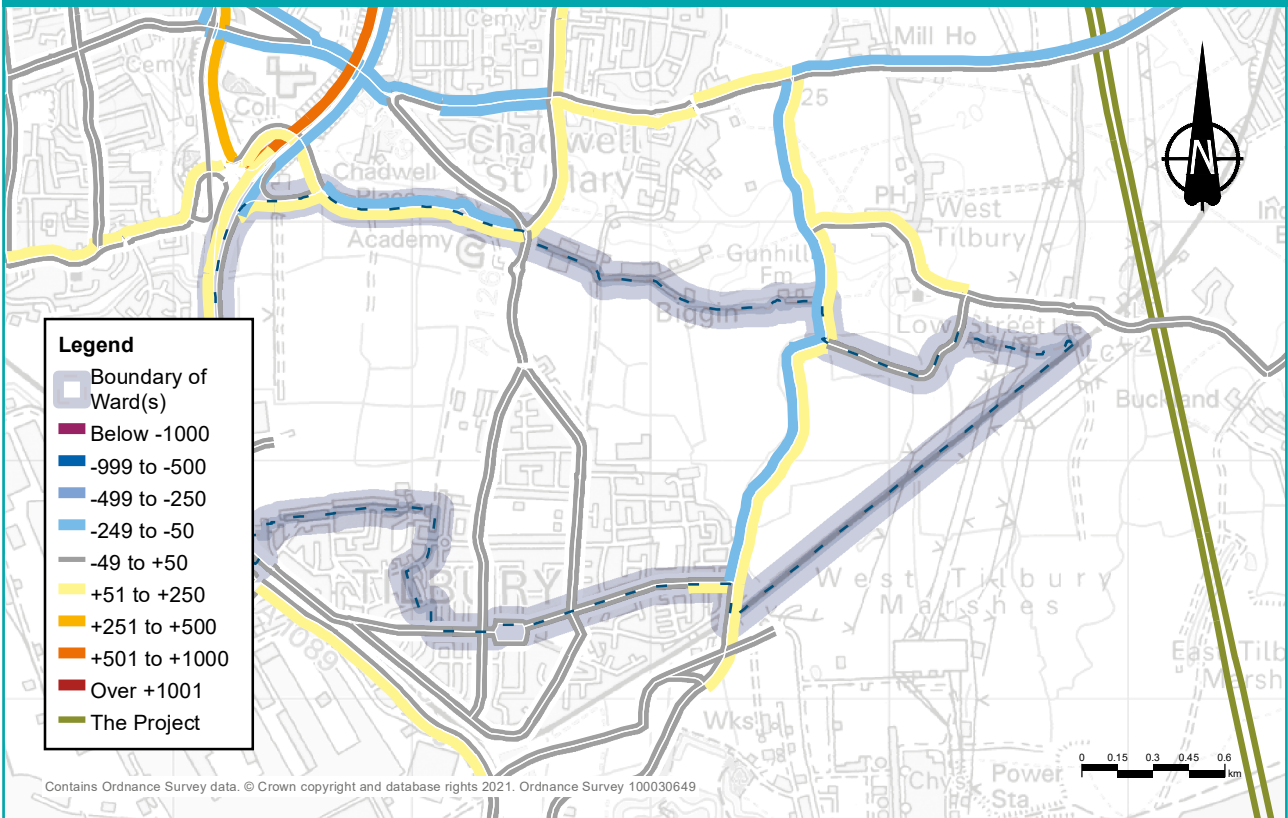


Figure 14.9: Predicted changes to percentage traffic flow during the evening peak in 2029

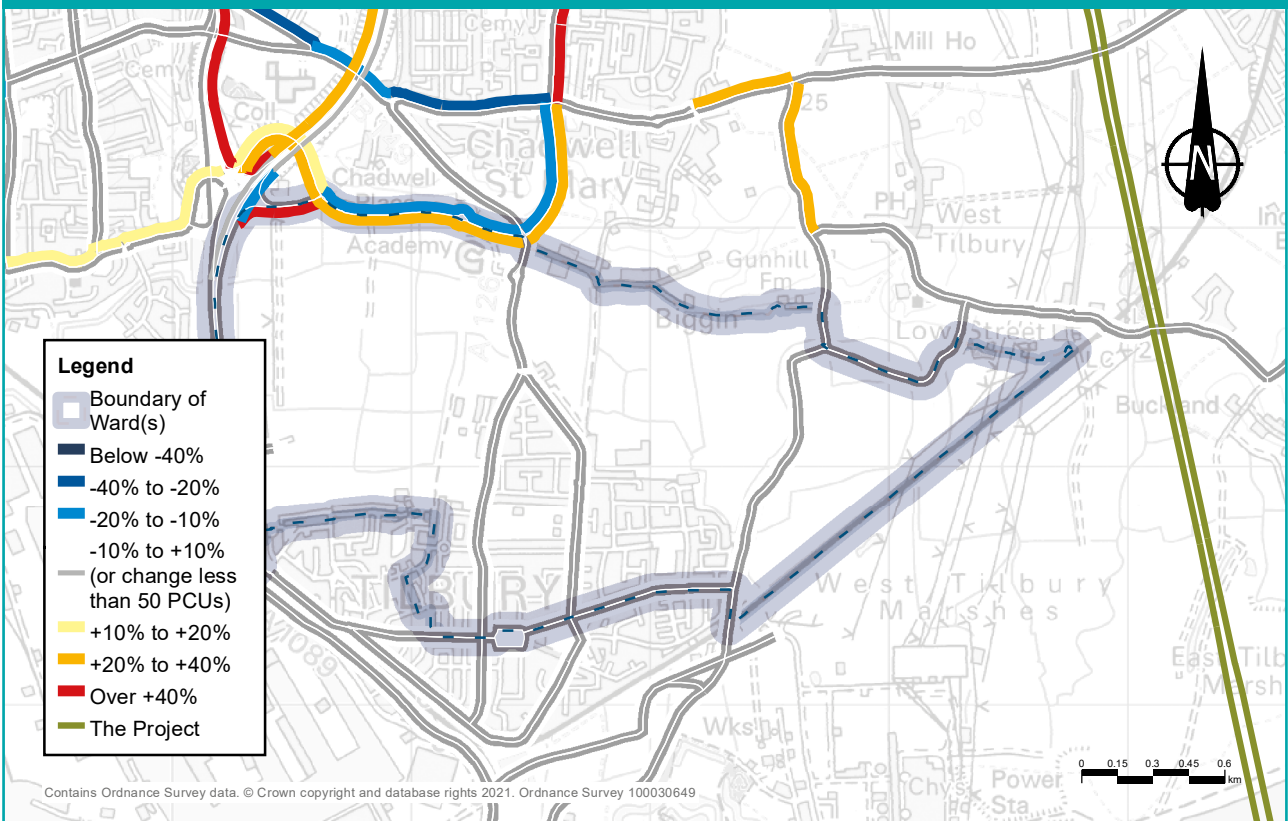
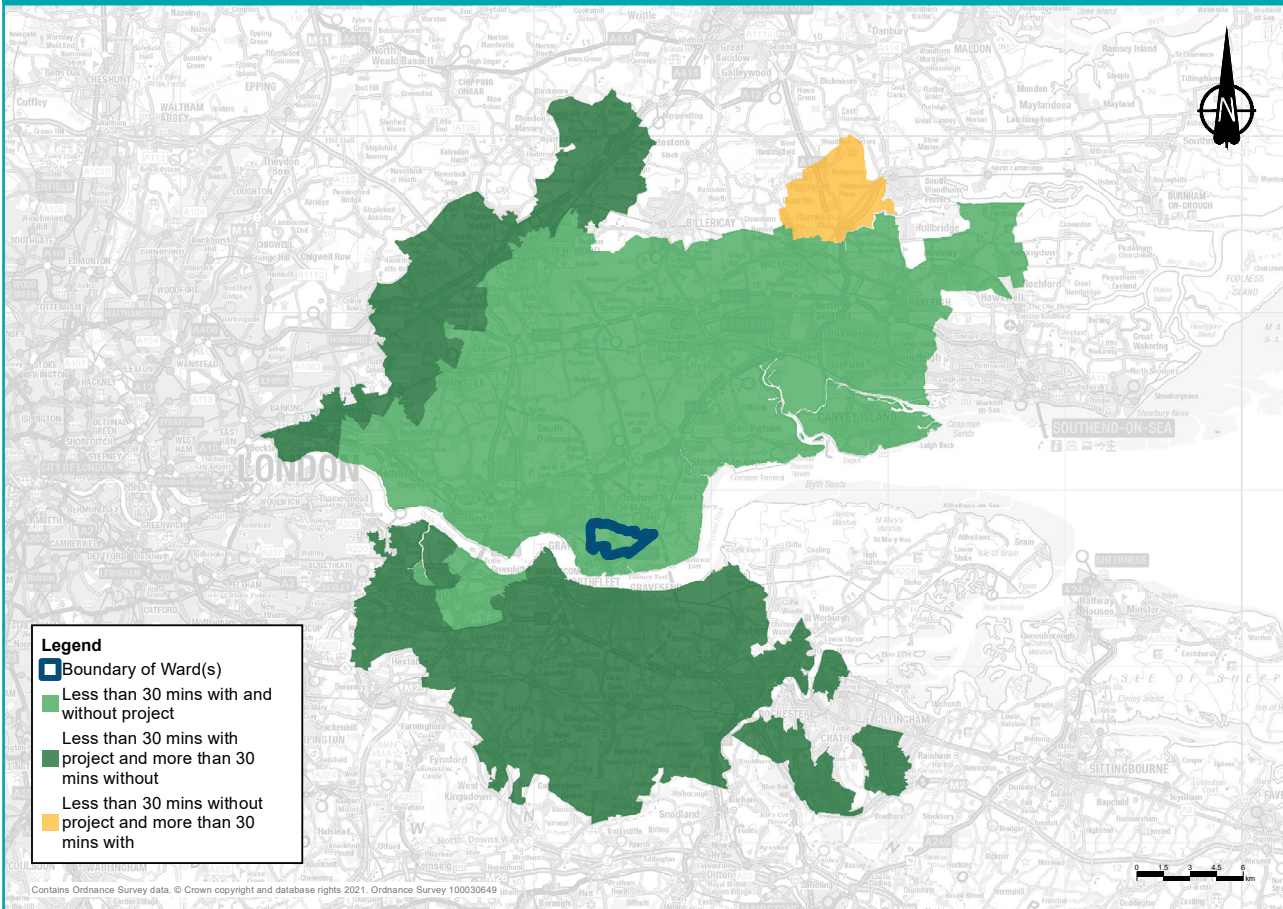


Figure 14.10: Change in area that motorists could drive to within 30 minutes from Tilbury St Chads ward



Changes to journey times

Figure 14.10 shows the change in the area that could be reached within a 30-minute drive time from the centre of the ward with and without the project. Figure 14.11 shows the change in areas within a 60-minute drive. The areas have been calculated for the morning peak hour (7am to 8am). The number of jobs within a 30-minute catchment area would increase by 81%, an additional 238,900 jobs, and within a 60-minute drive would increase by 26%, an additional 571,000 jobs.

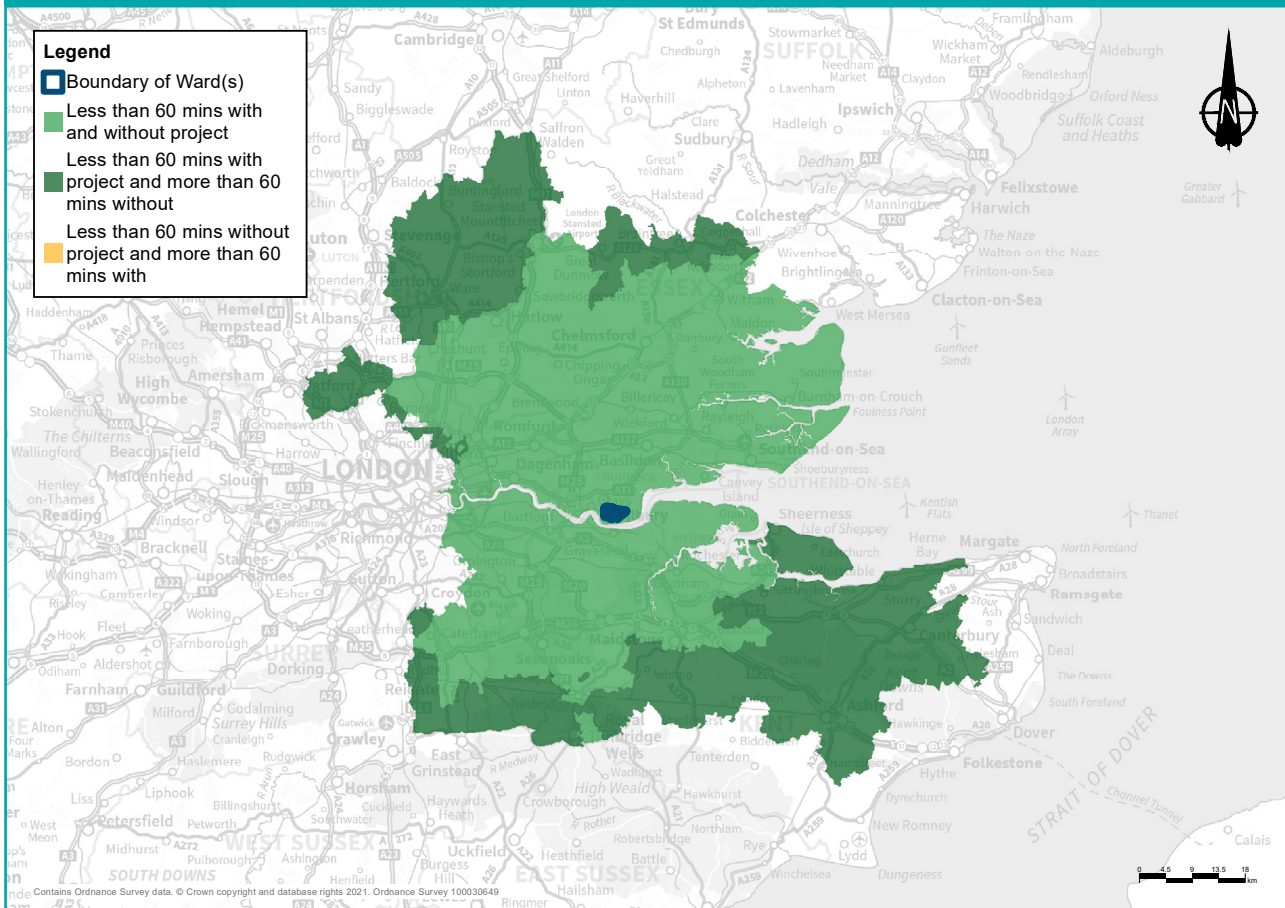
Operational traffic flow

The project has been designed to optimise its impacts on traffic, including the design of free-flowing connections with the M2/A2, A13/A1089 and the M25. In addition, the main route would have no traffic lights or roundabouts to ensure continuous traffic flow. Traffic lights or roundabouts would be necessary at some minor junctions away from the main route where traffic meets local roads. All new junctions would be designed to the latest safety standards, with high consideration for efficiency.

An iterative design process, including successive stages of traffic modelling and extensive consultation and engagement, has ensured that only the optimal links to the existing road network would be provided. For more information about how the project has developed, see the You said, we did consultation document.

Once the project is operational, traffic impacts on the affected road network would be monitored, including local roads. Where appropriate, we would work with the relevant highway authority to seek funding from the Department for Transport for further interventions.

Figure 14.11: Change in area that motorists could drive to within 60 minutes from Tilbury St Chads ward



14.4 Public transport

Existing situation

There are no railway stations within Tilbury St Chads ward but Tilbury Town station is nearby which provides c2c services between Essex and London Fenchurch Street.

There are a number of bus routes passing through or along the boundaries of Tilbury St Chads ward, including the 7A, 7B, 7C, 51, 66, 66A, 73, 73a, 77, 77a, 99, 475, Z1, Z2 and Z4.

14.4.1 Constructions

Rail

There would be a series of night time rail possessions of the Tilbury Loop railway line over a period of two months, in the adjacent East Tilbury ward, while the Tilbury Viaduct is constructed. These possessions would be agreed with the network operator. It is intended that the works would take place outside train operational times, and so services would not be disrupted.

Throughout construction there may be some increases in journey times to Tilbury Town station, associated with increased traffic through the area and traffic management on the local roads.

Buses

Traffic management measures may lead to increases in journey times for the 7A, 7B, 7C, 51, 66, 66A, 77, 77A, 99, 475 and Z1 bus routes.

14.4.2 Operations

Rail

There would be no discernible change in local access times to Tilbury Town station and no change to the rail services at that station. It would be quicker to access HS1 services at Ebbsfleet International Station, with the journey time decreasing by more than eight minutes in the morning and evening peaks.

Buses

There would be no required changes to bus routes through the ward once the project opens and no discernible predicted change to most bus journey times. The 73 bus runs from Tilbury through Grays to Lakeside Shopping Centre, and predicted journey times westbound in the morning peak hour would decrease by around two minutes.

14.5 Footpaths, bridleways and cycle routes

There are no footpaths, bridleways or cycle routes in Tilbury St Chads ward, so there would be no construction or operational impacts. For other potential impacts, see the other topic areas in this chapter, such as Visual, and Noise and vibration.

14.6 Visual

Existing situation

More information about how the area would look during construction, including visualisations, can be found in the Construction update.

Views towards the land on which the project would be built are limited to the eastern edge of Tilbury and open access land on Parsonage Common in the east of the ward.

Current views from the eastern edge of Tilbury overlook West Tilbury, bounded by the Chadwell escarpment and vegetation along the Tilbury Loop line, are dominated by overhead power lines.

14.6.1 Construction

Construction impacts

The main construction activities likely to be seen in this ward are:

- Formation and operation of the Northern Tunnel Entrance Compound
- Diversion and undergrounding of overhead power lines
- Construction of Tilbury Viaduct

Further information on our construction activities is provided in the Project description section above.

Any views of construction activity from properties on the eastern edge of Tilbury are likely to be partially screened by vegetation along Tilbury Loop line and limited to distant views of taller structures within the Northern Tunnel Entrance Compound. Overhead power line diversion work and the construction of Tilbury Viaduct may also be visible from these properties. There would be similar views from Parsonage Common.

Measures to reduce visual impacts of construction

Given the limited views of the project from this ward, no specific mitigation measures are considered necessary.

The visual impacts of the project would be controlled through the range of good practice measures set out in the project's CoCP and the REAC. See chapter 1 of the Construction update for more information about this and the project's other control documents.

14.6.2 Operations

Operational impacts

By the time the new road opens in 2029, Tilbury Viaduct and the overhead power line diversions would be complete and much of the former Northern Tunnel Entrance Compound would be reinstated to support the required end use, or returned to agricultural use.

Further information about the completed project is provided in the Overview section above.

There is likely to be very limited visual impact from the project on residential properties on the eastern edge of Tilbury. However, there would be distant partial views of Tilbury Viaduct while the overhead power line diversions would not noticeably alter the character of the views. There would be a similar change to views from Parsonage Common.

Measures to reduce visual impacts of the operational project

The landscaping along the Lower Thames Crossing corridor would be the primary measure in this ward, helping to integrate the new road into the surrounding landscape.

14.7 Noise and vibration

We have carried out noise and vibration assessments for both the construction and operational phases of the project. As explained in chapter 1, some of the assessments set out below are based on earlier versions of the project. The information provided still presents a reasonable representation of the likely effects from the proposals presented during this consultation.

Existing situation

The existing noise environment in Tilbury St Chads ward is mainly a result of traffic noise from the A126 and the A1089. There is also noise from railways, and other human activities.

It is further noted that the operational Tilbury docks are located immediately to the south of this ward, with the main access route of the A1089 being within the ward, forming the western ward boundary.

As part of our environmental assessment process, we carried out surveys of existing background noise in close proximity to the Tilbury St Chads ward, the nearest ones being in the adjacent ward of East Tilbury and Tilbury Riverside and Thurrock Park which are representative of residential receptors within this ward.

To understand how noise levels would vary with and without the project, we used noise modelling to predict what noise levels would be like in the project's proposed opening year if the project was not built. We modelled this because we cannot assume that noise levels in the future will be the same as they are now. For example, our assessment of the opening year noise levels accounts for predicted changes in traffic levels.

We also modelled the predicted noise levels for the opening year with the project in place. This provides a useful comparison as to how the project would change the noise levels in the project's opening year if it were implemented.

In the opening year (2029), noise levels without the project are predicted to range, on average, from 41 to 71 dB(A) during the day and from 30 to 57 dB(A)² during the night at the identified locations within the ward. Our noise assessments predict that by opening year noise levels would increase compared to the existing situation, even if the road is not built. Information about how noise levels would change with the project in place, during its construction and operation, are presented below.

14.7.1 Construction

Daytime construction noise impacts

The main construction activities expected to create a slight increase in noise in this ward are those associated with northern tunnel construction and utilities works.

There would be no main works compounds or Utility Logistics Hubs in Tilbury St Chads ward.

Although not located within the ward, Northern Tunnel Entrance Compound, Northern Tunnel Entrance Compound A and Low Street Lane Utility Hub may contribute to the noise impacts experienced within this ward due to how close they are to the ward boundary.

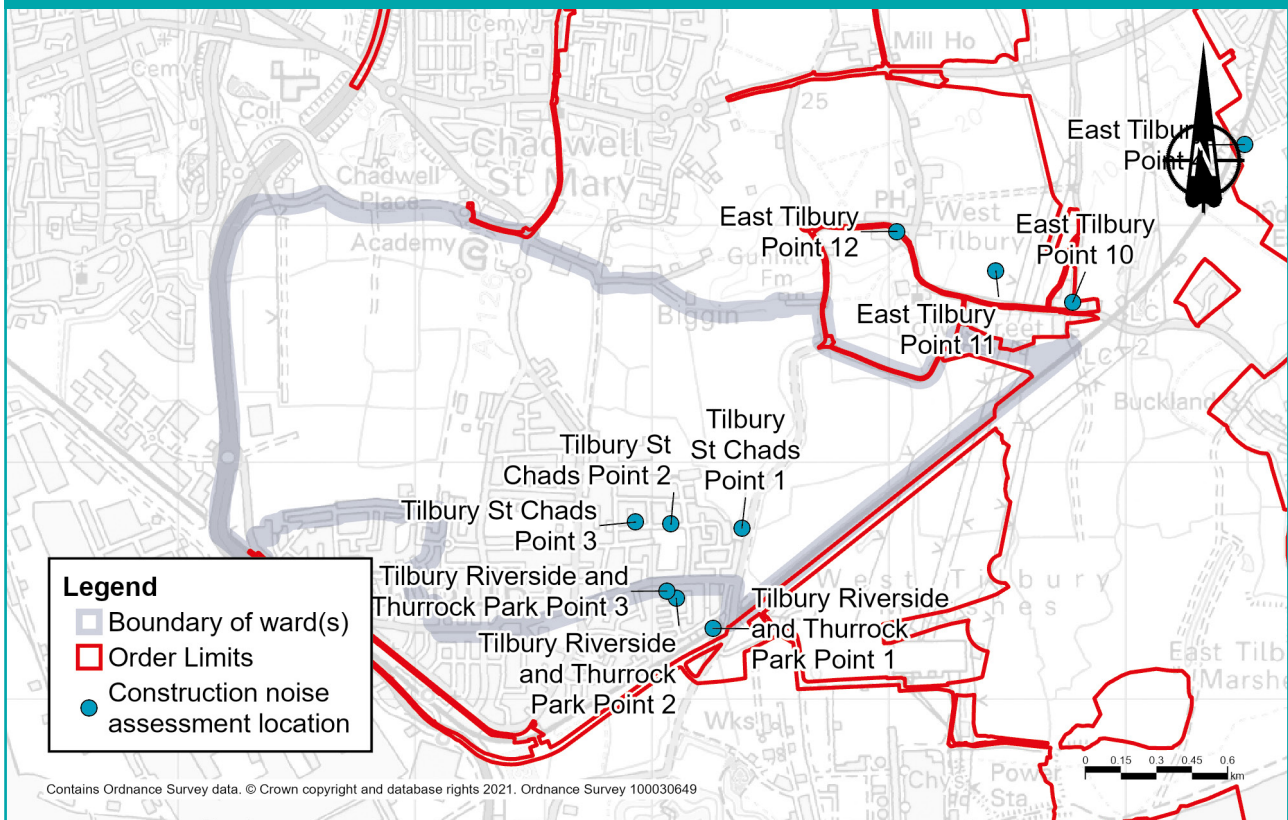
There are no haul roads proposed to be built and used during the construction period with the ward.

No percussive or vibratory works are proposed within the ward.

Construction noise levels have been predicted at three locations across this ward. These locations have been chosen to provide a representative level of the noise communities are expected to experience during construction. For more information about how we carried out these assessments, see chapter 1.

2 Decibel (dB) is the unit used to measure noise levels, with dB(A) being a standardised way of averaging noise levels that accounts for how humans hear sounds. The typical level of sounds in the environment ranges from 30 dB(A), which is a quiet night-time level in a bedroom, to 90 dB(A), which is how it would sound by a busy road. See chapter 1 for more information about what decibel levels mean.

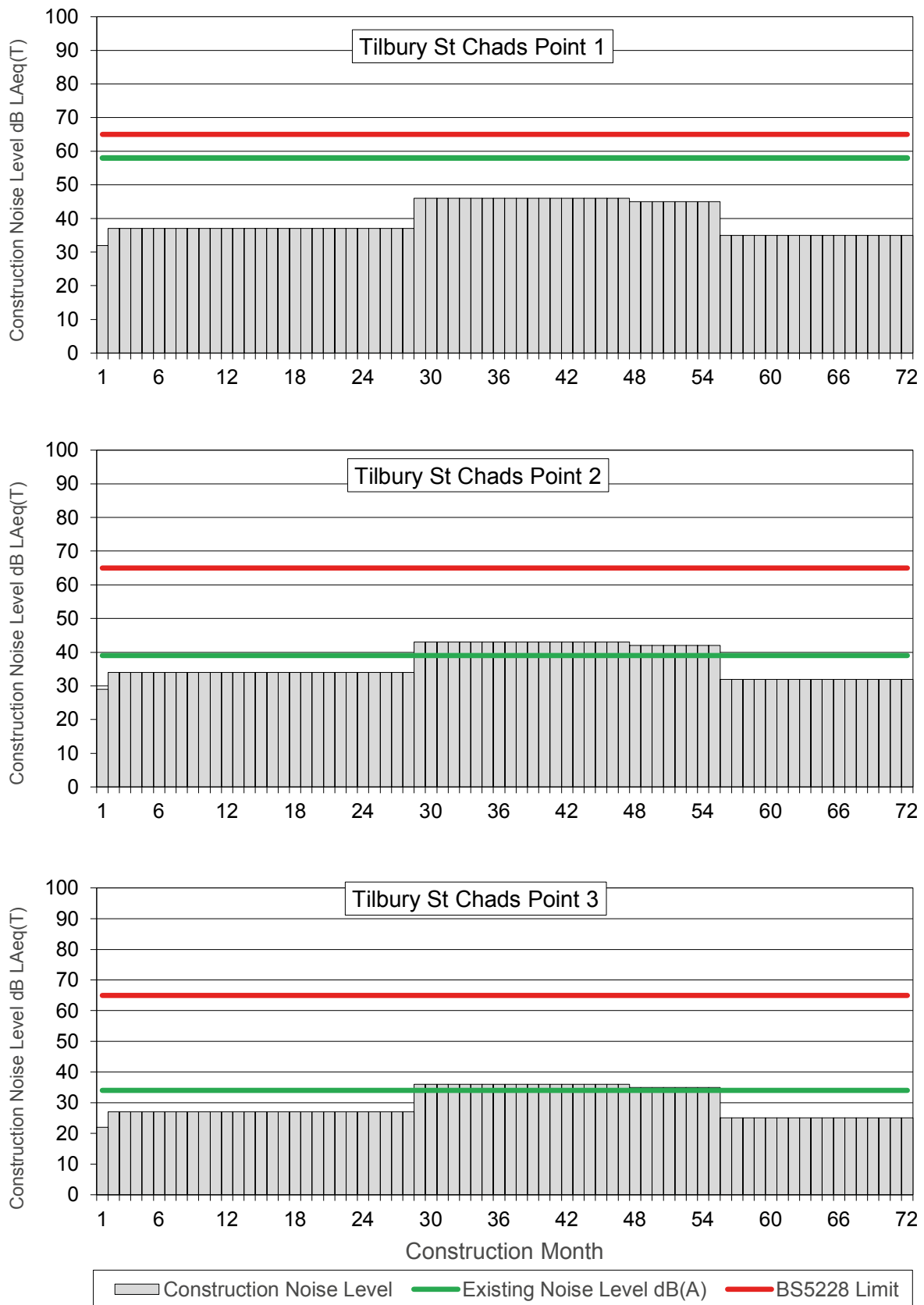
Figure 14.12: Construction noise assessment locations in Tilbury St Chads ward



Noise levels are shown using the standard units for major projects, dB LAeq(12 hour), which represent the average noise level for the assessed 12-hour daytime period. While there might be short-term noises that are louder than the noise level shown during the assessed period, the averaged figure provides a fair representation of what the overall noise impacts would be.

Figure 14.12 shows the locations at which we have predicted the daytime construction noise during the project's construction phase.

Figure 14.13: Construction noise by month for points 1, 2 and 3 in Tilbury St Chads ward



Each vertical bar in figure 14.13 shows the predicted noise levels for that month of the construction period (from month 1-72). The horizontal green line in each chart represents the existing background noise level at each assessment point without the project. The horizontal red line shows the level at which construction noise would exceed the BS threshold (see chapter 1 for more information about these thresholds). If noise is predicted to exceed acceptable levels, then specific measures would be implemented to reduce the noise.

The predicted construction noise levels show that higher noise levels and disturbance would be experienced closer to construction activity. Levels gradually diminish as a result of increased distance and additional buildings, and other features screening the noise from more distant residential areas.

With reference to figure 14.13 the following summarises the noise level changes over the construction period for points 1 to 3:

- At point 1, construction noise levels are predicted to range from 32 to 46dB LAeq(12hour) during the six-year construction programme. Construction noise levels are not predicted to exceed the existing background noise levels at this assessment location.
- At point 2, construction noise levels are predicted to range from 29 to 43 dB LAeq(12hour) during the six-year construction programme. Construction noise levels would exceed the existing background daytime noise level for approximately 27 months. However, they would not breach the defined threshold.
- At point 3, construction noise levels are predicted to range from 22 to 36 dBLAeq(12hour) during the six-year construction programme. Construction noise levels would exceed the existing background daytime noise level for approximately 27 months. However, they would not breach the defined threshold.

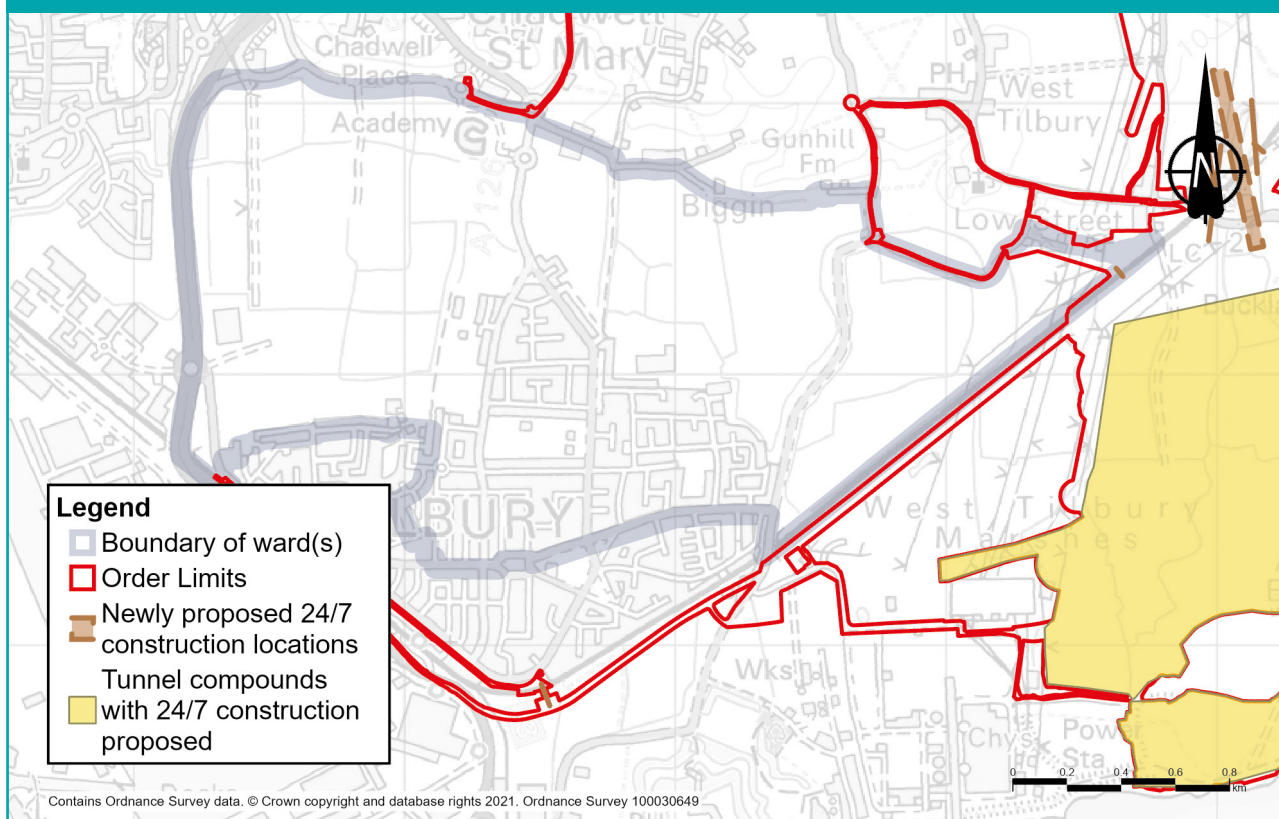
24/7 construction working

In addition to the changes to the daytime noise impacts reported in the section above, 24-hour seven-day construction working is proposed close to the ward at the locations shown in figure 14.14.

These works have been identified as they may need to be undertaken at night to maintain safety and reduce disruption to road, railway and utility networks. Construction would be required 24/7 within the Northern Tunnel Entrance Compound.

These works could have an impact on local communities, and we would work with the local authority to manage these impacts.

Figure 14.14: Newly proposed and tunnel 24/7 working locations in Tilbury St Chads ward



Construction traffic noise impacts

Maps showing the predicted change in road traffic noise within this ward during each year of construction can be found in chapter 7 of the Construction update. Based on the currently available traffic data (which offers a representative picture of what receptors within the ward are likely to experience) during the construction period there would be negligible changes in road traffic noise (less than 1dB change in noise levels) during all construction years. The exception would be along Coopers Shaw Road where minor increases in noise levels (increase of greater than 1dB but less than 3dB in noise levels) have been predicted. For more information about how we define noise impacts (negligible, minor, moderate and major), see chapter 1.

Table 14.4: Construction traffic noise impacts in Tilbury St Chads ward

| Affected road(s) | Predicted noise impact | Construction year(s) |
|--|--------------------------------|----------------------|
| Coopers Shaw Road (which forms the boundary with the East Tilbury Ward) | Minor increase in noise levels | 2, 3, 4 and 5 |

Measures to reduce construction noise and vibration

Construction noise levels would be controlled by using Best Available Techniques (BAT), with specific measures used at certain locations such as:

- Installing and maintaining hoarding around the construction compounds.
- Installing temporary acoustic screening around the construction areas likely to generate noise.
- Keeping site access routes in good condition with condition assessments onsite to inspect for defects such as potholes.
- Turning off plant and machinery when not in use.
- Maintaining all vehicles and mobile plant so that loose body fittings or exhausts do not rattle or vibrate.
- Using silenced equipment where available, in particular silenced power generators and pumps.
- No outdoor music or radios would be played onsite for entertainment.

- Site layout would be planned to ensure that reversing is kept to a practicable minimum. Necessary reversing manoeuvres would be managed by a trained banksman/vehicle marshal to ensure they are conducted safely and concluded quickly to reduce the noise from vehicle reversing warnings.
- Non-percussive demolition techniques would be used where possible to reduce noise and vibration impact.
- Careful consideration of the location and layout of compounds to separate noise-generating equipment from sensitive receptors, and the use of mains electricity rather than generators, where possible.
- Minimisation of construction vehicle traffic by, where practicable, selection of local suppliers along the project route, using local workforces and by minimising material transportation for earthworks construction along the project.

All control measures, including those above, fall under the principles of BAT and are secured in the REAC. For more information, see the sections NV001 to NV010 which set out how we would work under the supervision of the relevant local authorities to implement noise-reduction measures where appropriate.

The CoCP sets out additional measures that would be implemented to reduce noise and vibration during the construction period.

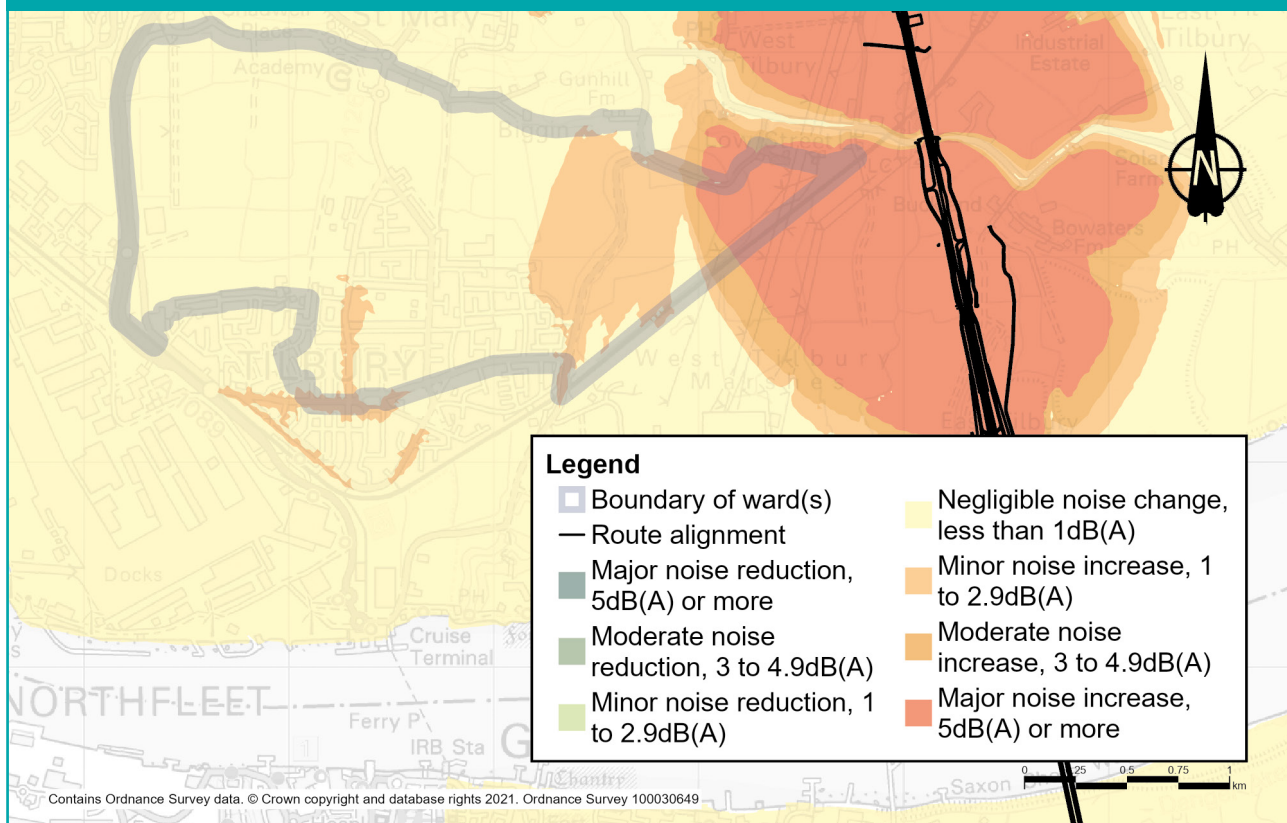
14.7.2 Operations

Operational impacts

This ward is located approximately 400 metres to the west of the project route. Direct noise impacts from the main route of the project would be confined to the eastern edge of the ward. There would also be indirect noise impact as a result of changes in traffic flow, the number of HGVs, and traffic speed on the existing road network within the ward.

Figure 14.15 shows the predicted changes in road traffic noise in the opening year of the project. Within the ward, changes in road traffic noise at identified noise sensitive receptors are predicted to range from negligible reductions of less than 1dB to major increases in noise levels of greater than 5dB. For more information about how we define noise impacts (negligible, minor, moderate, major), see chapter 1.

Figure 14.15: Noise impacts during operation in Tilbury St Chads ward



Measures to reduce noise and vibration during operations

The main methods of controlling noise would be, where practicable, to design the road within landscaped features such as cuttings and bunds (walls of earth). However, where noise impacts are greatest we would install noise barriers (typically, wooden fences) in addition to these earthworks features. While no noise barriers are proposed within Tilbury St Chads ward, there are noise barriers proposed in neighbouring wards that would mitigate impacts in the ward, which are shown in chapter 5 of the Operation update. The use of low-noise surfacing would also reduce the traffic noise once the road is in use.

For more information about the proposed measures to reduce operational noise see the REAC (including references NV011 and NV013).

14.8 Air quality

We have carried out air quality assessments for both the construction and operational phases of the project. As explained in chapter 1, some of the assessments set out here are based on earlier versions of the project. The information provided here still presents a reasonable representation of the likely effects from the proposals presented during this consultation.

Existing situation

Within Tilbury St Chads ward, the Thurrock AQMA No.24 has been declared an Air Quality Management Area (AQMA) due to yearly levels of air borne pollution above accepted standards. AQMAs are areas that have been identified by local authorities as areas of poor air quality that require additional monitoring and controls. No other areas within the ward have been identified as AQMA.

14.8.1 Construction

Construction impacts

Construction activities have the potential to affect nearby air quality through the release of dust and emissions from construction equipment and traffic. The areas most likely to be affected are those close to haul roads, compounds and soil storage areas.

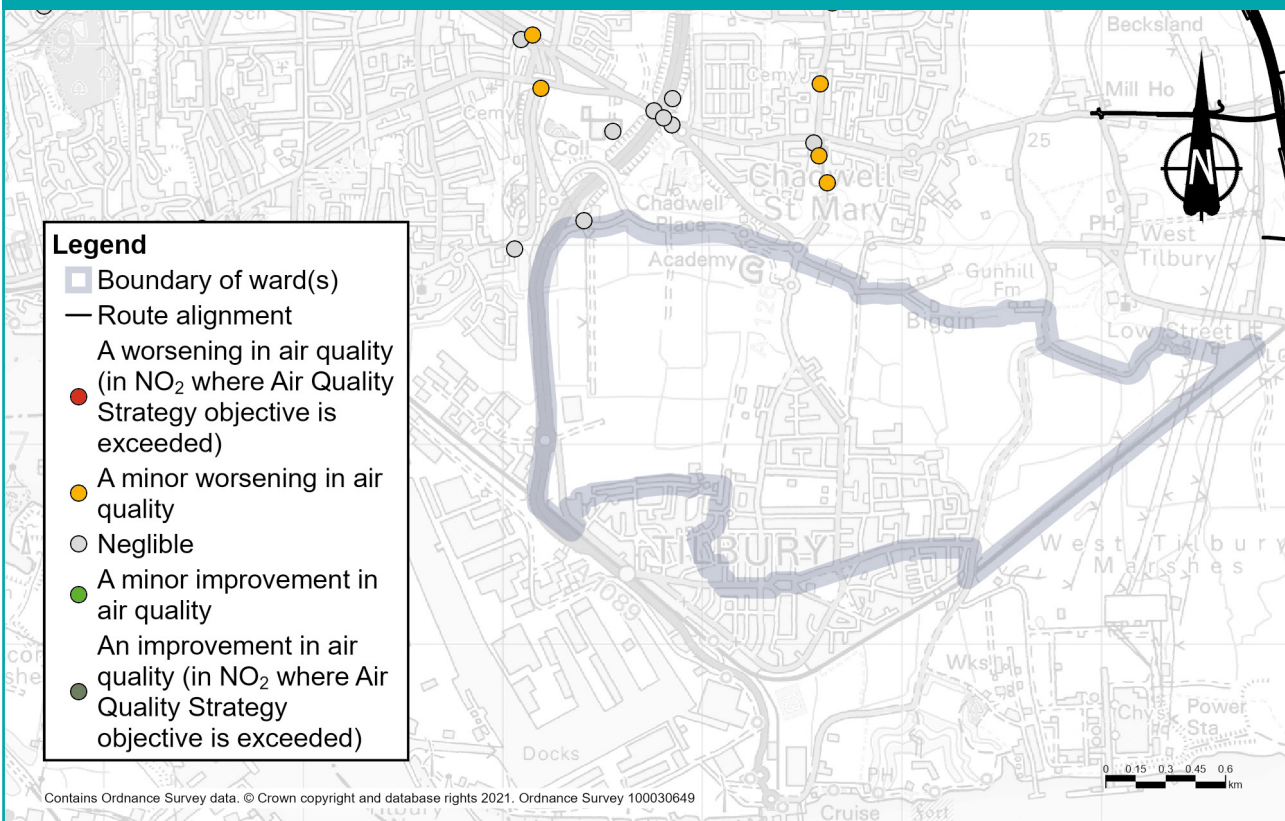
Properties more than 200 metres from the worksite, which is the majority of properties within this ward, are outside the area likely to be affected by construction dust or emissions from the worksite. In this ward, there are only a few properties within 200 metres of the worksite including those to the south of Chadwell St Mary. Air quality impacts on these properties during construction would be temporary and we would put in place measures to minimise the dust impacts (see below). The proposed measures to reduce dust and emissions are ones that have been proven to be effective when used on similar construction projects in the past. The change in air quality during the construction phase would be negligible, and there would be no discernible effect on health.

Our analysis of construction traffic predicts that the impact on most roads in this ward would be negligible, there would not be any changes in air quality in the area as a result of the traffic management in place from 2024 to 2029. More information about construction traffic impacts on air quality can be found in chapter 7 of the Construction update.

Measures to reduce air quality impacts of construction

The impact of construction machinery and traffic on air quality would be controlled through the range of good practice measures set out in the CoCP and the REAC. For example, there would be measures to suppress dust, such as damping down dry haul roads and spoil heaps, as well as the use of low-emission machinery and vehicles. We would put in place an air quality management plan to ensure the measures set out in the CoCP and the REAC would effectively monitor and control dust and exhaust emissions. The location and type of monitoring would be submitted in advance to Thurrock Council for consultation (see REAC reference AQ006).

Figure 14.16: Predicted changes in NO₂ levels within Tilbury St Chads ward once the new road is open



14.8.2 Operations

Operational impacts

We have carried out an assessment of the operational impacts of the new road on air quality. The assessment area includes a 200-metre buffer around the roads within the affected road network, with this area being the most likely to experience changes to air quality as a result of the new road. More information about air quality impacts once the road is open can be found in chapter 5 of the Operations update.

There are receptors (properties or habitats which are sensitive to changes in air quality) within the ward, close to the A1089 that are predicted to experience a negligible change in the air quality for nitrogen dioxide (NO₂), the main traffic-related pollutant³. The highest modelled yearly average NO₂ concentration within this ward is 22.2 µg/m³, which is well below the yearly average threshold of 40µg/m³. Our assessment is based on our opening year model, which represents a worst case scenario, without accounting for the increase in less polluting vehicles on our roads over time.

Furthermore, local air quality data shows an overall downward trend in NO₂ over recent years, which means that future air quality improvements at this location are likely (for example, through increased adoption of electric vehicles meaning a reduction in exhaust emissions).

In addition to our assessment of NO₂, we predict that PM₁₀ levels (small particles of dust, mainly from vehicle exhausts and brakes) are unlikely to exceed threshold levels across the assessed area.

Measures to reduce air quality impacts during operation

The assessed air quality impacts in this area, as a result of the project, would not trigger the need for additional monitoring or other mitigation measures once the road is open.

³ NO₂ levels are measured in 'micrograms per cubic metre', or µg/m³, where a microgram is one millionth of a gram.

14.9 Health

Existing situation

A range of personal, social, economic and environmental factors influence our health. Different groups within the population may be more sensitive to these factors than others – for example, children, older people or those with pre-existing health conditions.

Tilbury St Chads is characterised by a younger population with a relative high proportion of residents aged under 16 when compared to Thurrock and England as a whole, 28.4%, 24.2% and 20.3% respectively. The ward has a relatively high ethnically diverse population compared to other Thurrock wards and has a high concentration of residents for whom English is not their main language.

Parts of the ward are within the top 10% most deprived areas in England. Economic activity rates are the lowest of all Thurrock wards, and number of benefit claimants are higher in Tilbury St Chads when compared to Thurrock, and higher than for England as a whole. The ward has a very high proportion of residents within social grade D and E compared to Thurrock and England as a whole, 40.8%, 27.0% and 24.7% respectively. Tilbury St Chads also has a higher proportion of socially rented housing compared to Thurrock and England as a whole, 36.8%, 14.1% and 16.8% respectively

The ward has high rates of long-term health problems. In addition, Tilbury St Chads residents report high rates of self-reported bad health at 6.7%, compared to 4.7% for Thurrock as a whole. Tilbury St Chads also has a high proportion of residents who state that their day-to-day activities are limited a lot, compared to Thurrock and England as a whole, 8.8%, 7.2% and 8.3% respectively. Regarding deaths from all causes, there are high death rates from respiratory diseases and from cancer compared to Thurrock and England as a whole. The ward also has a high proportion of households without access to a car or van at 28.6% compared to 20.1% across Thurrock as a whole.

14.9.1 Construction

Construction impacts

Construction activities affecting Tilbury St Chads residents are presented in the Project description section. Only a small section of the project's Order Limits lies within Tilbury St Chads ward and little construction activity would take place within this ward, relative to neighbouring wards. A proposed temporary access for utility companies would be built along the eastern boundary of the ward parallel to the railway line, while an area at the north-eastern edge of Tilbury St Chads ward would be used for utility works. Further information about the utility works within Tilbury St Chads can be found in the Construction update.

Elements of all these activities have the potential to affect human health, whether through noise associated with construction activities or construction traffic, air quality (as a result of dust emissions), severance caused by construction traffic, road or footpath closures, or through impacts on mental health and wellbeing.

There are both positive and negative potential impacts on people's health and wellbeing as a result of construction. Through good communications and engagement, providing people with information about when construction works would be taking place and its impacts, the negative impacts on people's mental health and wellbeing would be reduced. Equally, some residents would see health and wellbeing benefits from improved access to work and training opportunities presented by construction activities (see the Traffic impacts section). Good mental health is a key influence on employability, finding a job and remaining in that job. Unemployment causes stress, which ultimately has long-term physiological health effects and can have negative consequences for people's mental health, including depression, anxiety and lower self-esteem.

As highlighted at the outset of this section, different groups of people within the population may be more sensitive to factors which potentially affect their health than others. Some of the changes identified as a result of construction activities may therefore only affect a small proportion of the population. Impacts may include:

- Changes in accessibility. This may be the case for people who are more dependent on public transport and have less choice about method and route travelled.
- Changes in access to open space. Much of the local footpath network to the east of the urban area of Tilbury would be temporarily closed during construction. People without access to private cars would have access to fewer alternatives.
- There are few properties in the Tilbury St Chads ward within 200 metres from the Order Limits and are therefore unlikely to be affected by dust or emissions from construction. However, properties within 200 metres may experience air quality changes as a result of increased dust and emissions from the nearby construction activities.

Measures to reduce impacts on health during operation

Proposed measures relating to health and wellbeing (including good practice for dust emissions, hours of working and visual screening) are described in this chapter in the Visual, Noise and vibration, and Air quality sections above. Further information relating to mitigation measures for these areas is set out in the Code of Construction Practice (CoCP), the Register of Environmental Actions and Commitments (REAC) and the package of traffic management plans. The commitments in the REAC include items such as adhering to Best Practicable Means (BPM) to reduce noise impacts (see NV007 in the REAC) and dust-management good practice (see AQ005 in the REAC). See chapter 1 of the Construction update for more information about this and the project's other control documents.

Engagement and effective two-way communication with communities, both prior to and during construction, by providing information about the programme and impact of works is important to reduce mental health and wellbeing impacts associated with uncertainty, stress and anxiety. The CoCP sets out proposals for community engagement, including how we would make sure that communities, stakeholders and any affected parties are kept informed of the construction works, their progress and associated programme.

14.9.2 Operations

Operational impacts

Information about the operational project in this ward is provided in the Project description above.

The assessments undertaken for air quality has shown that no adverse impacts are anticipated as a result of the project for people in the Tilbury St Chads ward. Noise impacts are predicted in the eastern edge of the ward.

A proportion of residents may also experience positive health benefits through accessibility improvements, better access to educational opportunities (specifically with further education colleges and primary schools), better access to employment opportunities and to open space, including new recreational areas outside Tilbury St Chads.

Measures to reduce health impacts of the operational project

Mitigation measures to address noise and visual impacts have been described above. No further impacts relating to health have been identified for this ward and consequently no specific additional measures are required.

14.10 Biodiversity

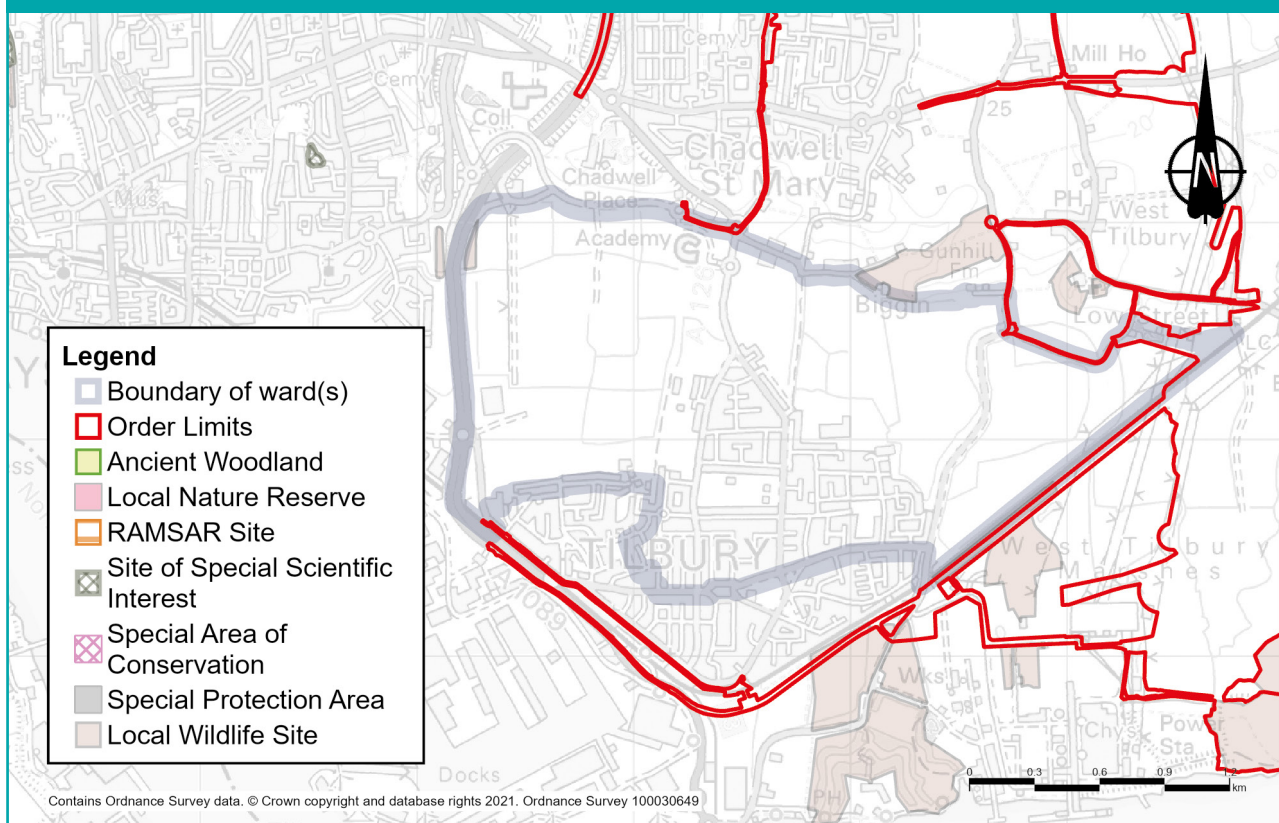
Existing situation

The main habitats in Tilbury St Chads within the Order Limits are arable farmland, with a small area of woodland, scrub and watercourses.

There are no designated sites within 2km of the Order Limits in this ward. Within 500 metres of the Order Limits, there are no non-designated sites, although both Lytag Brownfield Local Wildlife Site (LWS) and Broom Hill LWS are immediately adjacent to the boundary of the ward.

We carried out surveys across the project to set a baseline for assessment, and these identified the presence of a range of protected and notable species. These included bats, badgers, water vole and reptiles.

Figure 14.17 Biodiversity designated and non-designated sites in Tilbury St Chads ward



14.10.1 Construction

Construction impacts

Construction of the project would require removing areas of habitat, both temporarily and permanently. This habitat consists of arable farmland and scrub and supports a range of protected and notable species. These would be affected by construction due to direct habitat loss (the loss of badger setts, water vole and reptile habitat), fragmentation of habitat and disturbance to retained habitat.

Measures to reduce biodiversity impacts of construction

Vegetation clearance would take place during the winter, where possible, to avoid disturbing breeding birds. Where this is not practicable, clearance would be supervised by an ecological clerk of works to ensure that no nests are disturbed or destroyed. Where protected species are present, these would be moved from the site before construction, either through habitat manipulation (for example strimming to reduce the height of vegetation to displace reptiles), or translocation. Where necessary, works affecting protected species would be carried out under a Natural England licence. Boxes to support birds and bats would be set up within retained habitat. Habitat lost for temporary construction works would be reinstated following construction.

The impact of construction on biodiversity would be controlled through the range of good practice measures set out in the project's CoCP and the REAC. See chapter 1 of the Construction update for more information about this and the project's other control documents.

14.10.2 Operations

Operational impacts

Operation of the new road has the potential to cause mortality as species encounter road traffic, habitat fragmentation, and noise disturbance from traffic.

Measures to reduce biodiversity impacts of the operational project

Landscape planting has been designed to provide strong links for animals to move and forage along, guiding them to safe crossing points around the new road. To minimise disturbance from traffic, the new road would be in a cutting north of the northern tunnel entrance, reducing noise and visual impacts.

Newly created areas would be managed to ensure that they provide high quality habitat to support a broad range of different plant and animal species.

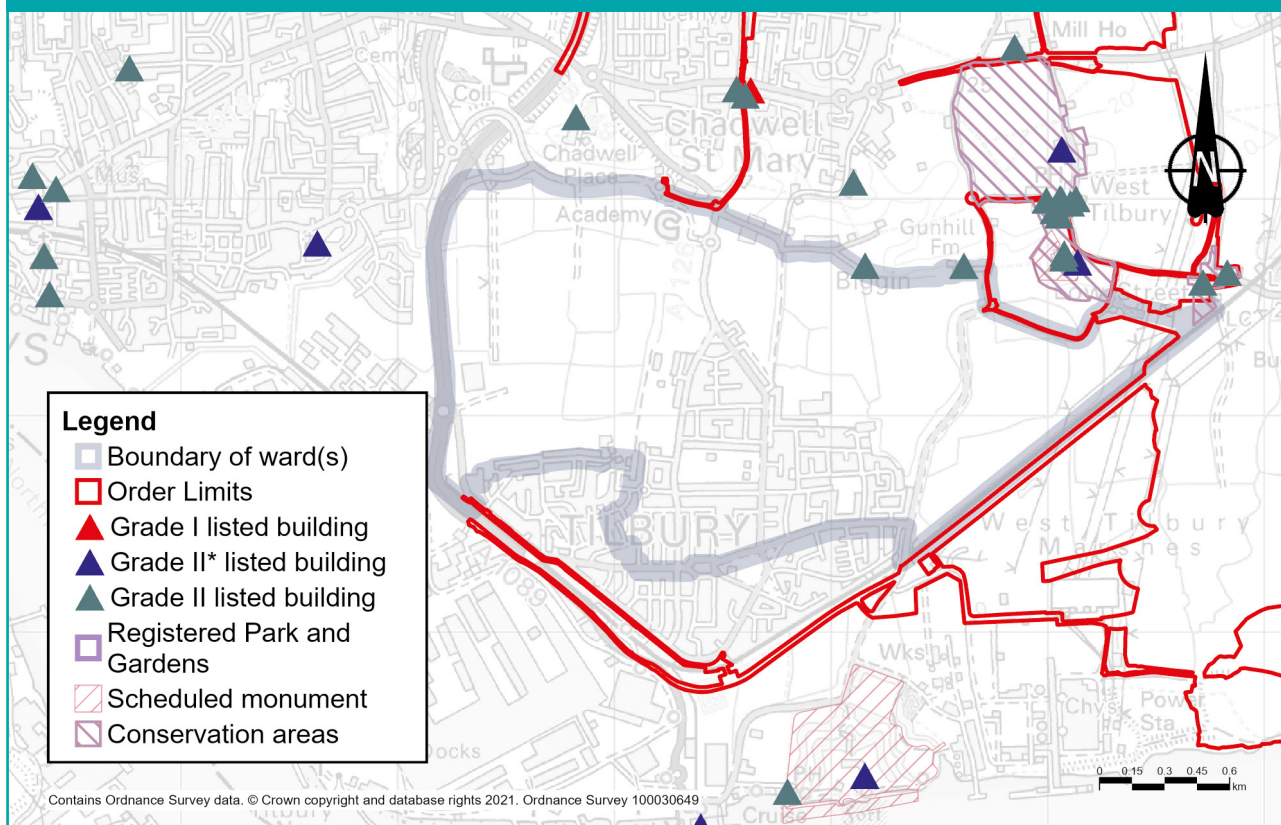
The impact of operation on biodiversity would be controlled through the range of good practice measures set out in the project's CoCP and the REAC. See chapter 1 of the Construction update for more information about this and the project's other control documents.

14.11 Built heritage

Existing situation

There are no buildings of historic relevance within Tilbury St Chads ward that would be affected by the new road. The West Tilbury conservation area does have a small part within the ward, but no areas with historic buildings. As such there would be no construction or operational impacts on built heritage in Tilbury St Chads ward.

Figure 14.18 Built heritage baseline for Tilbury St Chads Ward



14.12 Contamination

From the review of desk-based sources (historical maps and environmental data), there are no known medium or high-risk sources of contamination that would be disturbed during construction or operation of the new road within the Tilbury St Chads ward.

14.12.1 Construction

By following a construction management plan and ensuring that, where potential sources of contamination are used (such as oils, lubricants, mechanical plant), appropriate spill containment and emergency response procedures are in place to prevent adverse environmental impacts from occurring.

14.12.2 Operations

During the operation of the road, should an incident occur, for example, a traffic accident resulting in localised contamination, significantly affected soils would be assessed and if necessary removed to reduce the risk of contamination migrating across a wider area or entering controlled waters. For more information on these controls, see the REAC.