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Chapter 16: Orsett ward

This chapter summarises the activities in Orsett 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 local communities. 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.

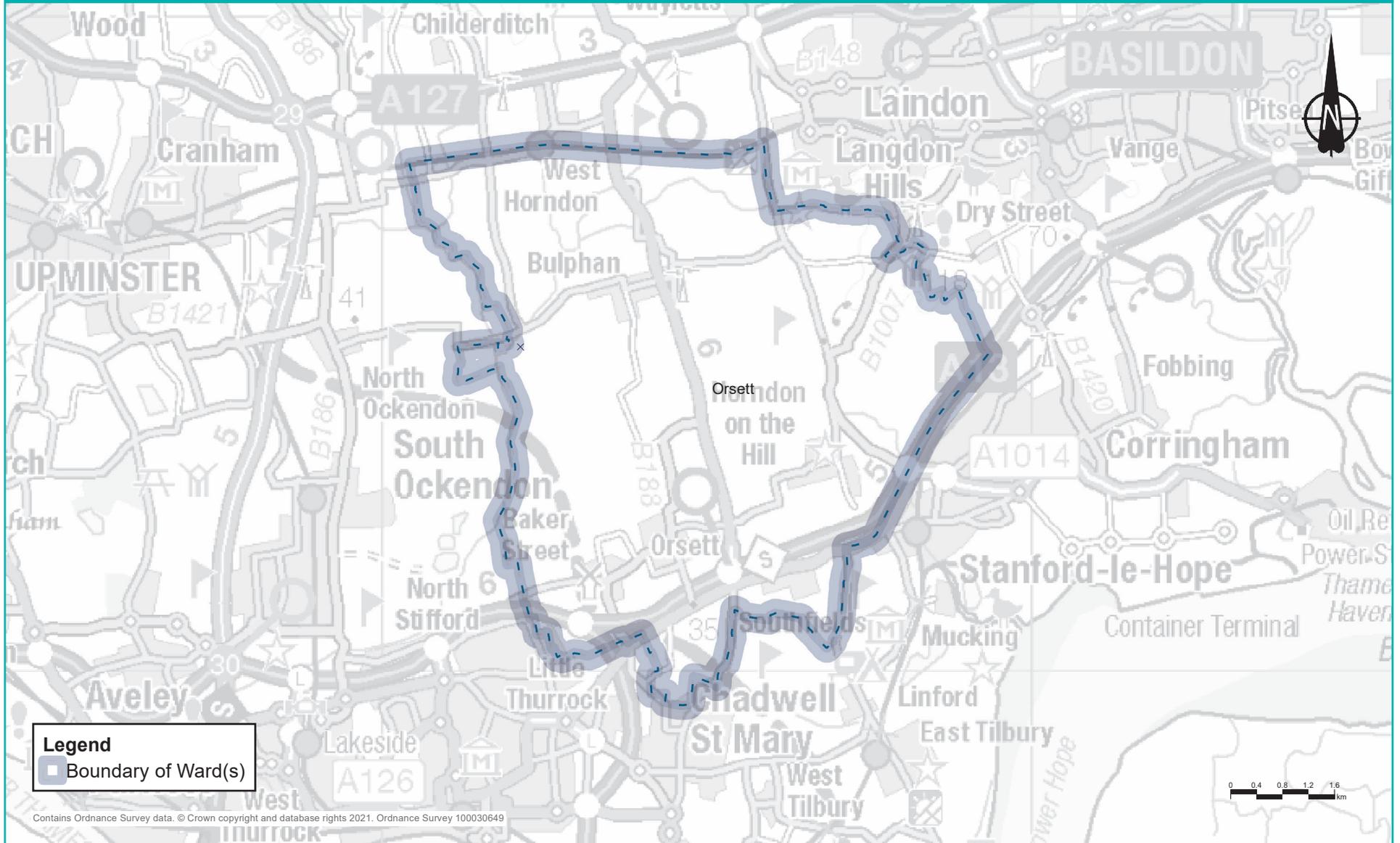
16.1 Overview

16.1.1 About this ward

Orsett ward is located to the north of Chadwell St Mary ward in the borough of Thurrock. It is a large ward, around 47km² in area with an estimated population of 6,090¹. The majority of the ward consists of agricultural land and fenland, although it also contains several population centres, including Orsett, Hordon-on-the-Hill and Bulphan. The Mardyke River runs along the western boundary of the ward and is an Environment Agency designated 'main river'. Main rivers run off the Mardyke across the centre of the ward. The A13 runs east-west across the southern part of the ward. There are high-voltage overhead power lines running through the ward and a high-pressure gas main running east to west, skirting the edge of Orsett village. The Whitecroft, a 56-bedroom care home, is situated on the southern boundary of Orsett ward, near the existing A13/A1089 junction.

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

Figure 16.1: Ward boundary map for Orsett ward



16.1.2 Summary of impacts

Table 16.1: Summary of impacts during the project’s construction and operation

Topic	Construction	Operations
<p>Traffic</p>	<p>Impact</p> <p>Increased traffic on the A13 is likely to lead to a small decrease in speeds along the A13. Traffic management on local roads is likely to lead to increased journey times along the roads while the measures are in place. Road closures would lead to longer journeys.</p> <p>Mitigation</p> <p>There are several mitigation measures planned to reduce the impact of construction on local residents in Orsett ward such as a HGV ban on local roads, for example, Pike Lane between Ockendon Road and St Mary’s Lane and Pea Lane between Ockendon Road and Dennises Lane. For details of all the mitigation methods for Orsett ward see the Traffic section of this chapter.</p>	<p>Impact</p> <p>There would be impacts on several roads including increases in traffic at the Orsett Cock junction, the A13 east of the new junction with the project and other local roads. On the A13, there would be significant increases of over 1,000 PCUs in some time periods and directions. On Brentwood Road in the north of the ward there are forecast to be decreases in traffic flow as a result of traffic rerouting to use the A127 to travel west. Analysis of the traffic flow increases and impacts can be found in the traffic section.</p> <p>Mitigation</p> <p>Once the project is operational, traffic impacts on the affected road network would be monitored, including local roads.</p>

Topic	Construction	Operations
<p>Public transport</p>	<p>Buses</p> <p>Journey times on the Z4 bus will be longer due to both the increased traffic flows on the A13 and the traffic management along this route. Traffic management works will affect buses using the local roads, leading to increased journey times while the measures are in place. Affected buses would include the 5A, 5B, 11, 100, 265, and the Z4. The temporary closures of Baker Street and Rectory Road would require a diversion of the 11, 5B and 265 buses. Any diversions would be agreed with the bus operators.</p> <p>Rail</p> <p>Throughout construction there may be some increases in journey times to West Horndon station, associated with increased traffic through the area and traffic management on the local roads.</p>	<p>Buses</p> <p>There are minor increases on several bus routes predicted including: Bus 5A from Pitsea to Grays the 5X from Wickford to Grays, 51 from Prittlewell to Grays and Chafford Hundred, 265 from West Horndon to Grays, and the Z4 service from the Amazon distribution centre to Basildon and Pitsea.</p> <p>Rail</p> <p>There would be no discernible changes in local access times to West Horndon station predicted and no changes to services at the station.</p>
<p>Footpaths, bridleways and cycle routes</p>	<p>Impact</p> <p>Due to the construction of the A13 junction and the project route, there would be a high number of footpaths, bridleways and cycle routes impacted during the construction period in this ward.</p> <p>Mitigation</p> <p>Where footpaths, bridleways and cycle routes require temporary closure to allow the construction of the proposed A13/A1089 junction and the main route, these closures would be as short as possible.</p>	<p>Impact</p> <p>Three footpaths and one bridleway would be realigned once the project is operational. One footpath would be permanently closed where it intersects the new road. Five footpaths would be upgraded to bridleways. Three new pedestrian-cycle tracks would be opened.</p> <p>Mitigation</p> <p>The realigned footpaths, bridleways and cycle routes would be resurfaced and designated as bridleways in the case of existing footpaths. The diverted routes would cross the project by a new bridge designed to be safe for horse riding.</p>

Topic	Construction	Operations
<p>Visual</p>	<p>Impacts</p> <p>Homes on the south and west edge of Baker Street would have views of the construction of the Lower Thames Crossing/A13 junction. To the north there would be views of construction including Stifford Clays Road Compound East for some residential properties. The utilities work on Baker Street would be visible nearby. Road construction, compounds, Utility Logistics Hubs and utility diversions would be clearly visible from some footpaths and cycle routes and especially prominent from footpaths crossing Orsett Fen and Mardyke Way.</p> <p>Mitigation</p> <p>Taller facilities required within Stifford Clays Road Compound East would be located the maximum distance from homes on Stifford Clays Road and Baker Street where possible. The visual impacts would be controlled through a range of good practice measures in the CoCP and REAC.</p>	<p>Impacts</p> <p>Views from footpaths and local cycle routes south of the A13 and north of the A13 would include the new road/A13 junction and the viaduct crossing the Mardyke Valley. The diverted section of overhead power line would appear similar to the existing overhead line. Stanford Road (Southfields) Gas Valve Compound would be a permanent addition to views.</p> <p>Mitigation</p> <p>The landscaping in the design of the Lower Thames Crossing would help integrate the new road into the surrounding landscape. This includes planting along the Green Lane green bridge and woodland planting. Views from footpaths crossing Orsett Fen and Mardyke Way would be softened by woodland mitigation planting.</p>

Topic	Construction	Operations
<p>Noise and vibration</p>	<p>Impacts</p> <p>The construction of the new road, upgrading of the A1089/A13 junction, and utility works are expected to cause noise and vibration impacts. There are also seven compounds and five Utility Logistics Hubs proposed within the ward, which have the potential to cause noise impacts. There would also be 24-hour, seven-day construction working in some locations. There are six proposed structures expected to be constructed using vibratory or percussive piling in this ward. There would be negligible changes in noise from road traffic for a majority of roads within this ward, except along the roads listed in table 16.4.</p> <p>Mitigation</p> <p>Construction noise levels would be controlled by mitigation measures set out in the REAC. There are also measures presented in the CoCP.</p>	<p>Impacts</p> <p>There would be increased levels of noise in the south-western section of the ward as a result of the proposed A13/A1089 junction and widening of the existing A13.</p> <p>Mitigation</p> <p>Low-noise road surfaces would be installed on all new and resurfaced roads, plus noise barriers would be installed. The road has been kept low in the environment using cuttings and bunds.</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>Our analysis of construction traffic predicts that the impact on most roads in this ward would be negligible, although there would be a temporary minor worsening in air quality in the area around the A1089 and the A13 corridors. However, there would be a temporary minor improvement in air quality along the A128 Brentwood Road.</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>There are no predicted exceedances of NO₂ or PM₁₀.</p> <p>Mitigation</p> <p>No essential 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.</p> <p>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 and delays to local journeys, amenities and open space. There are also likely to be changes in the levels of road traffic noise on Brentwood Road, Baker Street, Church Road, Stanford Road and High 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 noise, working hours and visual screening, traffic management measures and community engagement.</p>	<p>Impacts</p> <p>Some residents may experience impacts on mental health and wellbeing as a result of the project (for example, anxiety around perceived changes to air quality or as a result of changes to the noise environment).</p> <p>There would also be both noise improvements and deteriorations at locations that are further detailed in the noise and vibration section below. There would also be visual impacts during the opening year of the road.</p> <p>Mitigation</p> <p>No essential mitigation is required for health other than those measures described in the noise and visual 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, bat roosts, water vole, reptiles, great crested newts and invertebrate 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. Areas of mixed habitats and new ponds would be created. A large area of wetland habitat would be created adjacent to the Mardyke. A green bridge would be constructed at Green Lane. Biodiversity impacts would also be mitigated through a range of good practice control measures set out in the project's CoCP and REAC.</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>

Topic	Construction	Operations
<p>Built heritage</p>	<p>Impacts</p> <p>Murrells Cottages and Thatched Cottage (Grade II listed) would be demolished. Eleven Grade II listed buildings would be temporarily affected due to changes within their setting. Crop mark complex scheduled monument would be physically impacted during construction. The setting of two scheduled monuments would be temporarily impacted due to the noise and views of construction activities.</p> <p>Mitigation</p> <p>The demolition of the listed buildings would be entered into the historic building recording in line with industry standards. The design and layout of Brentwood Road Compound, Long Lane Compound, Stifford Clay Road Compound West and East and Mardyke Compound would avoid light pollution during night-time construction, as detailed in the Design Principles. Dust and noise would also be controlled through the reduction measures set out in the CoCP and REAC. The Crop mark complex scheduled monument would be excavated and recorded.</p>	<p>Impacts</p> <p>Nine Grade II listed buildings would have noise and light impacts on their setting caused by the operation of the new road.</p> <p>Mitigation</p> <p>Road lighting would be minimised where it is safe and practical to do so. The construction compounds would be reinstated after construction as detailed in the Design principles.</p>

Topic	Construction	Operations
<p>Contamination</p>	<p>Impacts</p> <p>There are potential sources of contamination that have been identified within this ward. There is the possibility for existing contamination within the ground to become mobilised. There is also a potential risk of accidental oil, cement and fuel spills from construction traffic and the storage of materials.</p> <p>Mitigation</p> <p>Essential mitigation such as the development of site-specific remediation, where contamination has been identified during ground investigation work, would be completed in consultation with the local authority. Procedures would be in place to reduce the risk of accidental spillages. Contamination would be controlled through the range of good practice measures set out in the CoCP and REAC.</p>	<p>Impacts</p> <p>None identified.</p> <p>Mitigation</p> <p>If during operation any incident were to occur which resulted in localised contamination, soils which had become significantly affected would be assessed and, if necessary, removed to reduce the risk of contamination migrating across a wider area or entering controlled waters.</p>

16.2 Project description

16.2.1 Construction

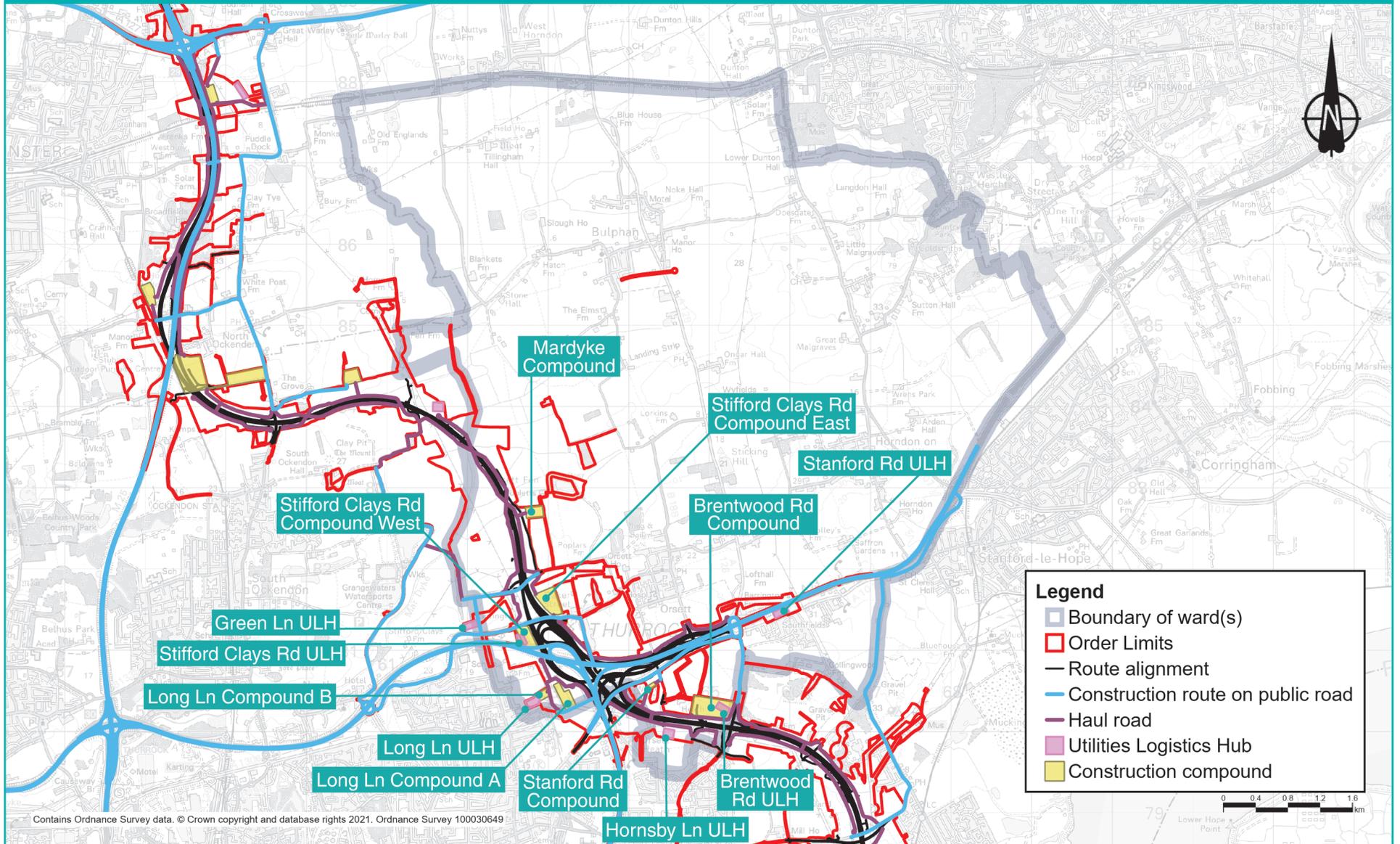
Construction activities

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.

Most of Orsett ward is outside the proposed Order Limits, but a large amount of construction activity essential to building the main route and the proposed A13/A1089 junction would take place in the south-west of the ward, near the existing A13/A1089 junction.

Utility diversions would be required to accommodate the new junction and road. Across the ward, construction would be coordinated to reduce its impacts on local communities. The haul roads within the worksite would take construction traffic off local roads for the onward delivery of plant, equipment and other materials. Centres of activity, such as construction compounds and Utility Logistics Hubs, would be located to minimise impacts on local communities wherever practicable, while still allowing for delivery of the complex construction process.

Figure 16.2: Main construction areas in Orsett ward



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The proposed A13/A1089 junction with the project would replace the existing junction. This would involve building two underpasses, one to the east of the A1089 and another to the west. Construction of the former would take place in the early phases of the construction period, taking up to two years. The underpass to the west would be built over an 18-to-22-month period, towards the end of the programme. Access to the worksite would be via Gammonfield Way. While both underpasses would be built next to existing roads, these existing roads would not be affected by long-term closures. Some short-term overnight closures would be required to connect the new roads to the existing later in the programme. Woodland planting would be designed around the A13/A1089 junction and within the area bounded by the junction to reduce the visual impacts on the local area. More information about how we would build this junction can be found in chapter 6 of the Construction update.

The bridge carrying Rectory Road over the A13 would need to be replaced, requiring the existing crossing to be closed for one year. While Rectory Road is closed, Baker Street would maintain local access either side of the A13, as would the route via Prince Charles Avenue and Brentwood Road. More information on the construction techniques for the new bridge is provided in chapter 3 of the Construction update. The new bridge would cross the slip roads connecting the A13 to the Orsett Cock junction, so short-term overnight or weekend closures would be needed when lifting the new bridge into place.

Temporary construction haul roads would be built along the Lower Thames Crossing's proposed alignment to manage the majority of construction traffic. A haul road would need to cross Rectory Road to access works to its east, so traffic management would be installed to manage the construction traffic across Rectory Road in the period before it is closed for works.

The A1013 would be realigned as part of the junction works, which would include building three new bridges. This would involve significant construction activity including piling and earthworks. Works would be phased to ensure the A1013 remains open during construction. Traffic restrictions would be needed in some areas along the road and signage would keep road users informed. While the A1013 would remain open, some short-term overnight and weekend closures would be necessary for works to tie-in to the existing road network. For more information, see the Traffic management section below.

The new viaduct would be built over Baker Street and the A1089, using construction methods explained in chapter 2 of the Construction update. These works are expected to last 18 to 22 months and would take place after the diversion of a gas main in this area.

- Bridge construction to facilitate the A13 connection works, north of the A13.
- Baker Street would be realigned south of the A13 to its connection with the A1013. The realignment would be mainly offline, and the aim would be for connecting works to happen while Baker Street is closed.

- The section of Heath Road 250 metres south of the A1013 would be realigned, requiring earthworks and carriageway construction. Heath Road and its connection to the A1013 would be open throughout construction, but some road-connection works would require short-term overnight or weekend closures.

The traveller site at Gammonfield Way would need to be relocated early on in the construction period to allow a new slip road to connect the A1089 northbound to the project's northbound route. This would involve earthworks and road construction. The new site would be next to the existing location and would be about 1.5 ha in size, with about 1.5 ha set aside for landscaping and access. The site would be next to its current location, with access off Gammonfield Way. For more information, see chapter 5 of the Construction update.

Stifford Clays Road would need to be realigned and two bridges built to allow the new alignment to pass over the Lower Thames Crossing. These works would take 12 to 14 months and be mostly offline, allowing Stifford Clays Road to remain open. Some short-term overnight or weekend closures would be required to connect new roads and bridges to existing roads. Further information on construction methods is provided in chapter 2 of the Construction update.

As with Stifford Clays Road, Green Lane would be realigned over a new bridge to allow it to pass over the new road. Green Lane would pass over the Lower Thames Crossing via a new green bridge, which would provide improved habitat connectivity compared with a standard bridge. The green bridge would be built alongside the existing road's alignment to allow Green Lane to stay open during the majority of the works, with only overnight or weekend closures needed to connect the new bridge to the existing road.

Green Lane and Stifford Clays Road would be used initially by construction vehicles to build the offline haul roads. On completion of the haul roads, Stifford Clays Road would be used infrequently by construction vehicles. It would, however, need to be crossed by construction traffic and this would require traffic management, such as traffic signals, until the new Stifford Clays Road bridges are in place. Green Lane would continue to be used for works access from Stifford Clays Road to the offline haul roads alongside the Lower Thames Crossing following the completion of the haul roads.

Works to construct the new road south of the A13/A1089 junction would be carried out without affecting the existing road network. They would involve substantial earthworks, with the route designed to be as low as possible, keeping within the natural valley of the landscape. False cuttings (building the road within landscaped earthworks) would provide visual screening for nearby properties and residents. Further information on this can be found in chapter 6 of the Construction update.

Within this ward, there are two areas of the Order Limits that are not connected to the rest of the Order Limits: one immediately south of Bulphan and another east of Orsett Fen. The former would be used for the replacement of some overhead power lines, while the latter area includes existing woodland (and the access routes to it) where we would install bat and bird boxes as part of our environmental mitigation plans.

Construction compounds

Construction compounds are fenced-off areas, accessible to construction traffic, which provide the facilities for our project to be built efficiently. For example, compounds would provide parking, storage for machinery and materials, offices, welfare facilities, refuelling, and vehicle and wheel-washing facilities to make sure vehicles leaving the Compound do not dirty local roads.

Seven construction compounds would be situated within Orsett ward to help deliver the project.

- The Brentwood Road Compound would be located west of Brentwood Road near Heath Place. It would support works south of the A13 towards the Tilbury Loop railway line and would be in place throughout the construction period. Construction traffic would use Brentwood Road between the Orsett Cock junction and the project route to access this compound and the haul roads. Construction traffic would travel no further south than the proposed new Brentwood Road bridge. Utility connections for this compound would be installed early in the construction programme taking up to a year. Traffic management would include traffic signals on Brentwood Road, south of the Orsett Cock junction. Brentwood Road Compound and Brentwood Road Utility Logistics Hub would use the same access on public roads. Construction traffic movements for both can be found in table 16.2.
- The Stanford Road Compound would be sited on Hornsby Lane near the A1013 Stanford Road. It would be used to support works between the A13 and the A1013. As part of the project, Hornsby Lane would be closed permanently either side of the haul road to allow construction vehicles to pass safely during the construction period and to accommodate the new road once it is complete. Prior to the closure of Hornsby Lane, areas would be built to allow local traffic to turn around on the two remaining sections of Hornsby Lane. A utility connection for the Compound would require works at the A1013 Stanford Road early in the construction programme for around two months. Traffic management would be necessary on the A1013 including single-lane closures and traffic signals.
- Long Lane Compound A would be located on the north side of Long Lane and would be used to allow construction of the south-west corner of the A13/A1089 junction. Access to this compound would be via Long Lane. Long Lane Utility Logistics Hub will use the same access on public roads. Construction traffic movements for both can be found in table 16.2.

- Stifford Clays Road West Compound would be sited on the south side of Stifford Clays Road to the east of the project and would be used for construction of the north-west section of the A13/A1089 junction. Stifford Clays Road would initially be used as a construction route to access this worksite and compound until a haul road is constructed from Stifford Clays roundabout and Medebridge Road. Once the haul road is in place, Stifford Clays Road would be used infrequently by construction traffic. However, Stifford Clays Road would still be crossed by construction vehicles. Traffic management, such as traffic lights, would be in place to maintain road safety as construction vehicles cross Stifford Clays Road to reach the haul road on the other side. The traffic management would be in place until the new Stifford Clays Road bridges are built and construction traffic can pass underneath. Stifford Clays Road West Compound and Green Lane Utility Logistics Hub would use the same access on public roads. Construction traffic movements for both can be found in table 16.2.
- A wastewater pipe would need to be connected with the existing network at Blackshots Lane. Traffic management, such as temporary traffic lights, may be necessary when the connection crosses Stifford Clays Road. A water pipeline would need to be installed, connecting to the local network at the Grangewaters Outdoor Education Centre. This means part of the centre's car park would be out of use for up to two weeks. Works would be completed during standard hours over nine months. Trenchless construction techniques could be used to minimise the impact on existing vegetation. We would also require a telecommunications connection with the network at Orsett village. Installation would involve traffic lights when the connection crosses Baker Street east.

- Stifford Clays Road East Compound would be sited on the north side of Stifford Clays Road to the east of the project. The Compound would support the construction of the proposed A13/A1089 junction and highways works south of the A13 towards the Mardyke River. It would be in place throughout construction. Facilities within the Compound higher than five metres would be sited as far west as possible away from residential properties on Stifford Clays Road and Fen Lane. Access would be via Stifford Clays Road until offline access is in place. Telecommunications would be supplied via the connection from Stifford Clays Road West Compound. Waste and water supply would require the temporary installation of a 100 metres pipeline to connect to the existing network on Stifford Clays Road. Works to supply this compound would be coordinated with those for Stifford Clays Road West Compound to minimise the impact on Stifford Clays Road.
- The Mardyke Compound would be on the eastern side of Green Lane. Any facilities higher than five metres would be sited to the Compound's north-east, as far away as possible from residential properties. Initially, access would be via Green Lane until temporary construction haul roads are in place. During the works, access would be required from Stifford Clays roundabout to these routes alongside the project.

The Compounds would be laid out in ways that keep noise and light generating activities as far as possible from nearby communities. At many compounds, 'bunds' (walls of earth) would be constructed on the boundary to further reduce effects on local communities. There would be controls on working hours, noise and light-generating equipment. Machinery and vehicles entering compounds and using public roads would be subject to strict emissions controls and dust-suppression measures to reduce air quality impacts.

Construction-related traffic would use the road network within Orsett ward to access the seven construction compounds and four Utility Logistics Hubs. The daily average number of vehicles going to these compounds is shown in table 16.2 below. 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. There would be less than 20 vehicles a day going to the Utility Logistics Hubs and staff would only be based at the Stanford Utility Logistics Hub. The staff vehicles associated with this hub are also shown in table 16.2 below.

Table 16.2: Average daily vehicle numbers going to compounds and Utility Logistics Hubs in Orsett ward

Time period	Brentwood Road Compound and Brentwood Road ULH		Stanford Road Compound and Hornsby Lane ULH		Long Lane Compound and Long Lane ULH		Stifford Clays Road West Compound, Stifford Clays Road ULH and Green Lane ULH		Stifford Clays Road East Compound		Mardyke Compound		Stanford Road ULH
	HGV	Cars	HGV	Cars	HGV	Cars	HGV	Cars	HGV	Cars	HGV	Cars	Cars
January to August 2024	52	57	22	41	0	9	0	33	20	129	0	0	27
September 2024 to February 2025	56	90	26	55	0	11	0	41	18	211	0	0	30
March to May 2025	76	52	28	55	0	11	0	41	26	211	12	24	30
June to October 2025	102	113	28	48	0	11	0	41	31	207	29	44	30
November 2025 to March 2026	99	140	8	44	10	28	8	48	38	185	30	61	29
April to August 2026	82	140	0	10	39	39	28	46	56	170	46	61	15
September 2026 to March 2027	82	140	0	6	47	49	25	46	56	170	52	53	0
April to November 2027	78	114	0	0	31	42	42	42	57	141	40	28	0
December 2027 to March 2028	45	68	0	0	16	22	35	27	30	46	0	0	0
April to July 2028	21	47	0	0	0	0	0	0	0	0	0	0	0
August 2028 to December 2029	0	0	0	0	0	0	0	0	0	0	0	0	0

Access routes to the compounds would be as follows:

- Brentwood Road Compound – via the A13 and Brentwood Road
- Stanford Road Compound – via the A1013 and Hornsby Lane, via the A13 and Brentwood Road, and via haul roads from other compounds
- Long Lane Compound A and Long Lane Compound B – via the A13, the A1013 and Gammonfield Way
- Stifford Clays Road Compound West – initially via the A13 and Stifford Clays Road, then once the haul roads are constructed from the south via the A13, and then on haul roads, or via the north from the M25 and then on haul roads

Utilities

In addition to the utility works required to provide services to the construction compounds, several Utility Logistics Hubs (ULHs) would also be sited in Orsett ward:

- Brentwood Road Utility Logistics Hub would be located within the Brentwood Road Compound, south of the A13 and north of the new road. It would be accessed from Brentwood Road and it shares an access route with Brentwood Road Compound.
- Hornsby Lane Utility Logistics Hub would be sited east of the A1089 and accessed from Hornsby Lane. It shares an access route with Stanford Road Compound.
- Long Lane Utility Logistics Hub would be west of the A1089, next to the Long Lane Compound and accessed from the haul road off Long Lane. It shares an access route with Long Lane Compound.
- Stifford Clays Road Utility Logistics Hub would largely overlap with Stifford Clays Road West Compound and would be accessed from the haul road.
- Stanford Road Utility Logistics Hub would be opposite Southfields, south of the A13 and east of Brentwood Road. It would be accessed from the A1013 Stanford Road.
- The Green Lane Utility Logistics Hub is located in the Stifford Clays ward and has access via Green Lane which separates Stifford Clays ward and Orsett ward. It shares an access route with Stifford Clays Road West Compound.

These ULHs would be used by utility companies working on diversions, including the following major works either in this ward or spanning several wards:

- Realignment of 400kV overhead power lines, around 1.7km in total length, with four new pylons, one of which would be in Orsett ward. Four existing pylons would be removed, including one in Orsett ward and one on the ward boundary with Chadwell St Mary.
- Realignment of 275kV overhead power lines, 3.2km in length, with eight pylons to be removed in total and 10 new pylons to be constructed, two of them temporary.
- High-pressure gas pipeline, 5.2km in length.
- New permanent high-pressure gas valve Compound and permanent access from Stamford Road.
- High-pressure gas pipeline, around 0.3km in length.

As well as the major utility works listed above, we are also proposing to carry out a substantial amount of works on the local road network within Orsett ward to relocate local utilities. Roads affected include Stifford Clays Road, Baker Street, Rectory Road, Orsett Cock junction, Heath Road, Hornsby Lane, Long Lane, the A1013 Stamford Road, High Road and Mill Lane. 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 chapter 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 schedule

Construction of the entire project is scheduled to last for around six years from 2024 to 2029. To deliver the construction programme efficiently, activities would be divided into packages of work and delivered in a coordinated way. More information about our proposed schedule, including maps and timelines, can be found in the Construction update.

Construction working hours

Most construction activity would take place during core construction hours. These are 7am-7pm on weekdays, and from 7am-4pm on Saturdays, with additional repair and maintenance periods (if required) from 8am-5pm on Sundays.

In addition to extended hours to support tunnelling works, there would be other circumstances when hours may be extended. Typically, this would be to reduce impact on road users by working at night when there is less traffic. Other activities that would involve longer working hours include implementing traffic management measures, realigning overhead power lines, diverting utilities under the A13 and A1089, joining new roads to existing ones, and resurfacing existing carriageways. For safety reasons, it would also be necessary to carry out some work close to railway lines outside core hours when trains are not in service.

In addition, there may be extended working hours for earthworks when days are longer (spring to autumn) and during fine weather. Typically, noisier works such as piling or bridge-building would not take place outside core hours. 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 within Orsett ward are set out in table 16.3 below.

Table 16.3: Main traffic management measures in Orsett ward

Road(s) affected	Proposed traffic management	Purpose	Duration
A13	Closure	To carry out specific works including bridge connection works and utilities	Occasional weekend or night closures for specific works during the construction period
A13	Eastbound off-slip closure	To carry out nearby works	Occasional weekend or night closures for specific works during the construction period
A13	Westbound on-slip closure	To carry out nearby works	Occasional weekend or night closures for specific works during the construction period
A13	Westbound on-slip closure	Connect new alignment	1 weekend between June and October 2025
A13	Closure	To undertake bridge works	Occasional weekend or night closures for specific works during the construction period
A13	Closure	To undertake bridge demolition works and modifications to local utility networks	Occasional weekend or night closures for specific works during the construction period
A13	Eastbound narrow lanes, 60mph speed limits	To carry out nearby works	3 months between April and June 2028
A13	Westbound narrow lanes and 60mph speed limits	To carry out nearby works	3 months between June and August 2025
A13	Closure	New alignment planned on the westbound on-slip at Orsett Cock	September 2025
A1013	Closure	To undertake specific works including bridge connection and utility works	Occasional weekend or night closures for specific works during the construction period
Brentwood Road	Lane closure and traffic lights	To facilitate construction access works and installation of temporary connections to Brentwood Road Compound	4 weeks between January and August 2024
Brentwood Road	Traffic lights	To allow construction vehicles to cross	Until access under overbridge between January 2024 and August 2026

Road(s) affected	Proposed traffic management	Purpose	Duration
Brentwood Road	Traffic lights and lane closures in 300m sections	To facilitate for modifications to utilities and the installation of temporary compound connections	6 months between January and August 2024
Brentwood Road	Lane closure and traffic lights	Installation of compound electricity supplies on the Brentwood Road south of the project alignment	12 months
Brentwood Road	Closure	Switch to permanent alignment	1 weekend October 2026
A1013	Traffic lights and lane closures	To facilitate construction of a new permanent access to and modifications of local utilities	1 month between January and August 2024
A1013	Closure	Switch to permanent alignment	1 weekend between December 2027 and March 2028
Orsett Cock junction	Lane restrictions	To allow for modifications to utilities	1 month between March 2025 and July 2028
Rectory Road	Closure	To allow for installation of new high-pressure gas pipeline	2 weeks between September 2024 and May 2025
Rectory Road	Traffic lights	To allow construction vehicles to cross	Until access under overbridge between January 2024 and March 2028
Rectory Road	Closure	To allow for bridge works	7 months between September 2027 and March 2028
Rectory Road	Closure	Switch to new alignment	1 weekend March 2028
A1013	Lane closures and traffic lights	To carry out nearby works and modifications to local utility networks	8 months between July 2025 and February 2026
Mill Lane	Traffic lights	To allow construction vehicles to cross	Until A13 connection works between January 2024 and July 2028
A1013	Closure	To carry out nearby works, modification to local utilities and installation of temporary utilities to Stanford Road Compound	Occasional weekend or night closures for specific works during the construction period
Hornsby Lane	Permanent closure	To move to new road alignment and modifications to local utilities	At the beginning of the construction period
A13 westbound to A1089 southbound	Closure	To allow for nearby works	Occasional weekend or night closures for specific works during the construction period

Road(s) affected	Proposed traffic management	Purpose	Duration
A13 westbound to A1089 southbound	Closure	Switch to new alignment	1 weekend in the middle of the construction period
A1089 northbound off-slip to A13 westbound	Closure	To allow for bridge works	Occasional weekend or night closures for specific works during the construction period
A1089	Closure	To allow for bridge works	Occasional weekend or night closures for specific works during the construction period
Baker Street	Lane closure and traffic lights	To install a telecommunications network	5 months between October 2026 and February 2027
Baker Street	Closure	To allow for nearby works	16 months between May 2026 and September 2027
Baker Street	Traffic lights	To allow construction vehicles to cross	Until A13 eastbound connection works
Baker Street	Traffic lights and lane closures in 300m sections	For modification to local utilities	7 months from January 2024 to February 2024 and July 2024 to November 2024
Baker Street	Closure	Switch to new alignment	1 weekend towards the end of the construction period
High Road	Traffic lights and lane closures in 300m sections	For modifications to local utilities and the installation of both temporary Stifford Clays Road Compounds	Occasional weekend or night closures for specific works during the construction period
Stifford Clays Road	Closure	To carry out nearby works, utility modifications and the installation of both temporary Stifford Clays Road Compounds	Occasional weekend or night closures for specific works during the construction period
Stifford Clays Road	Traffic lights and lane closures in 300m sections	For modifications to local utilities and the installation of both temporary Stifford Clays Road Compounds	4 months between January and August 2024
Stifford Clays Road	Traffic lights and lane closures	For construction access works, modifications to utilities and the installation of both temporary Stifford Clays Road Compounds	2 weeks between January and August 2024
Stifford Clays Road	Closure	To carry out nearby works and utilities modifications	Occasional weekend or night closures for specific works during the construction period

Road(s) affected	Proposed traffic management	Purpose	Duration
Stifford Clays Road	Traffic lights and lane closures	For construction access works and utilities modifications	1 week between January and August 2024
Stifford Clays Road	Traffic lights	To allow construction vehicles to cross	Until access overbridge between January 2024 and March 2027
Stifford Clays Road	Traffic lights and lane closures in 300m sections	For utilities modifications and the installation of temporary Stifford Clays Road West Construction Compound connections	Occasional weekend or night closures for specific works during the construction period
Stifford Clays Road	Closure	Switchover to new alignment	1 weekend January 2027
A13 eastbound off-slip to A1089 southbound	Closure	To carry out nearby works and utilities modifications	Occasional weekend or night closures for specific works during the construction period
Green Lane	Closure	For bridge and utility modifications, installation of Stifford Clays West Construction Compound CA09	Occasional weekend or night closures for specific works during the construction period
Green Lane	Crossing point	To allow construction vehicles to cross	Full period of construction between January 2024 and December 2029
Green Lane	Closure	Switchover to new alignment	1 weekend September 2027
Fen Lane/ Green Lane	Closure (in sections)	For installation of temporary connections to Mardyke Compound	9 months between March 2024 and November 2024
Mill Lane	Closure	For modifications to local utilities	2 weeks between September 2024 and February 2025
Hornsby Lane	Traffic lights and lane closures	For modifications to local utilities	2 months between January 2024 and February 2025
High Road	Traffic lights and lane closures	For modifications to local utilities and the installation of temporary connections to the east and west Stifford Clays Road Compounds	Six months

To explain these measures, a description of the works on key roads is set out below.

A13

Temporary narrow lanes and an associated reduced speed limit to 60mph are planned on the A13 westbound between the Orsett Cock junction and the A1089 for a three-month period between June 2025 and August 2025.

Temporary narrow lanes and an associated reduced speed limit to 60mph are planned on the A13 eastbound between the A1089 and the Orsett Cock junction for a three-month period between April 2028 and June 2028.

The switchover to the new alignment of the A13 westbound on slip at the Orsett Cock junction is scheduled for September 2025.

A1013

Stanford Road is proposed to be realigned as part of the works which include the construction of three new structures. The works around the area, particularly between the A1013 and A13 would be substantial. As a result, there would be significant construction activity within the area, from piling activities, earthworks to road construction.

Traffic restriction on the A1013 would be required in localised areas and would change during construction to allow construction vehicles and staff to access the works area around the road, predominantly to access the junction works between the A1013 and A13.

The A1013 is, however, envisaged to remain open throughout the works other than for specific works which would require several night closures and a few weekend closures.

Lane closures would be required on the A1013 to carry out these works and modifications to local utility networks. The lane closures would be required for eight months from July 2025 to February 2026. A second period of lane closure would be required on the A1013 for the construction of a new permanent access and modifications to local utility networks. The length of road that would be affected is 2.5km but the closed lane itself would be no more than 300 metres long at a time.

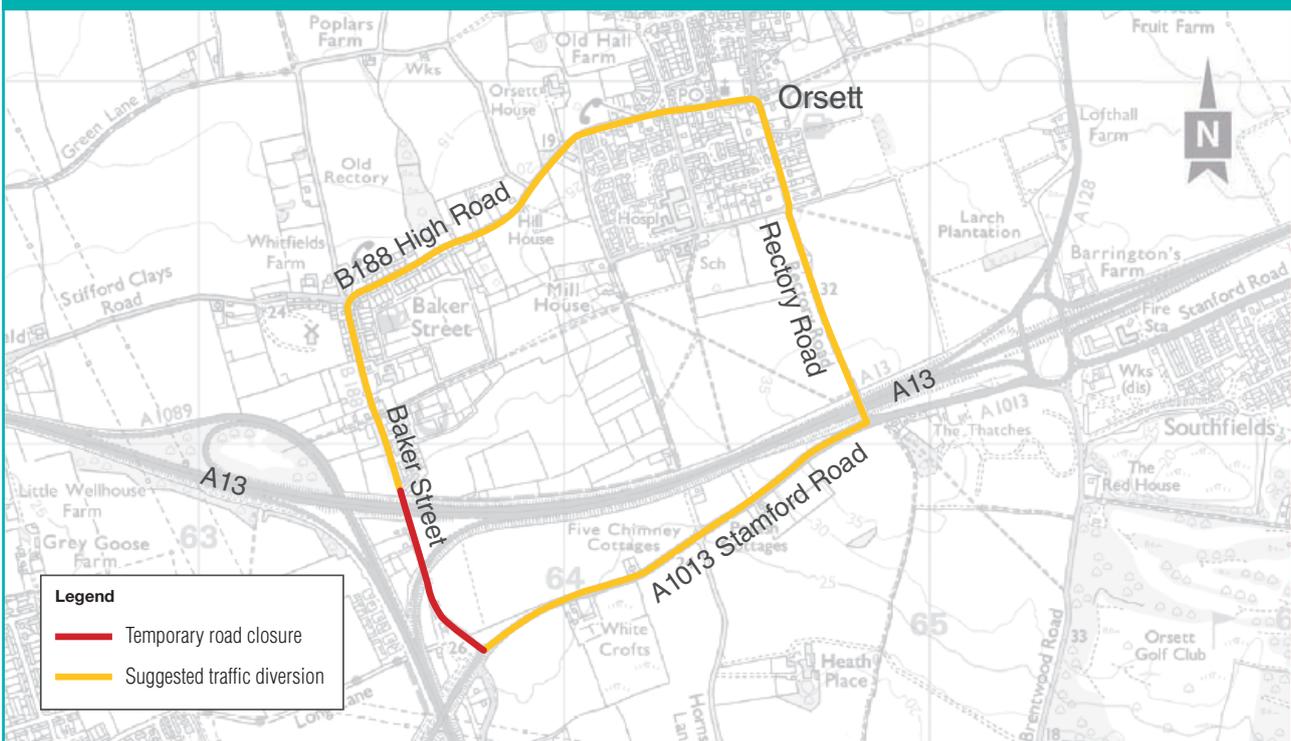
Baker Street

Lane closures would be required on Baker Street between Stifford Clays Road and the A13 underpass to carry out modifications to local utility networks. During the lane closures, a short section of road would be closed on one side, while the other side would remain open. Access to the open side of the road from each direction would be controlled by temporary traffic signals.

The lane closure would be required for seven months in total from January 2024 to February 2024 and July 2024 to November 2024. A second period of lane closure traffic management would be required on Baker Street to carry out modifications to local utility networks for the installation of a telecommunications network and an electrical network. The lane closures would be required for five months from October 2026 to February 2027.

A temporary road closure for the southern end of Baker Street is also planned for 16 months from May 2026 to September 2027. The possible diversion route is shown in figure 16.3 below. While Baker Street is closed Rectory Road would remain open and access from Stifford Clays Road to Baker Street would be remain available.

Figure 16.3: Suggested diversion during temporary closure of Baker Street



The switchover to the new permanent alignment of Baker Street is scheduled for September 2027. The switchover would likely require a night-time or weekend closure.

Brentwood Road

Lane closures would be required on Brentwood Road for construction access works and the installation of temporary connections to the Brentwood Road Compound. The lane closures would be required for four weeks at the start of the construction programme. A second period of lane closure traffic management would be required on Brentwood Road for modifications to local utility networks and the installation of temporary compound connections. This would be required for six months at the start of the construction programme.

Installation of compound electricity supplies on the Brentwood Road south of the project alignment may require the use of a lane closure for 12 months.

The stretch of Brentwood Road between the Orsett Cock junction and the Lower Thames Crossing alignment would be heavily used for the duration of the project. Traffic signals or similar would be required at the access to the Brentwood Road Compound to manage the construction and public traffic in this location.

Brentwood Road would be used for construction traffic to access the Brentwood Road Compound and the temporary offline haul roads. Once construction vehicles meet the project alignment, they would either go north or south using the temporary offline haul roads to access the various worksites. Construction traffic would not go further south than the proposed new Brentwood Road bridge, so it would not go through the residential areas of Chadwell St Mary.

Brentwood Road itself would need a slight alignment change to facilitate works on the new bridge. Brentwood Road would be closed for a number of weekends to tie-in the temporary alignment and also then to tie-in the permanent alignment. The switchover to the new permanent alignment of Brentwood Road is scheduled for late 2026 and would likely require a night-time or weekend closure.

Stifford Clays Road

Stifford Clays Road would be used as a construction route to access the construction sites Stifford Clays Road West and East compounds until a haul road running to the Compounds from the Stifford Clays junction has been built. This haul road would be available for construction vehicles about six months after the start of the construction programme. Once it is open, Stifford Clays Road would only be used infrequently.

There would however need to be a crossing point on the road as vehicles pass between the two Stifford Clays Road Compounds. The crossing point would be controlled by traffic signals or a similar arrangement. Once the new Stifford Clays Road overbridges are in place, construction vehicles would no longer need to use this crossing point and would instead pass between the sites by going under the new overbridges.

Stifford Clays Road would be realigned as part of the works to include two new bridges. The section of road which forms the realigned Stifford Clays Road and the new bridges would largely be constructed offline, allowing Stifford Clays Road to remain open while they are built. The switchover to the new permanent alignment of the Stifford Clays Road is scheduled for January 2027. The switchover event is likely to require a few night-time or weekend closures.

Lane closures would be required on Stifford Clays Road at various times for construction access works, making modifications to local utility networks, and the installation of temporary connections to the Brentwood Road Compound. The lane closures would be required for a four-month period, then a two-week period, a one-week period and a night/weekend. All works are programmed to be at the start of the construction programme.

There are currently high voltage electric cables located on pylons over Stifford Clays Road that would require works associated with the diversions. It is currently envisaged that works to these assets would not affect the use of Stifford Clays Road, however, night closures may be required on the grounds of safety to complete these works.

High Road

Lane closures would be required on the High Road to carry out modifications to local utility networks and the installation of temporary connections to the east and west Stifford Clays Road Compounds. The lane closures would be required for six months at the start of the construction programme.

Hornsby Lane

Lane closures would be required on Hornsby Lane to carry out modifications to local utility networks. The lane closures would be required for two months and is programmed to be early in the construction programme.

The permanent closure of the southern end of the north-to-south running section of Hornsby Lane is planned from the start of the construction programme.

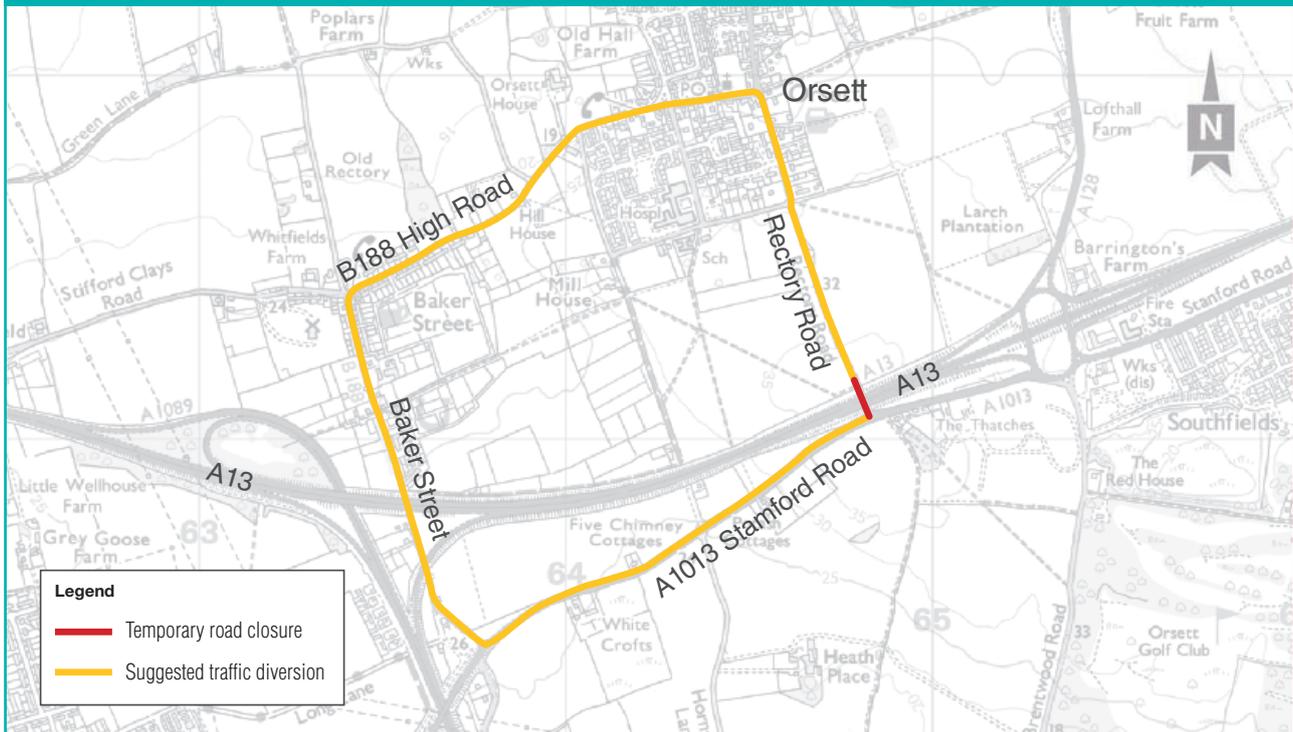
Rectory Road

A temporary road closure would be required on Rectory Road to carry out the installation of a new high-pressure gas pipeline. The closure is planned for two weeks and will be early in the construction programme.

A new bridge is proposed for Rectory Road which would cross the A13 and Lower Thames Crossing link roads and therefore would have to be longer than the existing one. In order to construct the new bridge, the existing bridge would have to first be demolished. This would require a closure of the current bridge over the A13, which is planned for seven months from September 2027 to March 2028. During this time Baker Street would be open and access from High Road and School Lane would be available. The proposed diversion route is shown in figure 16.4 below.

The switchover to the new permanent alignment for Rectory Road is scheduled for March 2028. The switchover event is likely to require a night-time or weekend closure.

Figure 16.4: Suggested diversion for traffic during temporary closure of Rectory Road



Rectory Road would be used by construction traffic for specific work only and would not be used as a through road for construction works. Temporary haul roads would be constructed along the Lower Thames Crossing link roads for use by most of the construction traffic. The haul road would need to cross Rectory Road to access works to the east of Rectory road and traffic signals or similar would be installed to manage the traffic across prior to the closure. The number of vehicles crossing Rectory Road to the works north of the A13 and east of Rectory Road would be low.

Fen Lane

Temporary road closures on Fen Lane and Green Lane would be required to carry out the installation of temporary connections to the Mardyke Compound. These closures would be required for nine months from March 2024 to November 2024. There would also be a need for lane closures while utilities are laid to the Compounds on Stifford Clays Road, if this work is required to start before the road closure.

Green Lane

Green Lane would be used by construction vehicles initially to facilitate the construction of offline haul roads. Once the haul roads are complete, a section of Green Lane would continue to be used as part of the access route from the Stifford Clays junction to the offline haul roads that will run alongside the project alignment.

Green Lane itself would need a slight temporary alignment change to facilitate works on the bridge. This work would mean that Green Lane would be closed for a number of weekends to tie-in the temporary alignment and also later to tie-in the permanent alignment. Other than these infrequent weekend closures the road would remain open. The switchover to the new permanent alignment for Green Lane is scheduled for September 2027.

A crossing point of Green Lane would be required to allow construction vehicles to travel north and south along the alignment. Stop/Go signs or similar would be required to manage the construction and public traffic during the construction period.

There are currently high voltage electric cables located on pylons over Green Lane that would require works associated with the diversions. It is currently envisaged that works to these assets would not affect the use of Green Lane, however, short-term closures may be required on the grounds of safety to complete these works.

Mill Lane

A road closure of Mill Lane would be required to undertake modifications to the local utility networks. The closure is planned for two weeks and would be early in the construction programme.

Orsett Cock junction

Temporary lane restrictions are planned at the Orsett Cock junction for the construction of a new permanent access and modifications to local utility networks. Two separate events of one month in duration are planned in 2025 and 2028 respectively.

The switchover of the A13 westbound to A1089 southbound slip road is scheduled for September 2025. This would end the access from the Orsett Cock junction to the A1089 southbound.

HGV bans during construction

HGV bans are planned on Rectory Road from School Lane to Prince Charles Avenue; on School Lane from Mill Lane to Rectory Road; on the B188 High Road from Mill Lane to Rectory Road; and on Prince Charles Avenue from Rectory Road to the A128 Brentwood Road.

An existing 7.5-tonne ban at the north end of Brentwood Road would be removed throughout the construction period to provide access to the Brentwood Road Compound.

We have sought to minimise traffic management measures wherever practical, but these would be necessary in some locations to allow construction traffic and local communities to move around safely, while providing 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. 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 approval by the Secretary of State for Transport, following consultation with the local highway authority.

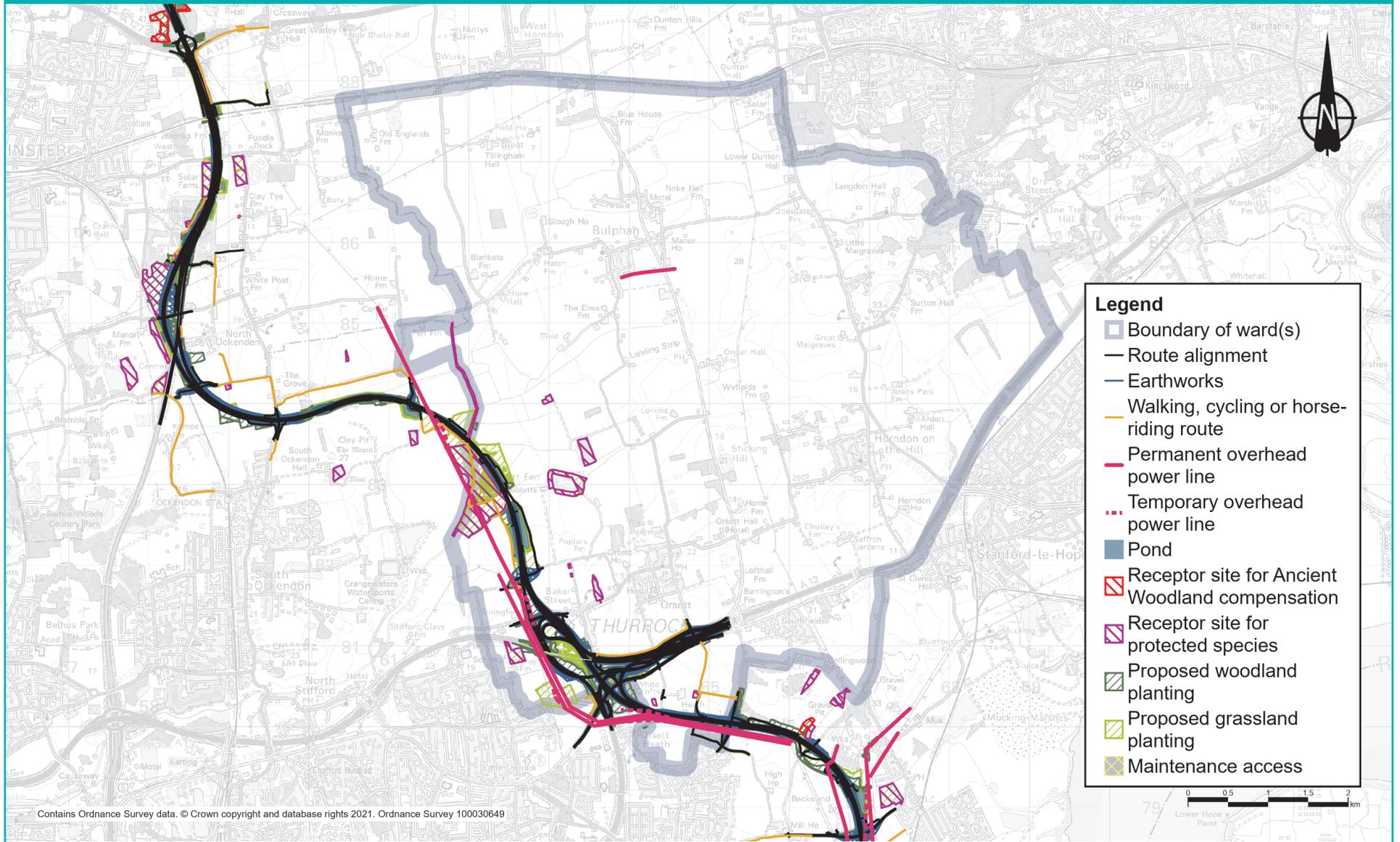
16.2.2 Operations

The completed project

For more information about the completed project, see the Operations update, as well as the figures in Map Book 1: General Arrangements. Below, we set out the main features of the project that would be within Orsett ward once it is operational.

- The landscaping around the new slip roads linking up with the A13 would be mostly woodland, including non-native species, with species-rich grassland running along the roads and the northern edge of the new roads to the woodland edges. The new slip roads would run underneath the existing Rectory Road bridge.
- The ancient woodland north of the High Road leading from Orsett would be a receptor site for translocated species, with bat boxes to be included at this location. This would allow for species whose habitats are being disturbed by the new route to remain locally.
- The southern half of the A13 junction would be mostly landscaped with mainly woodland, including non-native species, with species-rich grassland running along the roads and the edges of the junction to the woodland edges. The roads leading from the majority of roads that would form the new junction would be cut into the landscape to reduce visual impact and noise pollution, while the A13 would remain at its current height above the new roads. A flood mitigation pond would be built in the middle of the junction and accessed by a maintenance road. The landscaping and lowered height of the junction has been designed to reduce the impact on the local landscape as much as possible.
- The northern half of the A13 junction would be mostly landscaped with species-rich grassland, woodland including non-native species and woodland scrub. The new road parallel to Baker Street would be raised before passing under the raised Stifford Clays Road bridge, with the new road closest to Grays being lowered in a proposed cutting. The parcels of land north of, and between the Stifford Clays Road and A13, would be returned to agricultural use.
- The realigned 400kV overhead power lines would be a permanent feature, with one of four replacement pylons being in Orsett ward and one on the boundary with Chadwell St Mary ward.

Figure 16.5: Main features of the completed project in Orsett ward



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- The realigned 275kV overhead power lines would also form a permanent feature within this ward.
- Continuing north towards the M25 the new route would be landscaped with species-rich grassland, with woodland including non-native species and woodland scrub in-between the roads where they bisect underneath the Green Lane bridge. Further north flood mitigation ponds would be built running parallel with the north and southbound roads, with marsh and wet grassland edges landscaping. The area surrounding this section of the new road would be returned to agricultural use once the project is operational. The landscaping between the road and Mardyke River would be open grassland and then marsh and wet grassland – fen, with both sections being receptor sites for translocated species. A further flood mitigation pond would be built parallel with the southbound carriageway, accessible by a maintenance road which would be bordered by woodland include non-native species and marsh and wet grassland. All of this landscaping would be designed to be reflective of the existing ecology in these areas to mitigate against the impact on local wildlife.
- Some footpaths and bridleways would rerouted permanently as part of our proposals for over 46km of upgraded or entirely new walking paths, cycle routes and bridleways that would benefit communities along the route. For more information, see the Footpaths, bridleways and cycle routes section.
- The existing traveller site on Gammonfield Way would be relocated to an area next to its existing site and would be around 1.5 ha in size. For more information, see chapter 5 of the Construction update.

Changes to the project since our design refinement consultation

As part of our ongoing design development and discussions with utility companies, we have made the following changes to the project and its Order Limits within Orsett ward since our design refinement consultation in July 2020. More information about these proposed changes, including maps showing changes to the Order Limits, can be found in chapter 3 of the Operations update.

- It is proposed to remove the ‘spur’ of the Order Limits that runs north-south through the Ron Evans Memorial Field as a result of utilities works being conducted elsewhere. Two small new areas of land are proposed to the north for a utilities working area and as an ecological receptor site.
- Four residential properties on Woolings Close, owned by Highways England, have been removed from the Order Limits following local feedback.
- Following landowner and stakeholder feedback the Cadent high-pressure gas pipeline diversion has been pushed further south along the northern edge of the A13. This has enabled a reduction to the Order Limits, reducing impact on the Orsett Showground and fields currently used for football pitches by Orsett Park Royals Football Club.
- We have removed land to the north west of Orsett that contains existing vegetation but added additional adjacent land for a working area and installation of a pipeline.
- The land requirements at Stanford Road have changed, with the current power network diversion severing an agricultural field, which could restrict its use. We propose realigning the power network so it runs closer to the property boundary, reducing the restrictions that may apply to the field. This would see the addition of a small area of new land to the Order Limits and the removal of land for several diversions south of Stanford Road.
- We also propose to locate utility networks in Orsett Cock roundabout until Rectory Road Bridge is built. This proposal has reduced the land in this area too.
- The flood compensation area at Orsett Fen is no longer fully required and can be reduced, removing land at Green Lane from within Order Limits with the exception of an access track. This results in a reduction of approximately 7.8 ha of land.

- As a result of the new developments, there is now a need for increased capacity on the roads linking the project road to the A13 eastbound and Orsett Cock roundabout. We are therefore proposing a modification to the junction in this area, with an extra lane on the link road extending from where the road passes Baker Street through to the Orsett Cock roundabout. Please see chapter 3 of the Operations update for more detail.

Impacts on open space and common land

Within Orsett ward we propose to permanently acquire part of the Ron Evans Memorial Field for a new section of road and landscaping. In response to stakeholder feedback, we have amended our proposal for replacement open space land that was presented at the previous design refinement consultation. We are proposing to acquire two areas of replacement land to the south and west of the existing site. This replacement land would be landscaped and connected to the area of the memorial field to be retained, and adjacent areas of proposed environmental mitigation to the north of Long Lane.

We are also proposing to permanently acquire Orsett Fen common land within the Order Limits for new road, landscaping and environmental mitigation through the Mardyke Valley. In response to stakeholder feedback, we have amended our proposal for replacement common land that was presented at the previous design refinement consultation. We are now proposing to provide replacement land to the north and south of the existing common land. This replacement area would be designated as common land and benefit from the same rights of access and common rights as the existing and retained common land.

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.

Impacts on private recreational facilities

Within Orsett ward we are proposing to divert a gas pipeline to the south and east of the Orsett Park Royals Football Club pitches. There may be some impact on the area currently used for the smaller pitch during the diversion works which we would seek to mitigate.

More information about our proposals for private recreational facilities can be found in chapter 3 of our Operations update.

16.3 Traffic

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

16.3.1 Construction

Construction impacts

The traffic flows on the A13 would be higher as this is the main route that would be used by much of the construction traffic in Orsett ward. This is likely to lead to a small decrease in speeds along the A13. The length of time for which narrow lanes are required would be kept to a minimum and the works would be designed so that a 60 mph speed limit, rather than the usual 50mph can operate on this section. This would reduce the impact of the narrow lanes on the capacity of the A13 and the journey times of vehicles using the road.

The early construction of haul roads along the alignment of the project will mean that many of the construction HGVs would be able to use these roads from the A13 rather than use the local road network for the last part of their journey to the Compounds.

Elsewhere the presence of traffic management would increase the journey times of vehicles using the affected stretches of road, including in particular Stanford Road, Baker Street, Rectory Road, Brentwood Road, Stifford Clays Road, Fen Lane and Green Lane.

The temporary closures of Baker Street, Rectory Road, Fen Lane and Green Lane would result in longer journey times for the vehicles that usually use these roads.

Measures to reduce construction traffic impacts

During the design and development of the project, our approach to construction has been refined continually after extensive investigations and feedback from the public and stakeholders, with the aim of reducing construction traffic impacts. A summary of measures proposed to reduce the volume of construction materials transported in and out by road during the construction period can be found in chapter 2 of the Construction update

To reduce the construction traffic impacts on Orsett ward we would implement the following measures:

- Minimise the use of the local road network as far as reasonably practicable through the construction of temporary slip roads from the M25 which would provide direct access from the strategic road network to the construction site. These temporary slip roads would be constructed at the earliest opportunity to maximise the benefit.
- 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 period.
- Construction of temporary haul roads within the Order Limits, at the earliest opportunity, to provide improved access to the strategic road network for construction traffic and allow materials to be moved offline.
- Following discussion with key stakeholders, HGVs associated with construction of the project would be banned from using some local roads wherever practicable. Proposed road bans for construction vehicles (with the exception of very specific works, which include limited utility and road-connection works) include:
 - Rectory Road from School Lane to Prince Charles Avenue
 - School Lane from Mill Lane to Rectory Road
 - B188 High Road from Mill Lane to Rectory Road
 - Prince Charles Avenue from Rectory Road to the A128 Brentwood Road.

Note that an existing 7.5-tonne ban at the north end of Brentwood Road would be removed throughout the construction period to provide access to the Brentwood Road Compound.

- 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.
- Stockpile material within the Order Limits to allow material to be managed on-site rather than offsite, reducing the number of HGV journeys needed.

16.4.2 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 Orsett ward for the first year of operation, 2029.

Figures 16.6, 16.8 and 16.10 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 16.7, 16.9 and 16.11 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 project runs through the south-west of the ward. South of the A13, the predicted traffic flows on the project in 2029 northbound are 4,200 PCUs in the morning peak, 3,500 PCUs in the interpeak and 3,600 PCUs in the evening peak hour. Southbound, the predicted flow is 3,400 PCUs in the morning peak, 2,800 PCUs in the interpeak and 4,100 PCUs in the evening peak hour.

North of the A13, the predicted traffic flows on the project in 2029 northbound is 4,000 PCUs in the morning peak, 2,700 PCUs in the interpeak and 2,500 PCUs in the evening peak hour. Southbound the predicted flow is 2,200 PCUs in the morning peak, 2,100 PCUs in the interpeak and 2,700 PCUs in the evening peak hour.

There is a predicted increase in traffic levels at the Orsett Cock junction, along the A13 east of the new junction with the project, along Stanford Road, which runs alongside and to the south of the A13, Brentwood Road running southbound from the Orsett Cock junction and Buckingham Hill Road, carrying traffic that has left the A13 at the Manorway junction.

The A13 runs across the ward from west to east. There are currently free-flow connections with the A1089 close to the Orsett Cock junction. At this junction there are connections between the A13, the A127 Brentwood Road which runs north of the A13 towards Bulpan, the A1013 Stanford Road which runs parallel to the A13 on its southern side, and the Brentwood Road running south of the A13 towards Chadwell St Mary. Further east, the Manorway interchange connects the A13 with the B1007 North Road towards Horndon-on-the-Hill; the A1014 Manorway for access to Stanford-le-Hope, Corringham and the London Gateway Port; and the A1013 Stanford Road, which runs parallel to and south of the A13 to the Orsett Cock junction.

Traffic levels are predicted to decrease west of the proposed junction of the project with the A13. Westbound, the decrease would be over 1,000 PCUs in the morning peak hour and between 500 and 1,000 PCUs in the interpeak and evening peak hour. In all time periods, the decrease is between 10% and 20% of the traffic levels without the project. Eastbound, the decrease in traffic flows is between 500 and 1,000 PCUs in all modelled time periods. This is a decrease in traffic of between 10% and 20% in the morning peak and the interpeak period and between 0% and 10% in the evening peak hour.

Traffic levels are predicted to increase to the east of the proposed junction of the project with the A13. East of the Orsett Cock junction the increase in traffic flows would be between 500 and 1,000 PCUs westbound in the morning peak hour and the interpeak period. This is an increase of between 10% and 20%. In the evening peak hour, the increase in traffic is over 1,000 PCUs, an increase of between 20% and 40%. There would be an increase in traffic of between 500 and 1,000 PCUs eastbound in all the modelled time periods, which is an increase of between 10% and 20% in the morning peak hour and the interpeak and an increase of between 20% and 40% in the evening peak hour.

On the A13 east of the Manorway junction, traffic flows would increase. Westbound, the increase in flows would be between 250 and 500 PCUs in the morning peak hour and the interpeak. This is an increase of between 10% and 20%. In the evening peak hour, the increase in flows would be between 50 and 250 PCUs, an increase of between 0% and 10%. Eastbound, the increase in flows would be between 50 and 250 PCUs (between 0% and 10%) in the morning peak hour, between 250 and 500 PCUs (between 10% and 20% increase) in the interpeak, and between 500 and 1,000 PCUs (between 10% and 20%) in the evening peak hour.

There would be a connection provided between the A1089 and the project northbound. The flows on this connection in 2029 would be over 1,000 PCUs in the morning and evening peak hours and between 500 and 1,000 PCUs in the interpeak period. There would be a decrease in traffic flows on the slip roads between the A13 and the A1089 of between 500 and 1,000 PCUs in the morning peak hour, and a decrease of between 250 and 500 PCUs in the interpeak period and the evening peak hour. In each time period, this is a decrease of between 20% and 40%. On the slip from the A1089 northbound on to the A13 eastbound, the decrease in traffic levels is predicted to be within 50 and 250 PCUs in each of the modelled time periods. This is a decrease of between 10% and 20%.

The A1013 Stanford Road in Orsett ward runs parallel to the A13 to its south, joining with the A13 at the Manorway junction. On the A1013 as it passes under the A1089 there would be an increase in flows westbound of between 50 and 250 PCUs in each modelled time period. This would be an increase of between 20% and 40% in the morning peak hour and over 40% in the interpeak period and the evening peak hour. Eastbound, there would be a decrease in traffic flows of between 50 and 250 PCUs in each modelled time period. This is a decrease of between 20% and 40% in the morning peak hour and between 10% and 20% in the interpeak period and the evening peak hour.

On the A1013 between the Orsett Cock junction and the junction with the Buckingham Hill Road, there would be a decrease in traffic of between 50 and 250 PCUs westbound in the interpeak period and the evening peak hour. This is a decrease of between 20% and 40%. Eastbound there would be an increase in traffic flows of between 50 and 250 PCUs during all modelled time periods. This is an increase of over 40% in the morning peak hour and between 20% and 40% in the interpeak and evening peak hour. On the final section of the A1013 west of the Manorway interchange, there would be an increase in flows of between 50 and 250 PCUs in the morning peak hour, which is an increase of between 20% and 40%. Eastbound, there would be an increase in traffic flows of between 50 and 250 PCUs in the morning peak hour and the interpeak period. This is an increase of between 20% and 40%.

On North Hill, the B1007, just north of the Manorway interchange, there would be a decrease in traffic northbound of 50 to 250 PCUs (a decrease of between 10% and 20%) in the morning peak hour and an increase of between 50 and 250 PCUs in the evening peak hour (which is an increase of between 20% and 40%). Southbound, there would also be an increase in flows in the evening peak hour of between 50 and 250 PCUs, an increase of between 20% and 40%. On the B1007 north of Horndon on the Hill, there would be an increase in traffic in the evening peak period of between 50 and 250 PCUs (between 20% and 40%) both northbound and southbound.

On Buckingham Hill Road, on the section just south of the A13 within the Orsett ward, there is a decrease in flows northbound in the morning peak and evening peak hours of between 50 and 250 PCUs, a decrease of between -20% and -40%. Southbound there is an increase in flows of between 50 and 250 PCUs in each of the modelled time periods, in each case an increase of over 40%.

Brentwood Road, the A128, runs vertically through the middle of Orsett ward. North of the A13 it runs from the Orsett Cock junction up to the A127 in the north of the ward. At the northern end of the Brentwood Road, north of Bulphan, there is a decrease in traffic flows. Northbound the decrease is between 250 and 500 PCUs (between 20% and 40%) in the morning peak hour on the section of the A128 between Bulphan and the A127. In an average interpeak hour and the evening peak hour the decrease in traffic flows is between 50 and 250 PCUs an hour, a decrease of between 20% and 40%. Southbound, there would be a decrease in traffic flows of between 50 and 250 PCUs (between 20% and 40%) in the morning peak hour, and a decrease of between 250 and 500 PCUs in an average interpeak hour and the evening peak hour. In an average interpeak hour, this is a decrease of over 40% and in the evening peak hour this is a decrease of between 20% and 40%.

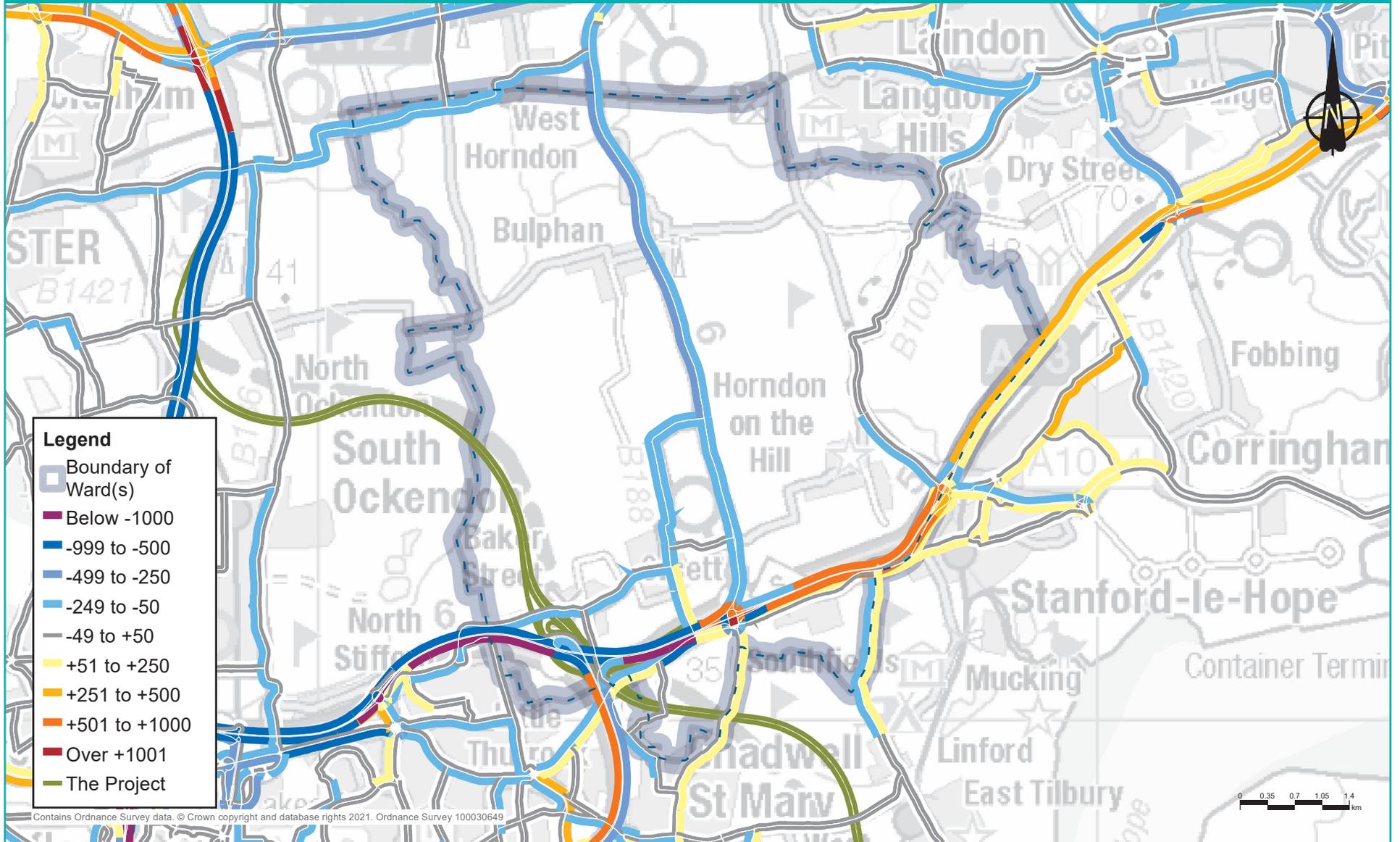
Just north of the Orsett Cock junction, on Brentwood Road there would be a decrease in traffic flows northbound of between 50 and 250 PCUs in all the modelled time periods. In the morning peak hour and an average interpeak hour this is a decrease of between 20% and 40%. In the evening peak hour, there would be a decrease of between 10% and 20%. Southbound, there would also be a decrease in flows of between 50 and 250 PCUs in the morning peak hour and an average interpeak hour. In the evening peak hour, the decrease in traffic would be between 250 and 500 PCUs. This is a decrease of between 0% and 10% in the morning peak hour and a decrease of between 20% and 40% in the interpeak and evening peak hour. The decrease in traffic may be associated with the additional flows on the A13.

South of the Orsett Cock junction the traffic flows on the A128 Brentwood Road would increase in both directions, particularly in the southbound direction. Northbound, the increase in flows is between 50 and 250 PCUs (between 20% and 40%) in the evening peak hour. Southbound, the flows would increase in all modelled time periods by between 50 and 250 PCUs in the morning peak hour and an average interpeak hour, and by between 250 and 500 PCUs in the evening peak hour. This is an increase of over 40% in all of the modelled time periods.

When the new road opens, it would not be possible to reach the A1089 from the Orsett Cock roundabout by using a short section of the A13. All other movements would remain available, including the free-flow slip-road from the A13 westbound on to the A1089, but the slip-road would no longer be able to be reached from the Orsett Cock roundabout.

Rectory Road currently has a bridge over the A13, which would be replaced during the construction of the project. The traffic flows over the new bridge northbound would decrease by between 50 and 250 PCUs an hour in the morning and evening peak hours in 2029, a decrease of over 40%. Southbound, there would be an increase in flows of between 50 and 250 PCUs (20% to 40%) in the morning peak hour and a decrease of between 50 and 250 PCUs (a decrease of greater than 40%) in an average interpeak hour.

Figure 16.6: Predicted change in traffic flows (PCUs) with the project during the morning peak in 2029



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Figure 16.7: Predicted percentage changes to traffic flow during the morning peak in 2029

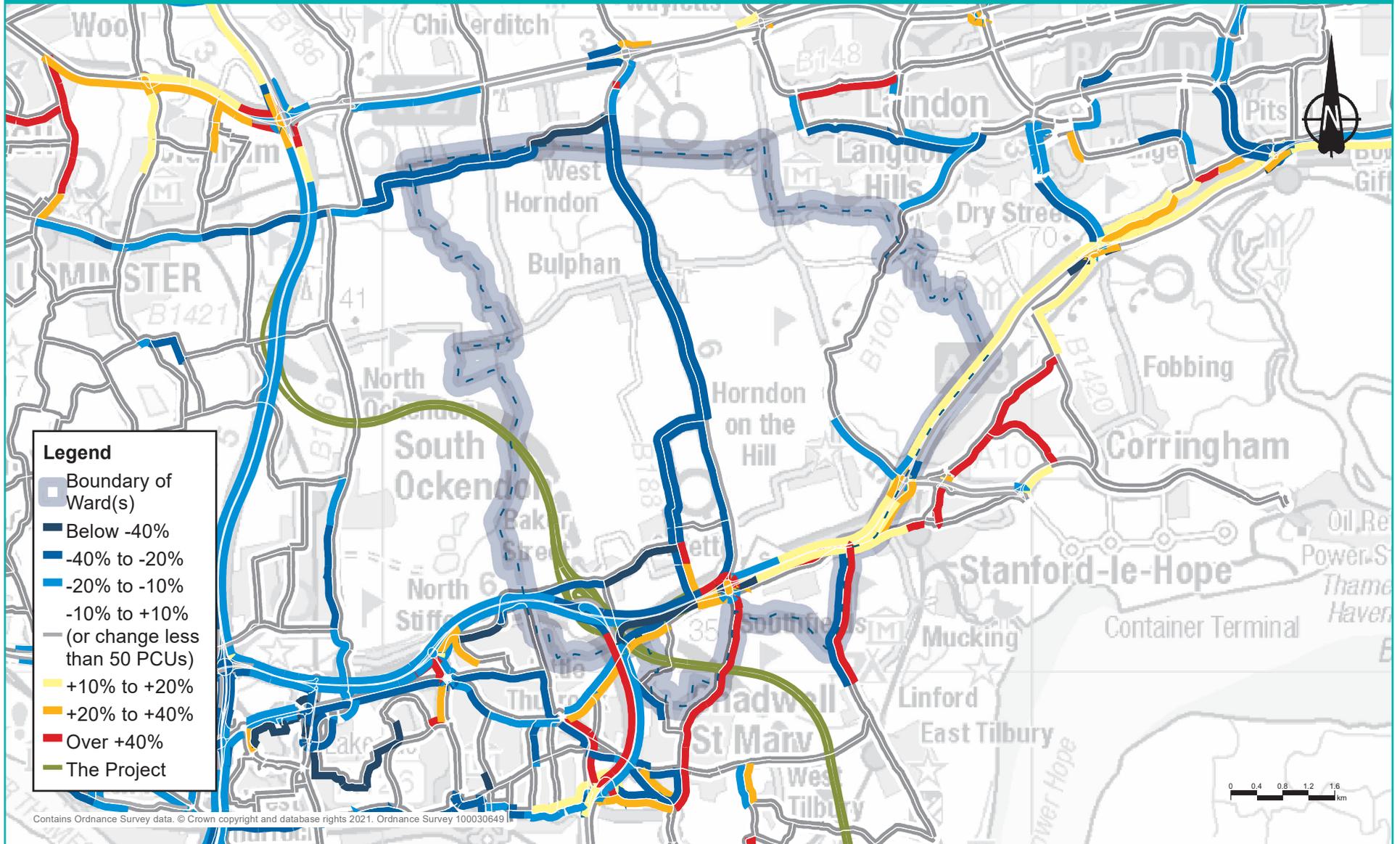


Figure 16.8: Predicted change in traffic flows (PCUs) with the project during the interpeak in 2029

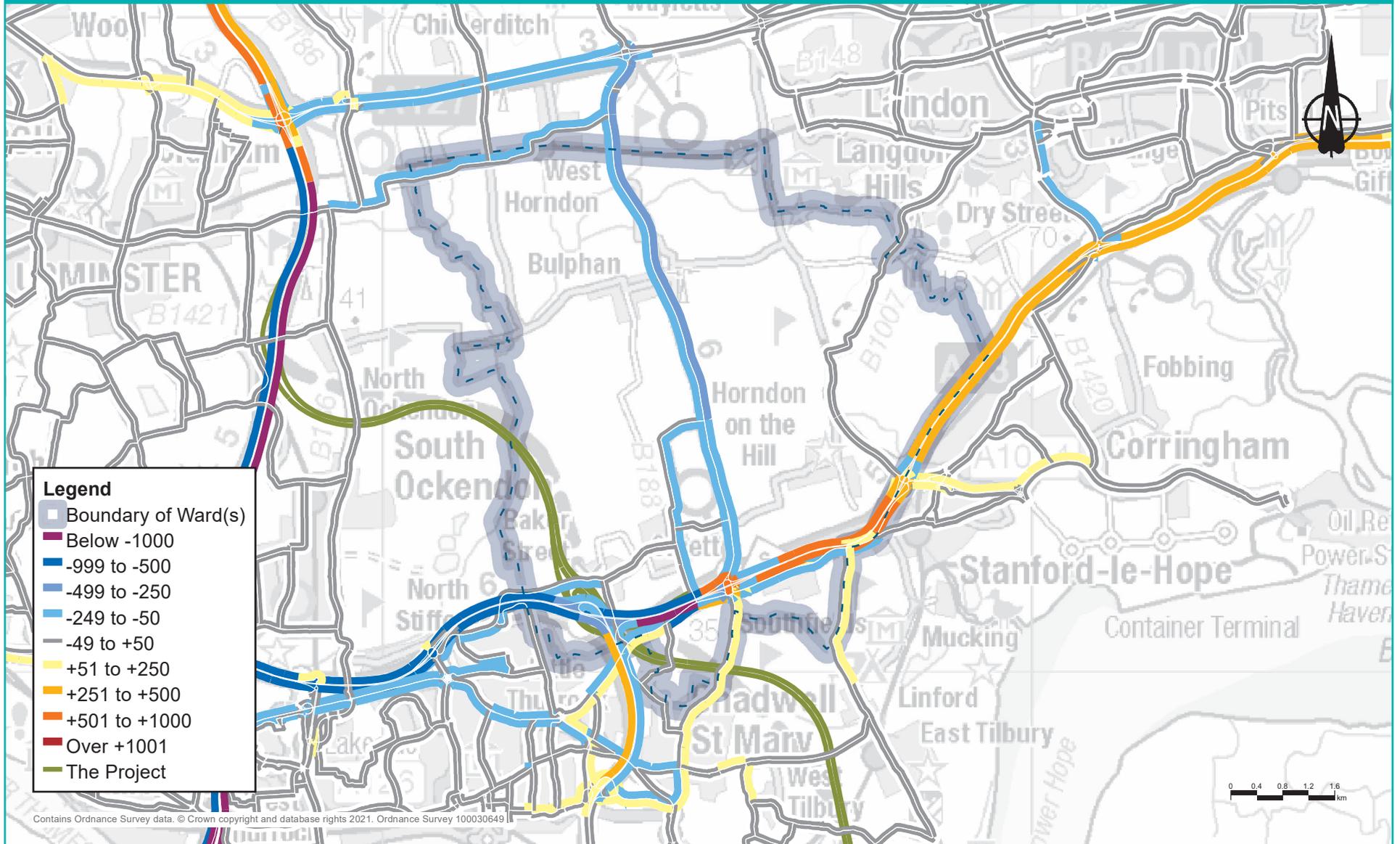


Figure 16.9: Predicted percentage changes to traffic flow during the interpeak in 2029

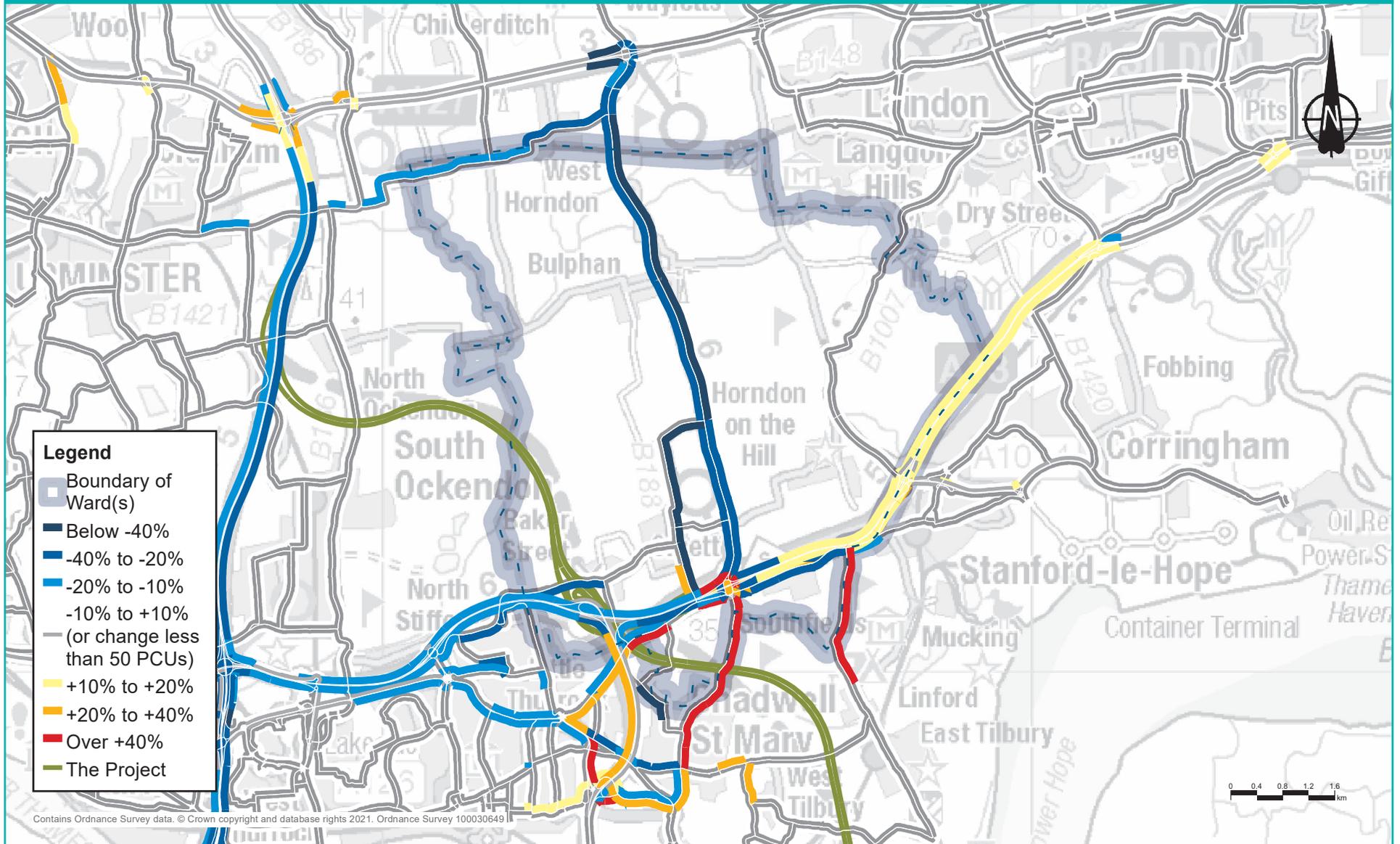
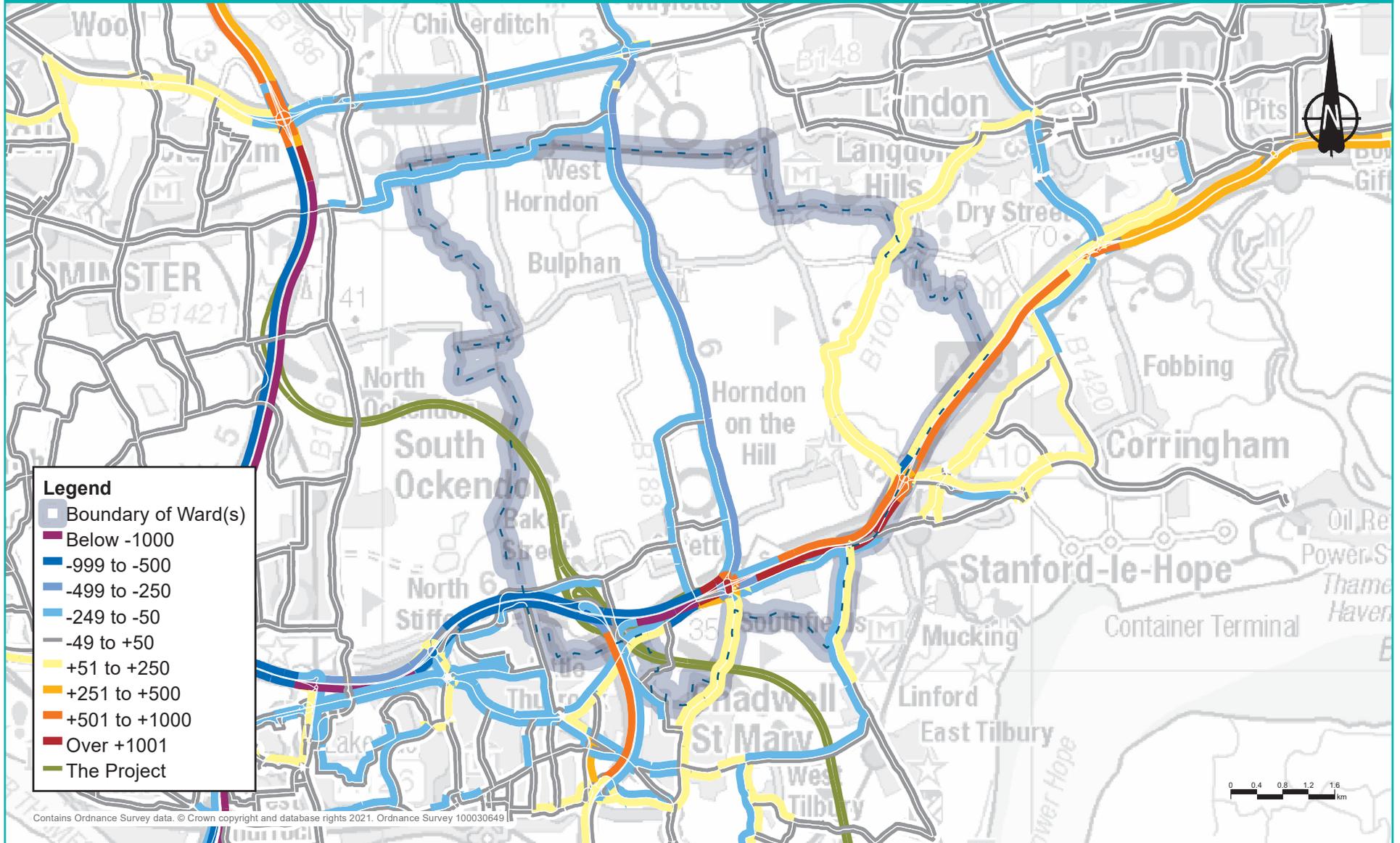


Figure 16.10: Predicted change in traffic flows (PCUs) with the project during the evening peak in 2029



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Figure 16.11: Predicted percentage changes to traffic flow during the evening peak in 2029

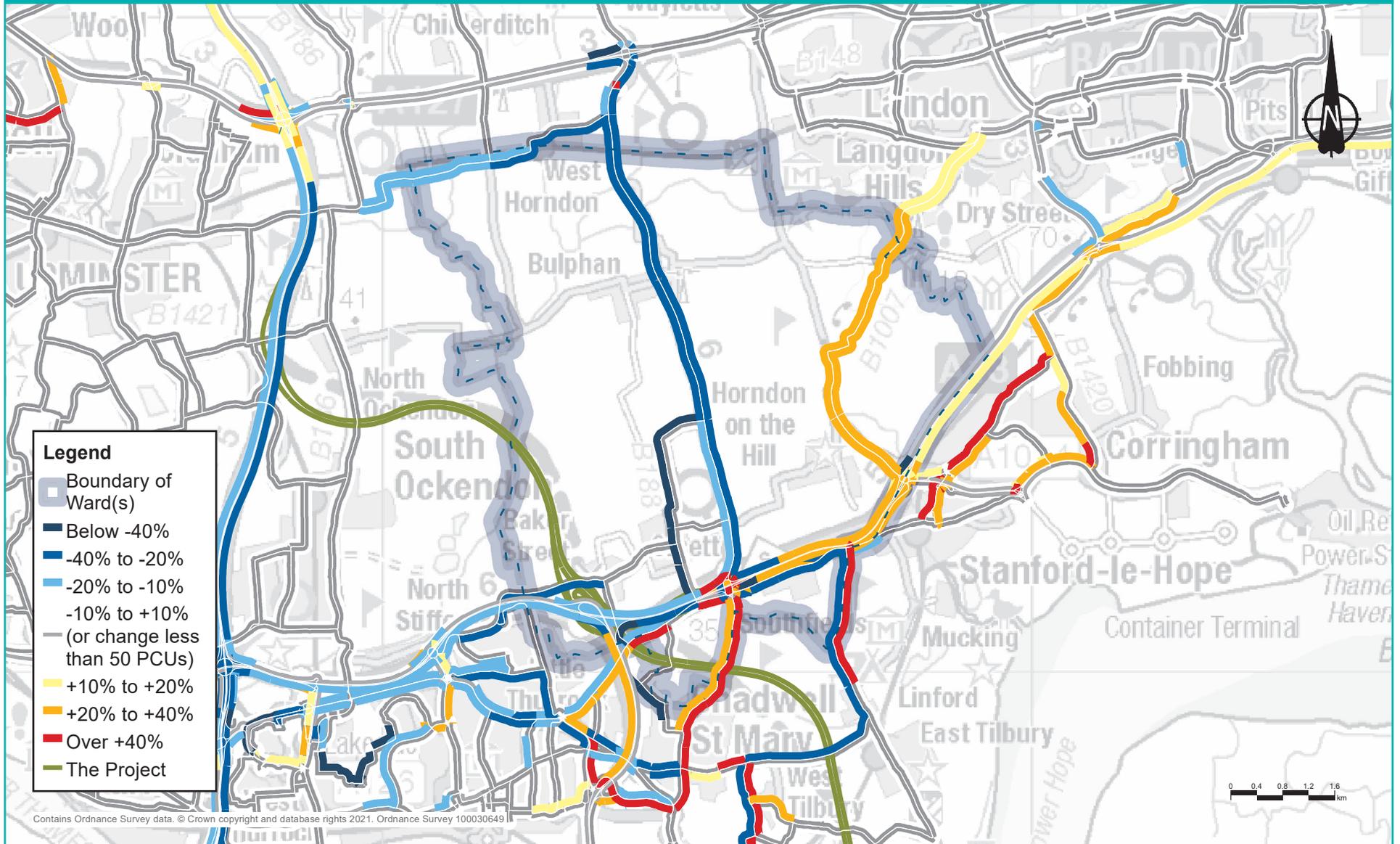
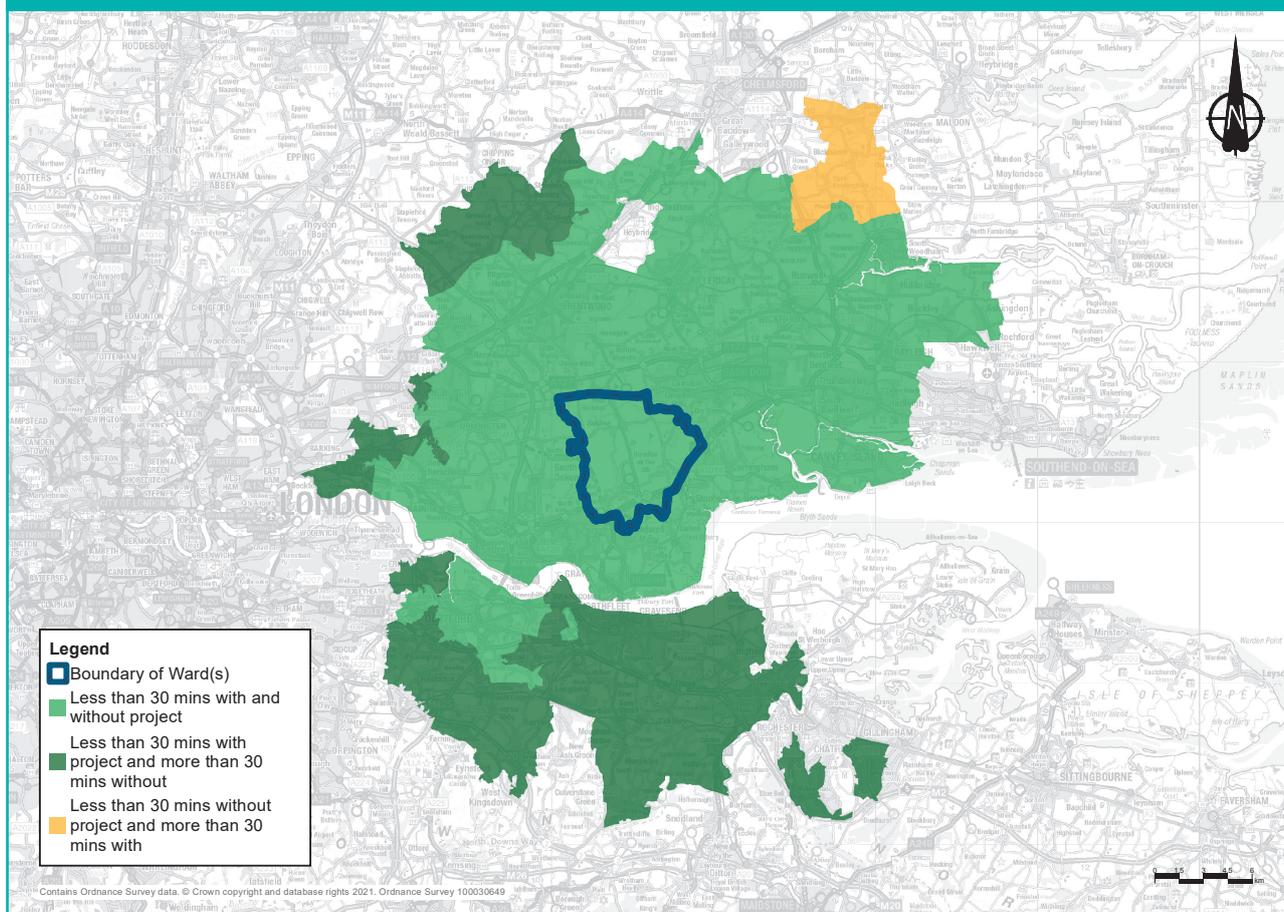


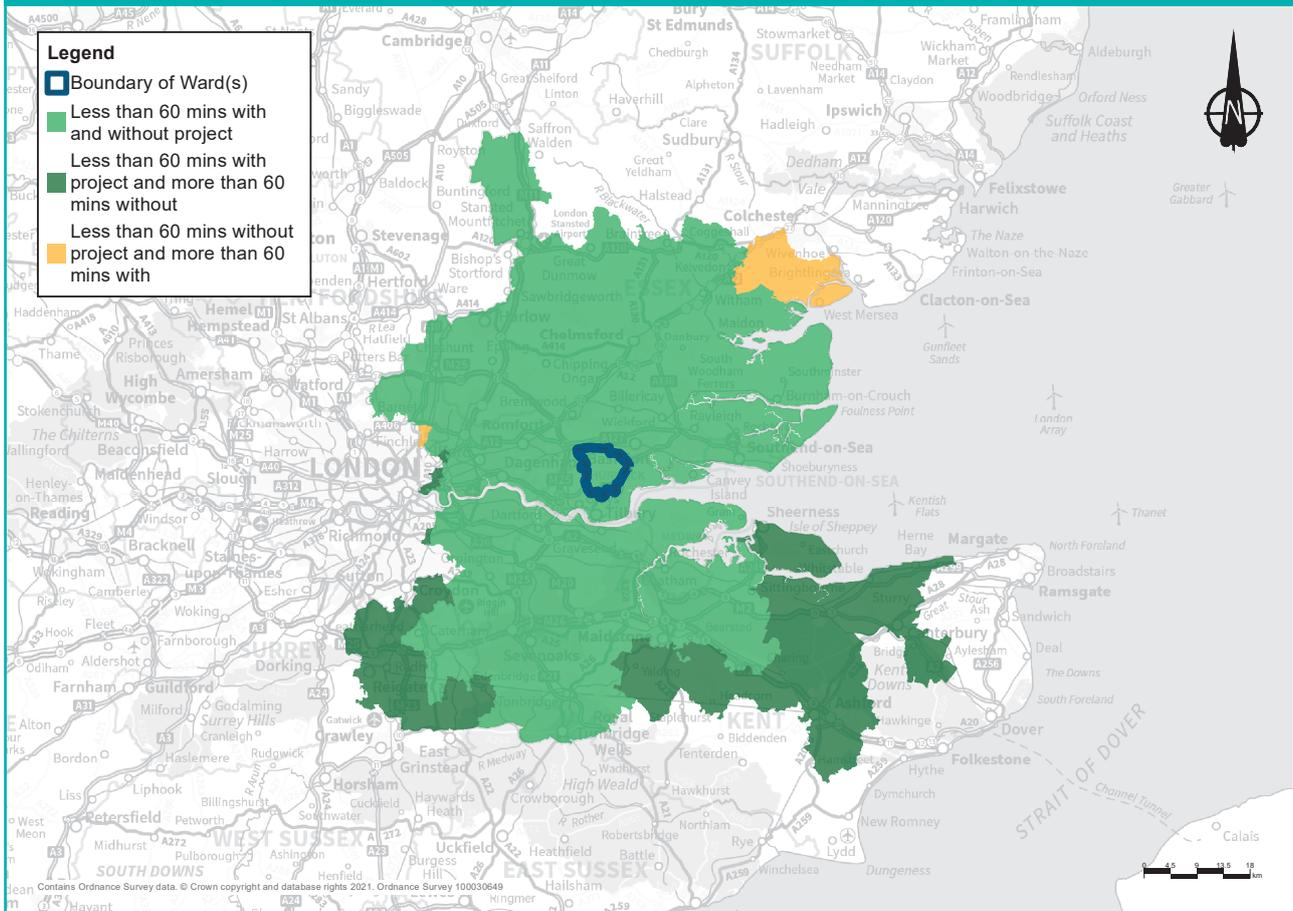
Figure 16.12: Change in area that motorists could drive to within 30 minutes from Orsett ward



Changes to journey times

Figure 16.12 shows the change in the area that could be reached within a 30-minute drive from the centre of the ward both with and without the project. Figure 16.13 shows the change in areas that can be reached within a 60-minute drive. The areas have been calculated for the morning peak hour (7am-8am). The number of jobs within a 30-minute drive would increase by 37%, which would provide access to an additional 145,900 jobs. The number within a 60-minute drive would increase by 16%, which would provide access to an additional 375,500 jobs. Despite the project providing a substantial net gain in access for motorists within Orsett ward, there are areas (shown in orange on the maps) that would no longer be accessible by car within 30 or 60 minutes because of changes to traffic flows on the wider road network.

Figure 16.13: Change in area that motorists could drive to within 60 minutes from Orsett ward



Operational traffic flows

The project has been designed to optimise its impacts on traffic, including the design of free-flowing connections with the A13/ A1089 and the M25. In addition, the main route would have no traffic lights or roundabouts to ensure continuous traffic flow. However, 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.

16.4 Public transport

Existing situation

The northern boundary of the ward contains West Horndon station which, is served by c2c rail services between Southend, Shoeburyness and London Fenchurch Street.

A number of buses serve Orsett ward, including the 5A, 5B, 5X, 7, 7A, 7B, 7C, 11, 51, 100, 265, 475, X1, Z2, and the Z4.

16.4.1 Construction

Rail

Rail services to West Horndon station would be unaffected by the works.

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

Buses

Journey times on the Z4 bus may increase due to the increased traffic flows on the A13 and the traffic management along this route.

Traffic management works may affect buses using local roads, leading to increased journey times while the measures are in place.

The temporary closures of Baker Street and Rectory Road would require a diversion of the 11, 5B, 265 and 475 buses. Any diversions would be agreed with the bus operators.

16.4.2 Operations

Operational impacts

Rail

There would be no discernible change in local access times to West Horndon 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 to that station predicted to decrease by around six minutes in the morning and evening peaks.

Buses

It is predicted that during the operational phase there would be minor increases in journey times on certain sections of these bus routes:

- Bus 5A from Pitsea to Grays: There would be a predicted increase of around two minutes westbound in the morning peak. There are no predicted impacts for other time periods or directions.
- Bus 5X from Wickford to Grays: There is a predicted increase of around seven minutes westbound in the morning peak. There are no predicted impacts during the other time periods or directions.
- 51 bus from Prittlewell to Grays and Chafford Hundred: There is a predicted increase of nearly seven minutes westbound in the morning peak hour. There would be slight changes in other time periods and directions.
- 265 bus from West Horndon to Grays: This bus is predicted to operate two minutes quicker for southbound journeys in the evening peak hour.
- Z4 service from the Amazon distribution centre to Basildon and Pitsea: There is a predicted increase in travel time of two minutes northbound in the evening peak hour.

16.5 Footpaths, bridleways and cycle routes

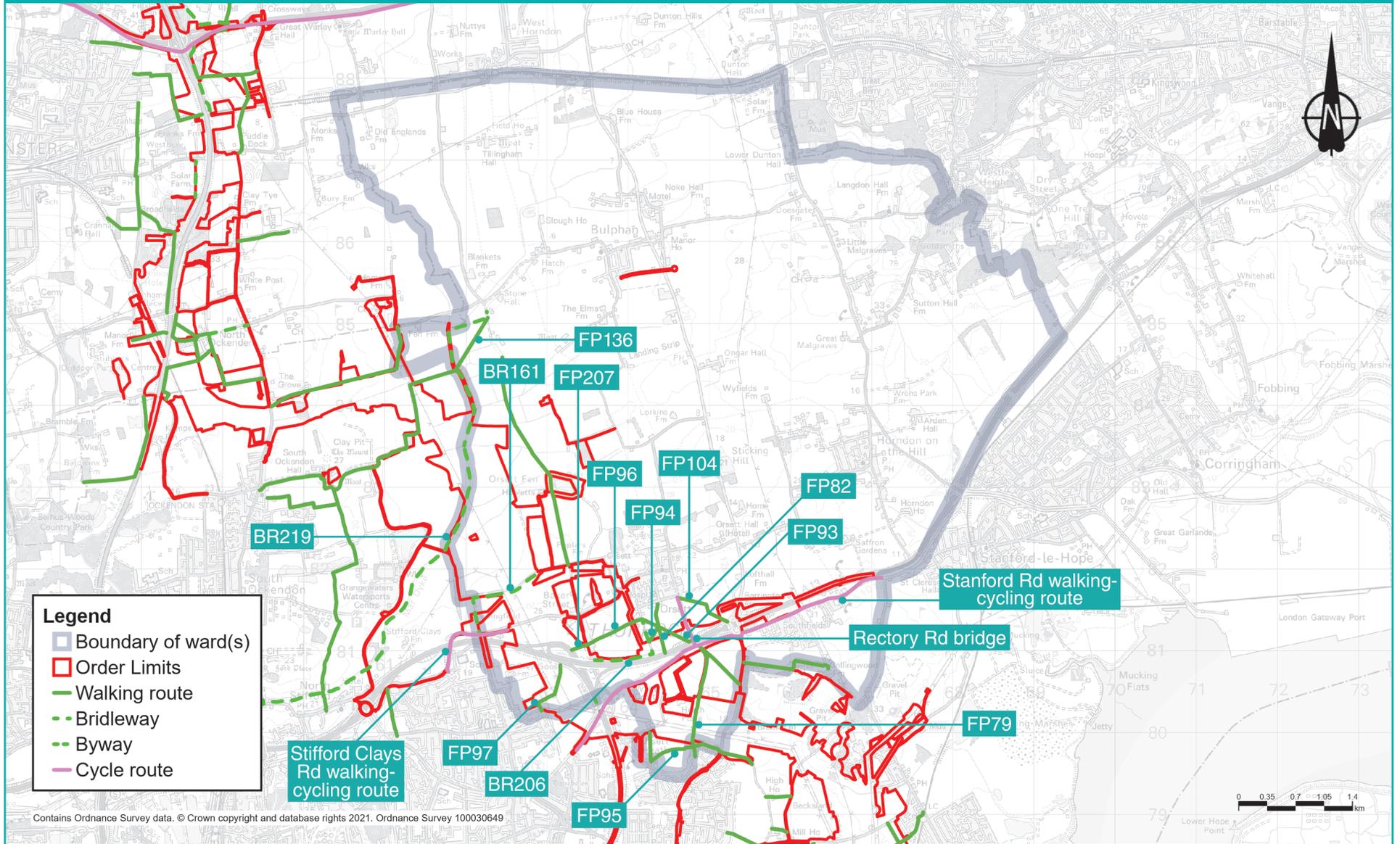
Existing situation

Orsett ward is a large and rural ward with a network of footpaths and bridleways that connect the residential areas of Stanford-le-Hope, Horndon-on-the-Hill, Bulphan, South Ockendon and Grays. For potential additional impacts, see the other topic areas in this chapter, such as Visual and Noise and vibration.

16.5.1 Construction

Due to the construction works in this ward, there would be significant changes to the network of footpaths and bridleways during the construction period. For more information about the proposed network of footpaths and bridleways once the new road is complete (including a map), see the Operational impacts section below.

Figure 16.14: Footpaths, bridleways and cycle routes in the vicinity of the project in Orsett ward



- Footpath FP79 would be impacted by the project and would need to be closed for five years to allow utilities diversion works and construction of the Lower Thames Crossing main line. We are currently working on a potential temporary diversion for this route, so that some or all of the amenity currently provided would be retained during the construction period.
- Footpath FP82 would need to be closed for five years to allow for overhead utility works and construction activities.
- Footpath FP93 would need to be closed for five years to allow utilities diversion works and construction.
- Footpath FP94 would need to be closed for eight months to allow for utilities works.
- Footpath FP95 would be impacted by works to divert overhead lines in the area and would need to be closed for intermittent periods over three years to facilitate this work before closure of less than a month while the path is resurfaced.
- Footpath FP96 would need to be closed for eight months to allow utilities diversion works.
- Footpath FP97 would need to be closed for eight months to allow utilities works. A section of the route would be permanently closed, shortening the path at the A13 end.
- Footpath FP104 would need to be closed for eight months to allow utilities works.
- Footpath FP136 would need to be closed for three years to allow utilities diversion works and main construction works.
- A short section of footpath FP207 would need to be permanently closed where it meets the new road. This footpath has already been severed by the existing A13 junction.
- Bridleway BR161 (Green Lane) would be closed for six months to allow overhead power line works. The bridleway would be realigned along a new green bridge over the new road. The new bridge would be built alongside the existing one to reduce the length of time the bridleway would need to be closed.
- Bridleway BR206 would need to be closed for five years to allow utilities diversion works and main works.
- A section of Bridleway BR219 that would cross the project route (just north-west of Orsett Fen) would need to be closed for five years to allow utilities diversion works and the construction of the Mardyke Viaduct. We are currently working on a potential temporary diversion for this route, so that some or all of the amenity currently provided would be retained during the construction period.

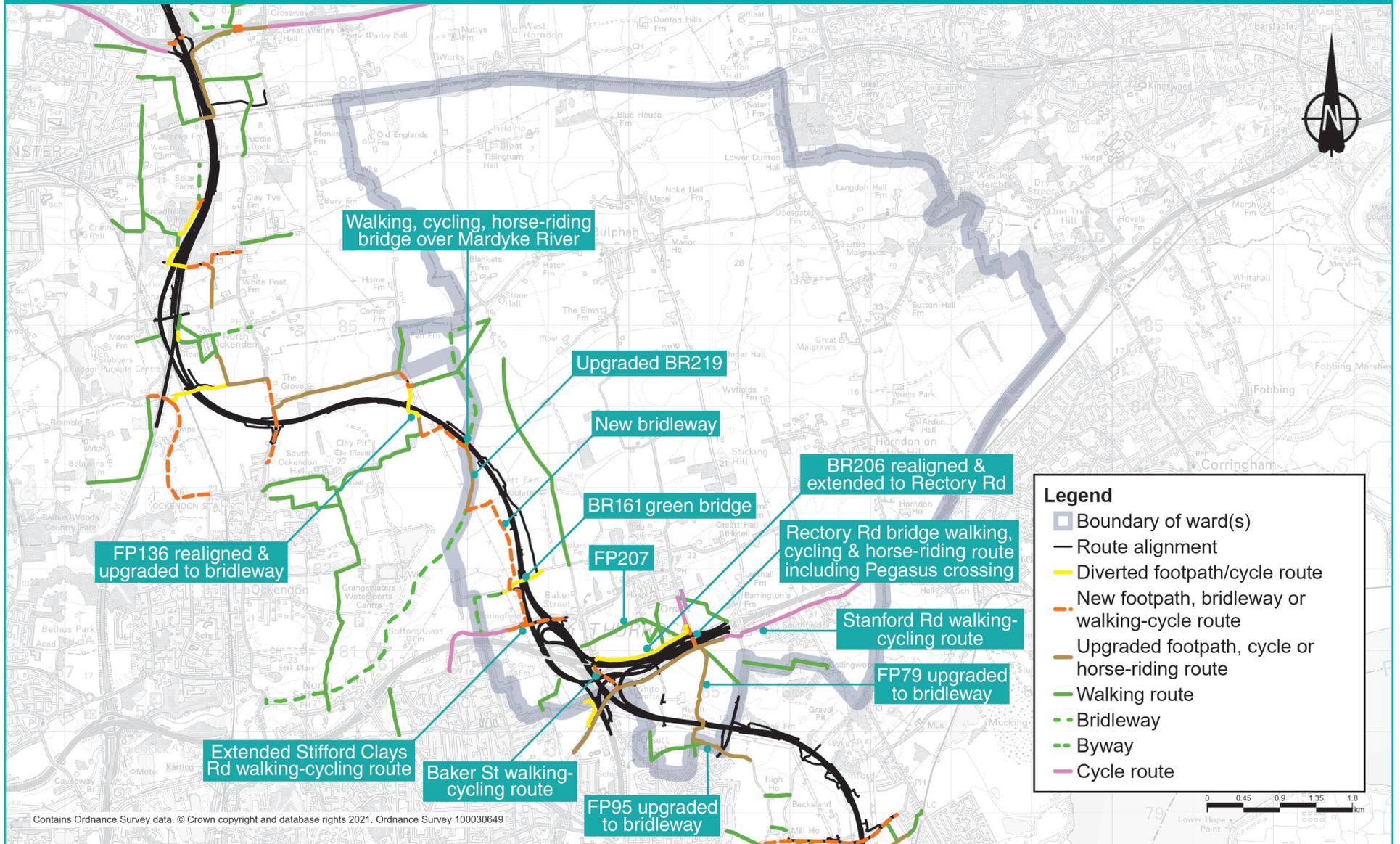
- Baker Street would be closed south of the A13 for five years while the road is realigned and used as an access route for construction vehicles. A diversion route for vehicles to the north of Baker Street would be created.
- The pedestrian-cycle track that runs along the south side of the A1013 Stanford Road would need to be closed for less than a week when traffic is diverted onto the new bridges over the project.
- The Stifford Clays Road would remain open throughout construction via a diversion adjacent to the existing road to allow the construction of two new bridges over the project and to realign the Stifford Clays Road, including provision of new off-road cycle track would require temporary closure of the route.
- Rectory Road bridge would need to be closed for one year during the construction of the new bridge that would cross the A13 affecting the walking-cycling route.

16.5.2 Operations

Overall, the proposals for walking, cycling, and horse riding include more than 46km of new, diverted, extended or upgraded footpaths, bridleways and cycle routes. These would provide greatly improved connections across the project. We developed our proposals after consultation and engagement with local communities and stakeholders. For an overview of the proposed improvements to footpaths and bridleways across the Lower Thames Crossing, see chapter 2 of the Operations update.

- Footpath FP79 would be permanently realigned locally over the project by means of a new bridge and would be resurfaced and designated as a bridleway. The bridge crossing the project would include parapets made to equestrian standard.
- A section of footpath FP95 would be resurfaced and upgraded to a bridleway.
- Footpath FP97 would see a shortening of the path at the A13 end.
- A section of footpath FP136 would be upgraded to a bridleway, including a new footbridge, suitable also for horse-riders, taking the bridleway over the new road. The new section of bridleway would connect to BR219.

Figure 16.15: Proposed footpaths, bridleways and cycle routes Orsett ward



- Footpath FP207 would be permanently closed where this path clashes with the project. This footpath was severed by the existing A13 junction when this was constructed and appears to no longer be accessible. No diversion route would be provided.
- Bridleway BR161 (Green Lane) would be realigned over a new green bridge over the new road. The bridge would be suitable for walking, cycling and horse-riding.
- Bridleway BR206 would be realigned and extended as far as Rectory Road.
- Bridleway BR219 would be upgraded and resurfaced prior to reopening. The route would include a new bridge over the Mardyke for equestrian and cycle use connecting to new bridleway connection to FP136 (upgraded to a bridleway), and from Stifford Clays Road, across Green Lane up to the Mardyke BR219.
- Baker Street would reopen along a new realignment and include construction of a new off-road pedestrian-cycle track parallel to and east of Baker Street with road and surface improvements.
- Once operational a new off-road cycle track parallel to, and south of A1013 Stanford Road, would be opened with an adjacent grass verge for horse-riding. This cycle route would cross the project via a new pegasus crossing (suitable for horse-riders, as well as walkers and cyclists) connecting A1013 cycle track and Rectory Road bridge cycle track.
- The Stifford Clays Road would reopen with new pedestrian-cycle track connections over the newly constructed bridges. This new provision would connect to the existing network west of Stifford Clays Road, including new pedestrian-cycle track route that would connect into new bridleway connection from Green Lane to Stifford Clays Road.
- Rectory Road bridge would reopen widened to include segregated pedestrian-cycle and equestrian tracks connecting to the realigned A1013 and Rectory Road cycle tracks. The new walking cycling horse-riding routes over Rectory Road would connect to the extended routes BR206 to FP79, which would both be designated as bridleways.

16.6 Visual

Existing situation

Views towards the land on which the project would be built from the main populated area are mostly limited to homes on the south and west edges of Orsett and settlement of Baker Street.

Other views towards the land on which the project would be built are from the local footpath network, public rights of way crossing Orsett Fen, Mardyke Way, and local cycle routes along Stanford Road and Stifford Clays Road/B188 through Baker Street.

Current views north and west from Baker Street towards the land on which the project would be built are over relatively flat agricultural land, punctuated by woodland belts and overhead lines, and softened by garden or boundary vegetation. There are filtered views from the edge of Orsett over playing fields to the south and relatively flat agricultural landscape to the west.

Views from the public rights of way south of the A13 towards the land on which the project would be built encompass gently rolling agricultural land crossed by prominent overhead lines. Views from the public rights of way network immediately north of the A13 are mostly of flat agricultural land, with small scale pastoral fields and paddocks adjoining Baker Street. South of Orsett, views from the public rights of way network include playing fields, allotments and agricultural land.

Views towards the land on which the project would be built from public rights of way crossing Orsett Fen and from Mardyke Way, reveal a mainly flat and open landscape of large arable fields bounded by hedgerows and trees, and crossed by an overhead power line.

16.6.1 Construction

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.

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

- Highway works to the A13
- Construction of the proposed A13/A1089 junction and the project's main road
- Construction of Green Lane green bridge
- Establishment and operation of the Brentwood Road Compound, Long Lane Compound A, Long Lane Compound B, Stifford Clays Road Compound West, Stifford Clays Road Compound East and Mardyke Compound
- Establishment and operation of the Green Lane, Stanford Road, Stifford Clays Road, Long Lane, Hornsby Lane and Brentwood Road ULHs
- Utilities works, including overhead power line diversions

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

Construction impacts

Views from homes on the south and west edge of Baker Street would include construction of the Lower Thames Crossing/A13 junction, partially softened by existing vegetation. To the north, there would also be views of construction, including sight of Stifford Clays Road compound East for a small number of homes. Utilities works within the Baker Street settlement are also likely to be visible, with construction activities occurring within the road corridor of the B188 and Stifford Clays Road.

Homes on the southern edge of Orsett are likely to have a limited view of road construction due to the intervening vegetation along the settlement edge or outlying fields. There may be some views of gas diversion works to the west of Orsett, however, these activities would be partially screened by vegetation along Mill Lane.

Road construction would be clearly visible from some public rights of way and the local cycle route along Stanford Road to the south of the A13. Views from here would include construction compounds, Utility Logistics Hubs, and utilities works including overhead power line diversion work. From the public rights of way network immediately north of the A13 and local cycle route along Stifford Clays Road/B188, the A13 junction construction would be visible, including the A13 widening and distant views of overhead line diversion works.

From the public rights of way crossing Orsett Fen and from Mardyke Way, views of the Lower Thames Crossing construction would be prominent.

Measures to reduce visual impacts of construction

These would include locating construction compound facilities greater than six metres in height within Stifford Clays Road Compound East, to maximise the distance from residential properties on Stifford Clays Road and Baker Street, where possible.

The visual impacts of the project would be controlled through the range of good practice measures set out in the CoCP and the REAC.

16.6.2 Operations

When the Lower Thames Crossing opens, the new A13/A1089 junction and associated widening of the A13 would be complete, including the Orsett Fen and Mardyke Viaducts. The former construction compounds and Utility Logistics Hubs would have been restored to the landowner or to agricultural use.

Further information on the completed project are provided in the Overview section above.

Operational impacts

The main visual impacts from Baker Street would be sight of the completed new road/A13 junction including prominent road embankments. However, a false cutting would help screen views of traffic. From Orsett, there are likely to be limited views of the completed new road which would be largely screened by proposed planting.

When the road opens, views from the public rights of way and local cycle route along Stanford Road to the south of the A13 would include the completed Lower Thames Crossing/A13 junction, softened by proposed planting. The diverted section of overhead line would appear similar to the existing overhead line.

From the public rights of way network immediately north of the A13 and local cycle route along Stifford Clays Road/B188, there would be views of the Lower Thames Crossing/A13 junction within a generally flat rural landscape. Planting on the Green Lane green bridge would help to integrate the structure into this surrounding landscape.

From the public rights of way crossing Orsett Fen and from Mardyke Way, there would be views of the Lower Thames Crossing and the Orsett Fen and Mardyke Viaducts. However, these would be partially softened by woodland mitigation planting.

Measures to reduce visual impacts of the operational project

The primary mitigation measures within this ward include screen planting and false cuttings, helping to screen views of the new road and traffic and integrate the project into the surrounding landscape.

16.7 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 Orsett ward is mainly a result of road traffic noise from the A13, A128, A1089 and the A1013. There is also noise from other roads, agriculture and other human activities.

As part of our environmental assessment process, we carried out surveys of existing background noise at 10 locations in the ward, which were agreed with the local authority. The levels monitored at these locations recorded average existing noise levels in the range of 46 to 71 dB(A)² during the day and 41 to 58 dB(A) during the night.

In order to understand how noise levels would vary with and without the project, we use 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 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 40 to 77 dB(A) during the day and from 29 to 62 dB(A) during the night at the identified locations within the ward. As such, our noise assessments predict that by opening year there will be a noticeable change 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.

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.

16.7.1 Construction

Daytime construction noise impacts

The main construction activities that are expected to create a slight increase in noise and vibration levels in this ward are those associated with A1089 upgrade works, A13 junction upgrade works and main alignment and as well as selected utilities works.

There would be seven main works compounds and five Utilities Logistics Hubs located in Orsett ward. These are described in the Project description section above.

Although not located within the ward, the Green Lane Utility Logistics Hub may contribute to the noise impacts experienced within this ward due to how close it is to the ward boundary.

There would also be project haul roads built and used during the construction period, these are shown in the Project description.

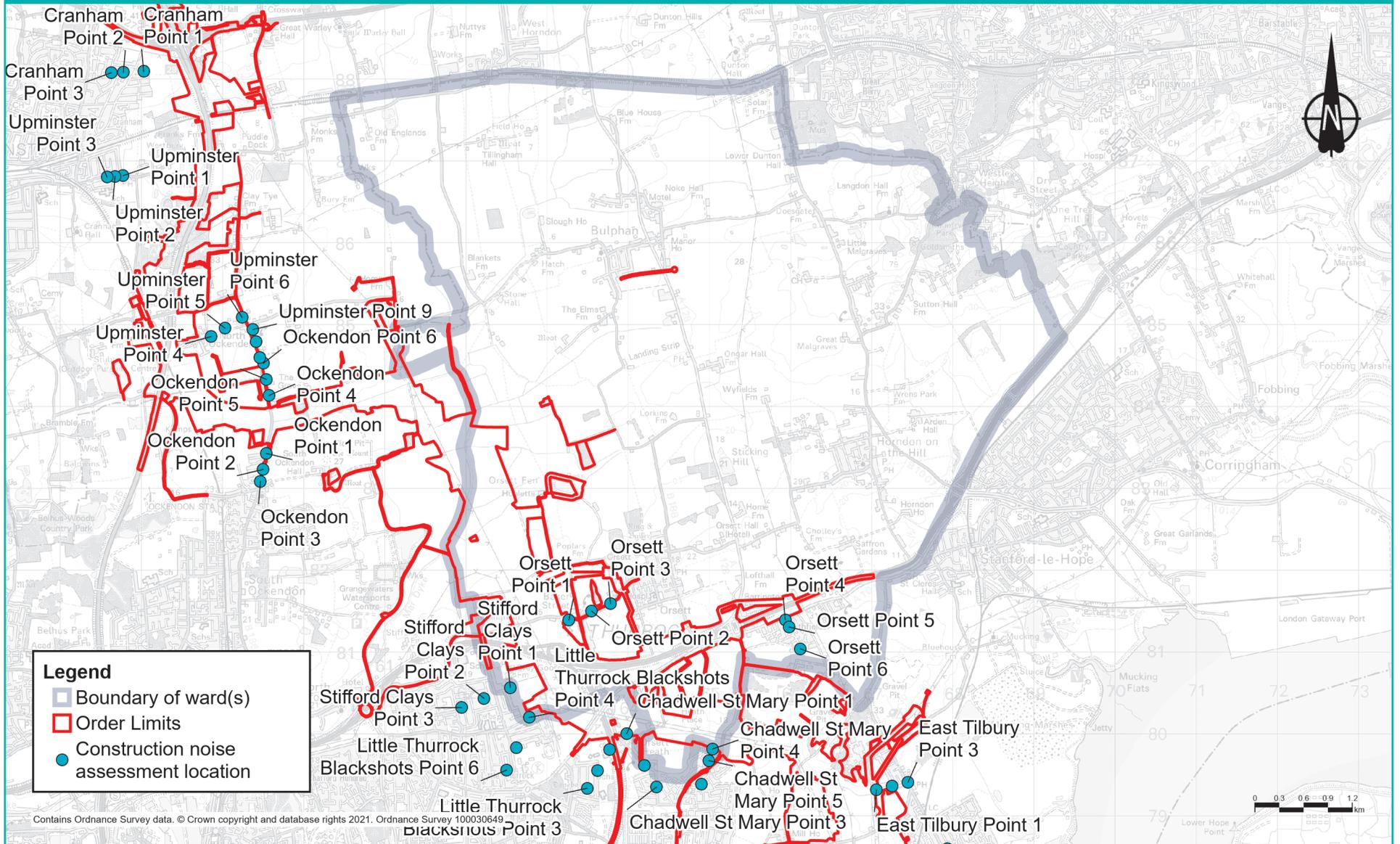
Within the ward there are six proposed structures expected to be constructed using vibratory or percussive piling, but potential vibration impacts of these structures would be less than 10 days.

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

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 16.16 below shows the locations at which we have predicted the daytime construction noise during the project's construction period.

Figure 16.16: Construction noise assessment locations in Orsett ward



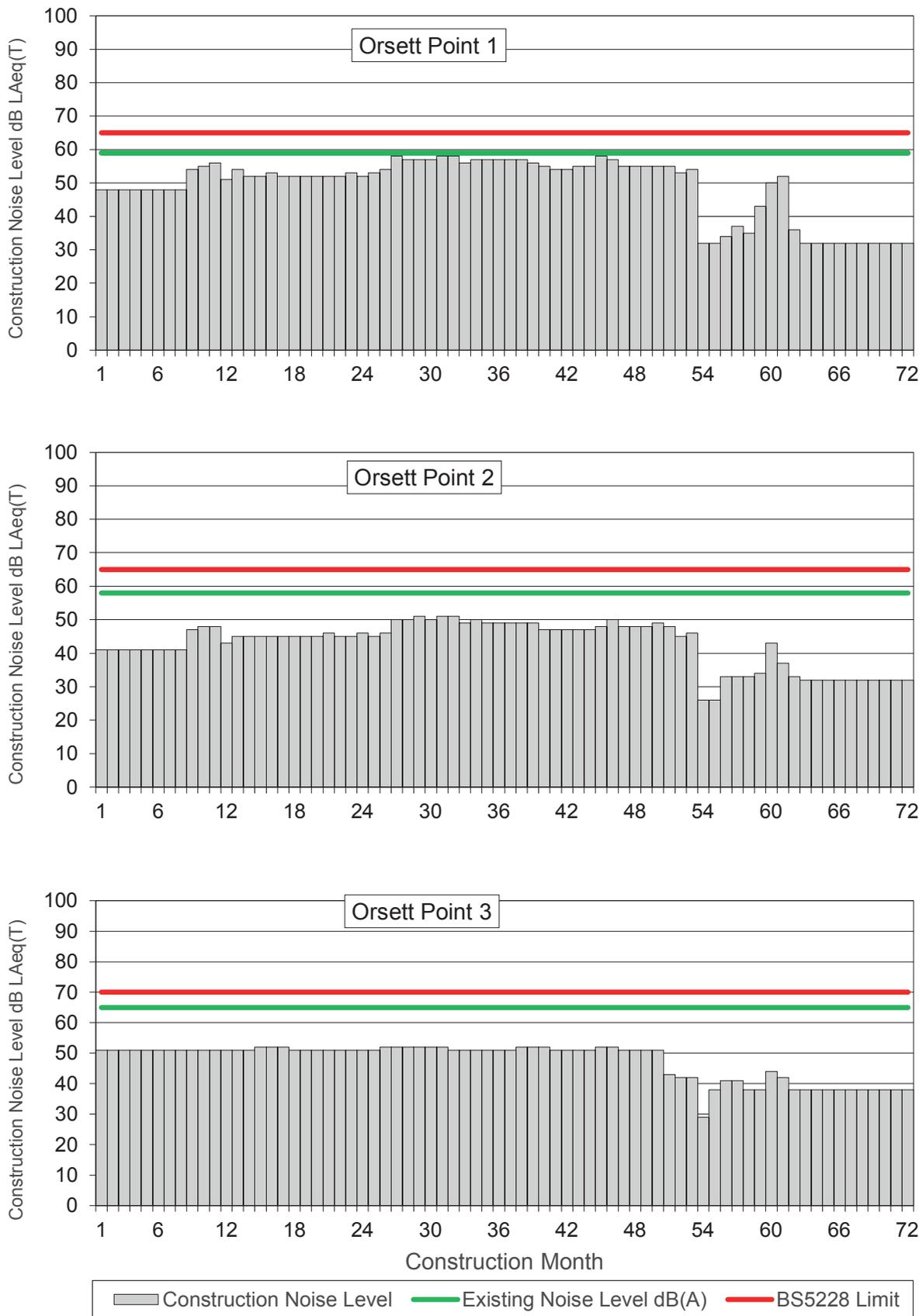
Each vertical bar in figure 16.17 and in figure 16.18 show the predicted noise levels for that month of the construction period (from month 1 to month 72). The horizontal green line in each chart represents the existing background noise level at each assessment point without the project. The horizontal red line shows the level at which construction noise would exceed defined thresholds (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 it.

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 16.17 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 58dB 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 26 to 51dB 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 3, construction noise levels are predicted to range from 29 to 52dB 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.

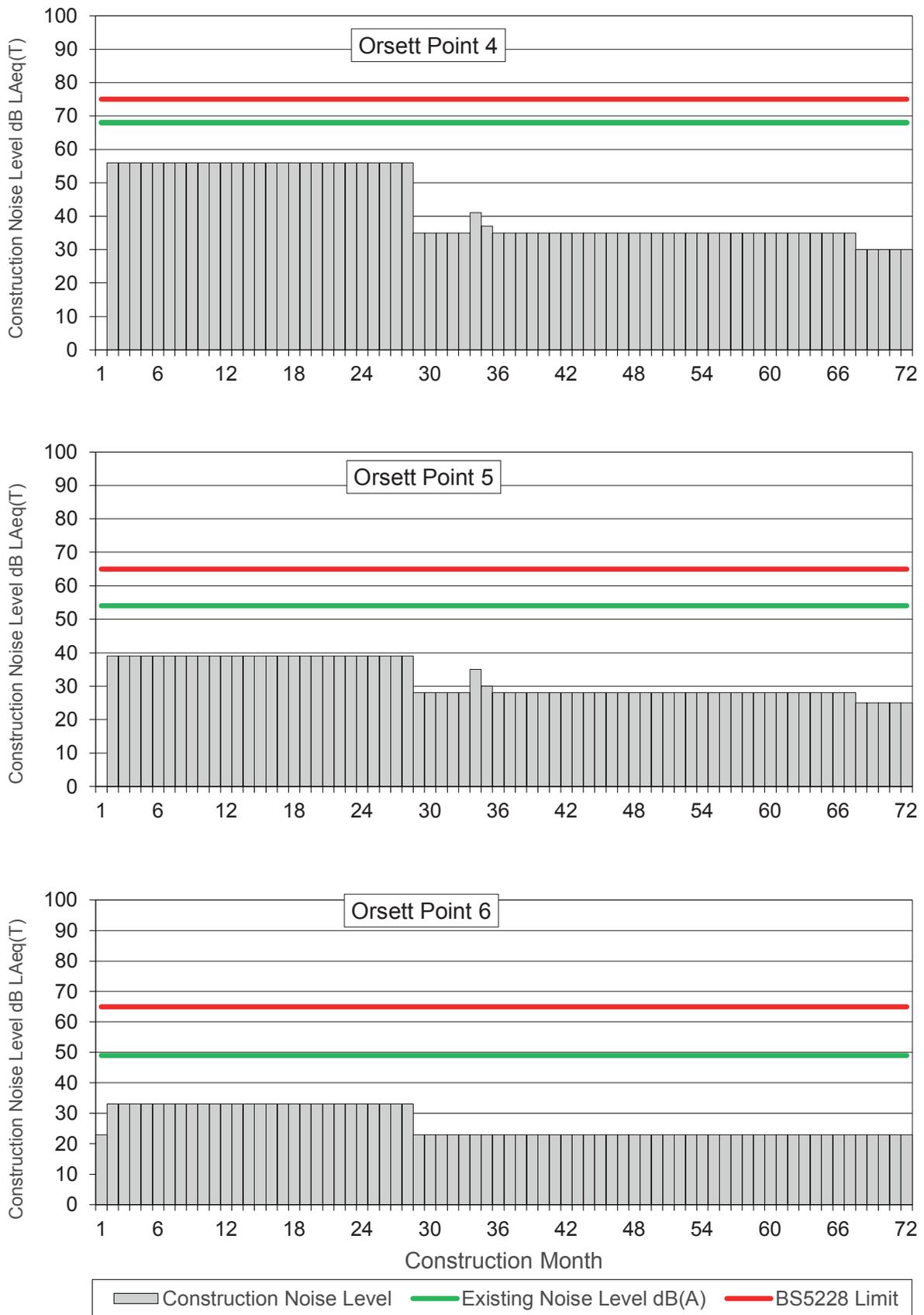
Figure 16.17: Construction noise by month for points 1, 2 and 3 in Orsett



With reference to figure 16.18, the following summarises the noise level changes over the construction period for points 4 to 6:

- At point 4, construction noise levels are predicted to range from 30 to 56dB 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 5, construction noise levels are predicted to range from 25 to 39dB 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 6, construction noise levels are predicted to range from 23 to 33dB 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.

Figure 16.18: Construction noise by month for points 4, 5 and 6 in Orsett



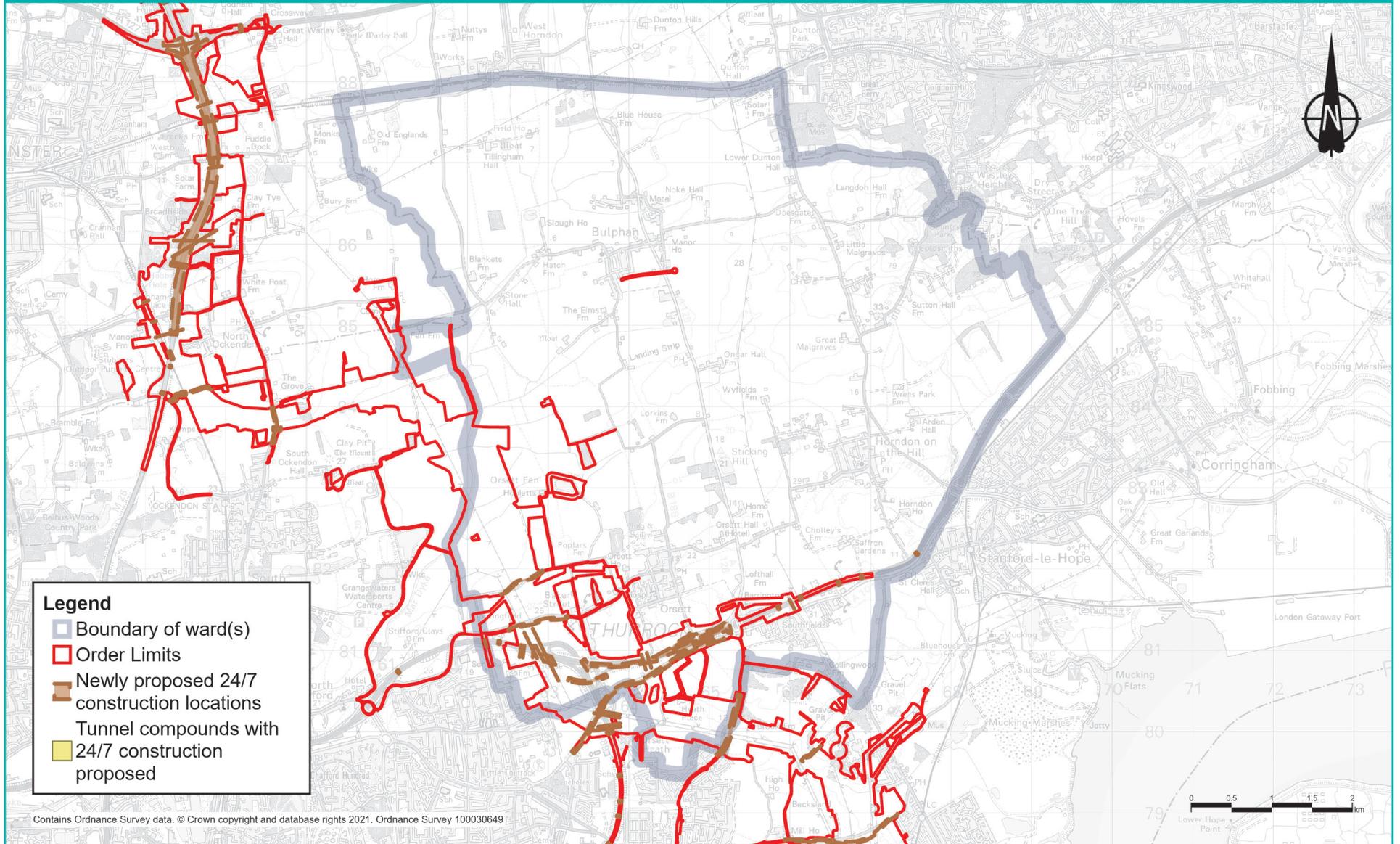
24/7 construction working

In addition to the changes to the daytime noise impacts reported in the section above, 24-hour seven-day construction working is proposed at the locations shown in figure 16.19.

These works have been identified as they may need to be undertaken at night to maintain safety and reduce disruption to road and utility networks. The duration for the works within this area is anticipated to be night-time or weekend possessions (for example, road closures) for highways and utilities works. Examples of activities that may be required during additional working hours include surface tie-ins, road resurfacing, bridge works, highway technology installations, utilities installations and erection and removal of overhead line equipment.

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

Figure 16.19: Newly proposed and tunnel 24/7 working locations in Orsett 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, except along the roads where increases in noise levels have been predicted. For more information about how we define noise impacts, for example, negligible, minor, moderate and major, see chapter 1.

Table 16.4: Construction traffic noise impacts in Orsett ward

Affected road(s)	Predicted noise impact	Construction year(s)
Baker Street	Minor increase in noise levels	2 and 3
Prince Charles Avenue	Minor increase in noise levels	2
High Road	Minor increase in noise levels	2
Rectory Road	Minor increase in noise levels	1
Conway's Road	Minor increase in noise levels	1
Hornsby Lane	Moderate increase in noise levels	4
Hornsby Lane	Major increase in noise levels	1, 2 and 5
Westbound exit from the A13 onto Dock Approach Road	Minor increase in noise levels	2

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 loose body fittings or exhausts do not rattle or vibrate
- using silenced equipment where available, in particular silenced power generators and pumps
- no music or radios would be played for entertainment outdoors onsite
- site layout would be planned to ensure that reversing is kept to a practicable minimum. Required 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 adopted where reasonably practicable 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 as opposed to generators, where possible
- minimisation of construction vehicle traffic by using a 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.

16.7.2 Operations

Operational impacts

Within this ward, the project route and the proposed improvements to the A13 junction are located at the south western part of the ward.

Direct noise impacts from the route, the proposed A13 junction and widening of the existing A13 would be experienced in the south-western section of the ward. There would also be indirect noise impact as a result of changes in traffic flow and traffic speed on the existing road network within the ward.

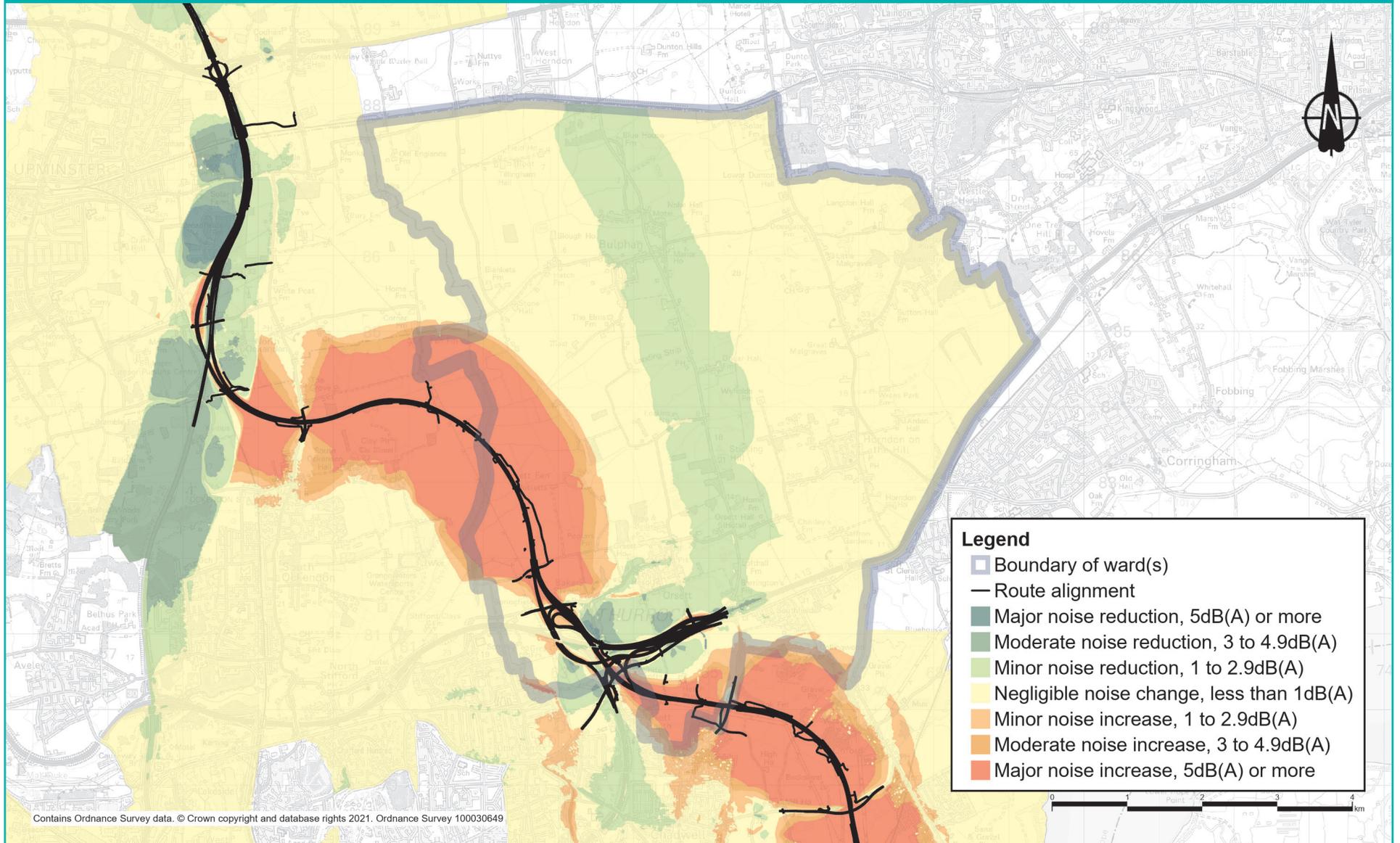
Figure 16.20 shows the predicted changes in road traffic noise in the opening year of the project. Within the ward, changes in road traffic noise at identified noise sensitive receptors are predicted to range from major decreases in noise levels of greater than 5dB to major increases in noise levels of greater than 5dB.

Measures to reduce impacts 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. Proposed noise barriers are shown in the Project description section above. 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).

Figure 16.20: Noise impacts during operation in Orsett ward



16.8 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

Orsett ward is not located within an Air Quality Management Area (AQMA). AQMAs are areas that have been identified by local authorities as areas of poor air quality that require additional monitoring and controls.

16.8.1 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 in the A1089 and the A13 corridors. 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 period 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, although there would be a temporary minor worsening in air quality in the area around the A1089 and the A13 corridors as a result of traffic management in place from 2025 to 2027. However, there would be a temporary minor improvement in air quality along the A128 Brentwood Road as a result of a traffic management in place in 2024. 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 during 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 entry AQ006).

16.8.2 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 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 that are sensitive to changes in air quality) within the ward, close to east of the A1089 and Baker Street and along the Stanford Road A1013 that are predicted to experience a minor worsening in the air quality for nitrogen dioxide (NO₂), the main traffic-related pollutant³. The highest modelled yearly average NO₂ concentration within this ward is 31.3 µg/m³ (namely, Stanford Road A1013), which is 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).

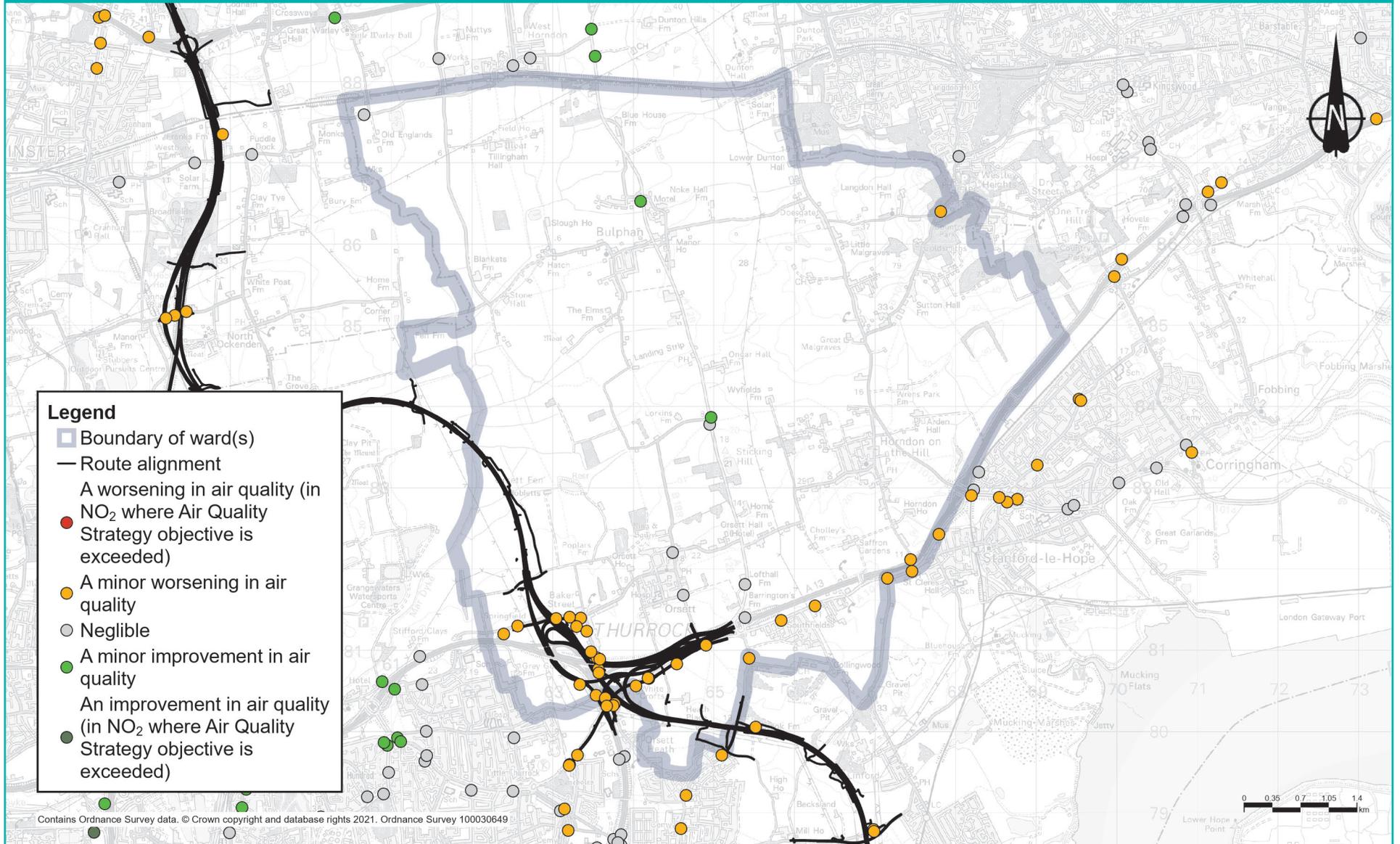
³ NO₂ levels are measured in 'micrograms per cubic metre', or µg/m³, where a microgram is one millionth of a gram.

In addition to our assessment of NO₂, our assessment predicts 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.

Figure 16.21: Predicted changes in NO₂ levels within Orsett ward once the new road is open



16.9 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.

The Orsett ward is characterised by an older population (nearly a third of its residents are aged over 60 – a significantly higher proportion than for Thurrock as a whole and nationally). Compared to wards throughout Thurrock, Orsett has a low ethnically diverse population, with a significantly higher proportion of white residents compared to the England average, 94.6% and 85.4% respectively.

As a whole, Orsett has very low rates of deprivation. However, an area to the south-east of the ward is among the top 10% most deprived in England, according to the Government's Barriers to Housing and Services domain which measures barriers to housing and key local services. Economic activity rates in Orsett are relatively low, compared to Thurrock as a whole, 67.5% and 79.1% respectively. The proportion of benefit claimants are also comparatively low compared to Thurrock and wards throughout Thurrock. This reflects the high proportion of elderly people in Orsett who are at retirement age. It also has the highest proportion of privately owned households compared to Thurrock as a whole. In addition, Orsett has a significantly lower proportion of households with no car or van compared to Thurrock as a whole, 6.7% and 20.1% respectively.

Orsett residents generally report high rates of very good health, the highest of all the wards across Thurrock, and the highest proportion of residents who state that their day-to-day activities are not limited. Male and female life expectancy at birth is higher here than for Thurrock, and similar to England. Deaths from respiratory complications, heart diseases and cancer are lower than rates in Thurrock and similar to rates in England as a whole.

16.9.1 Construction

Construction impacts

Construction activities affecting Orsett ward residents are presented in the Overview section and relate to: the construction of the route and the creation and operation of the associated compounds, utility diversions, the proposed A13/A1089, a new bridge over the A13, works to the A1013, the Orsett Heath Viaduct, works to Baker Street between the A13 and A1013, the relocation of Gammon Field Way travellers' site. In addition, seven construction compounds would be situated within Orsett.

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 the construction stage. Through good communications and engagement, providing people with information about when construction works would be taking place and its impacts, then 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). The relationship between mental health and unemployment is bi-directional. 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. Orsett residents are likely to be
- affected by changes in accessibility and delays to local journeys due to temporary road closures during construction and the permanent closure of Hornsby Lane
- This may be the case for people who are more dependent on public transport and have less choice about method and route travelled
- There are few properties in the Orsett ward within 200 metres from the Order Limits and are therefore unlikely to be affected by dust or emissions during construction. Those properties within 200 metres may experience air quality changes as a result of increased dust and emissions from nearby construction
- Based upon reasonable worst case assumptions, there are likely to be construction noise impacts on Nos. 1-3, Five Chimney Cottages, Stanford Road
- There are likely to be significant adverse effects for construction traffic noise predicted in Orsett – particularly along Brentwood Road, Baker Street, Church Road, Stanford Road and High Road
- Temporary adverse visual effects have been identified in Orsett

Measures to reduce impacts on health during construction

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 section 16.6 (Visual impacts), section 16.7 (Noise and vibration impacts) and section 16.8 (Air quality impacts). Further information relating to mitigation measures for these areas is set out in the CoCP, the 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). For more information about these documents, see chapter 1 of the Construction update.

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 in order to reduce mental health and wellbeing impacts associated with uncertainty, stress and anxiety. The CoCP sets out proposals for community engagement, setting out how we would continue to liaise with local communities, stakeholders and any affected parties to make sure they are kept informed of our construction works, their progress and associated programme.

16.9.2 Operations

Operational impacts

The assessments undertaken for air quality show that the operation of the new road would result in deteriorations and improvements in local air quality as a result of changes in traffic flow and the works associated with the project's construction. However, those properties modelled within the Orsett ward are predicted to be well below the air quality thresholds for the key traffic related pollutants, namely nitrogen dioxide (NO₂) and particulate matter. The project is not expected to result in significant air quality changes.

The assessments undertaken for noise have shown that there would be direct adverse noise impacts as a result of the project for people in the Orsett ward. Conversely, beneficial changes in road traffic noise levels have also been identified in Orsett. In respect of visual impacts, significant adverse visual impacts in the opening year of the new road have been identified.

A proportion of residents may experience anxiety or stress associated with perceptions of environmental change as a result of a major road project. As with the construction stage, different groups in the Orsett population may be more susceptible to anxiety and stress than others.

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.

16.10 Biodiversity

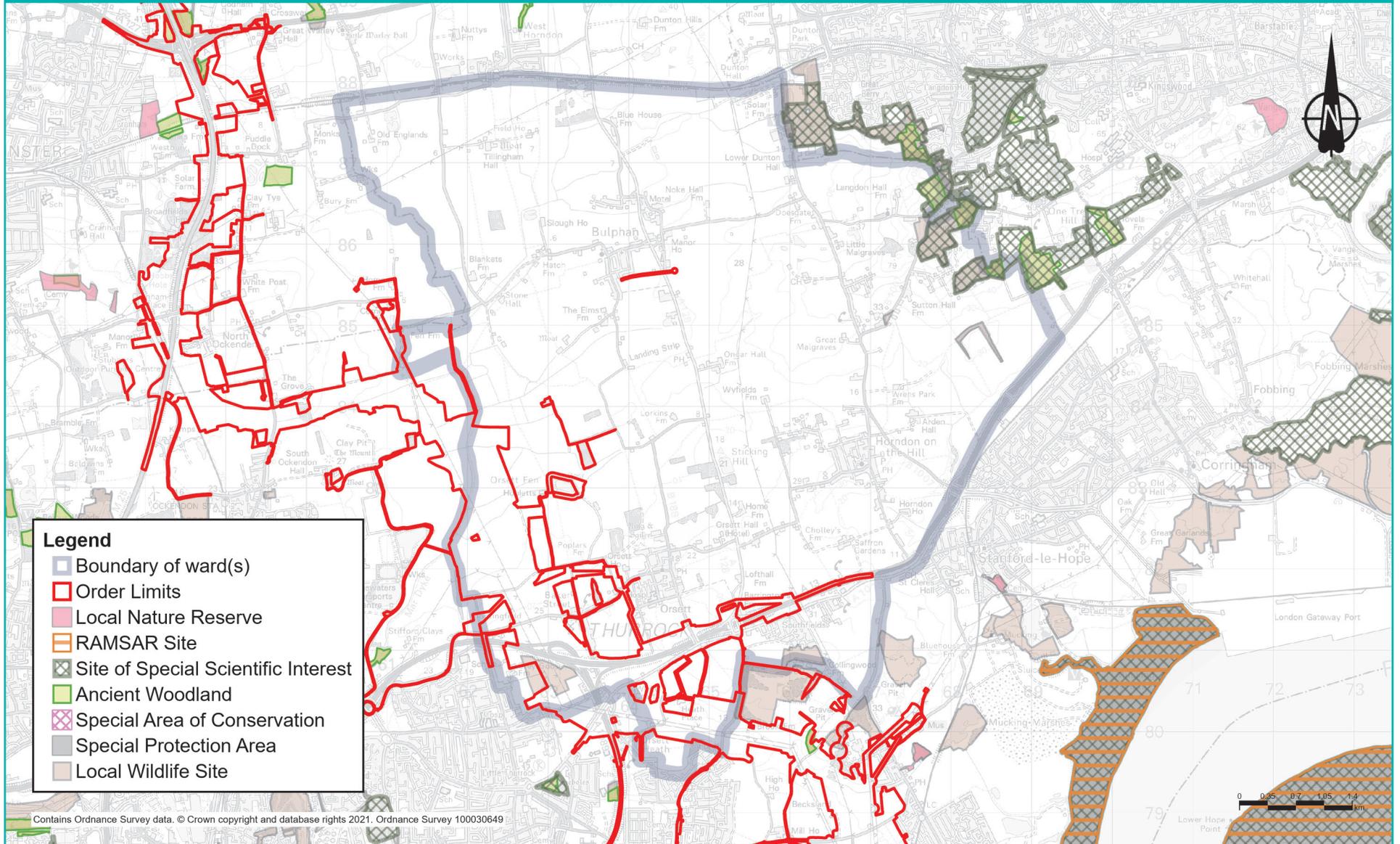
Existing situation

In Orsett, the main habitats within the Order Limits are areas of arable farmland with a large number of watercourses. There are also areas of pasture, rough grassland, scrub and woodland.

There are no designated sites in Orsett within 2km of the Order Limits. Within 500 metres of the Order Limits, the non-designated sites are Mucking Heath Local Wildlife Site (LWS) and Blackshots Nature Area LWS.

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 including bats, badgers, water vole, otter, terrestrial invertebrate species, great crested newts and reptiles.

Figure 16.22: Designated and non-designated biodiversity sites in Orsett ward



16.10.1 Construction

Construction impacts

Project construction would require temporary and permanent removal of areas of habitat from the route alignment. This habitat consists of arable fields, scrub, rough grassland and watercourses and supports a range of protected and notable species. These would be affected by construction through direct habitat loss (the loss of badger setts, including a main sett, bat roosts, water vole, reptiles, great crested newts and invertebrate habitat); fragmentation of habitat (which includes the loss of three bat commuting routes); and disturbance to the 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 no nests are disturbed or destroyed. Where protected species are present, these would be moved away from the site before construction either through habitat manipulation (for example strimming to reduce the height of vegetation and displace reptiles), or translocation. Where required, works affecting protected species would be carried out under a Natural England licence. Mitigation measures would include the creation of an artificial badger sett to replace the loss of the main sett. Boxes to support bats and birds would be set up within retained habitat.

Areas of open mosaic habitat (mixture of bare ground, scrub and grassland with areas of aggregates (mixture of gravel/excavated materials) that have been landscaped to provide south-facing slopes) would be created to provide good quality habitat for a number of species, particularly invertebrates, reptiles and amphibians including great crested newts. This habitat would also be suitable for the breeding bird assemblage in this area. Ponds would be included to further diversify the habitats, and provide suitable conditions for breeding great crested newts. A large area of wetland habitat would be created adjacent to the Mardyke. This would include areas of ditch and reed bed habitat suitable for a number of species, and designed for use by water voles. These are shown in a map in the General Arrangement drawings.

To provide habitat connectivity, the project would be on a viaduct in a number of areas to allow animals to commute under the new road. In addition, a green bridge would be constructed at Green Lane which has been designed at the location of a key bat commuting route.

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.

16.10.2 Operations

Operational impacts

The operation of the new road has the potential to cause mortality as species would 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 across the new road. For example, the green bridge mentioned above and the areas under the viaduct.

Newly created habitat, including that specifically created to support animals moved from the construction area, 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.

16.11 Built heritage

Existing situation

Conservation areas

Orsett Conservation Area is located within the ward.

Listed buildings

There are two Grade I listed buildings, two Grade II* listed buildings and 49 Grade II listed buildings within the ward. Fifteen of the Grade II listed buildings and one Grade I listed building are located within Orsett Conservation Area.

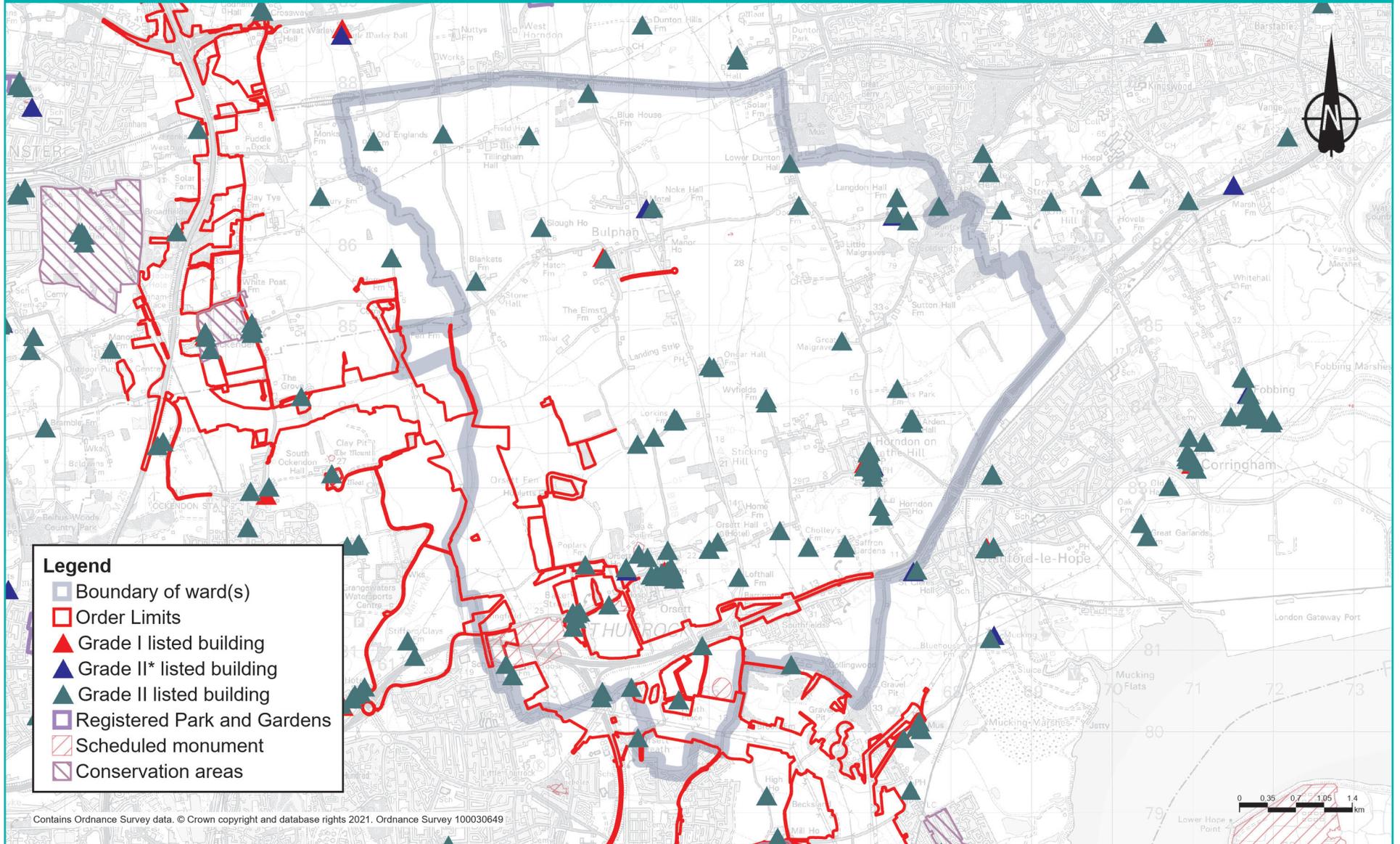
Scheduled monuments

There are five scheduled monuments within the ward.

Structures of historical relevance

The ward contains one historic structure, Orsett Post Mill Roundhouse, which is not a listed building and is of medium value.

Figure 16.23: Built heritage locations in Orsett ward



16.11.1 Construction

Construction impacts

Construction activities include the main road alignment as well as associated earthworks, landscaping and utility diversions. Construction activity would result in physical damage to listed buildings and a scheduled monument.

Listed buildings

Two Grade II listed buildings would be deconstructed and removed, these are Murrells Cottages and Thatched Cottage. This would result in considerable adverse effects to these high value assets.

Eleven Grade II listed buildings would be temporarily affected due to changes within their setting during construction. These high value assets are:

- Whitecrofts Farmhouse (barely perceivable effect)
- Greygoose Farmhouse (barely perceivable effect)
- Heath Place (barely perceivable effect)
- Slades Hold Cottages (barely perceivable effect)
- Thatched Barn at Whitfields (barely perceivable effect)
- The Wilderness (barely perceivable effect)
- Mill House (barely perceivable effect)
- Baker Street Windmill (perceivable effect)
- Whitfields (barely perceivable effect)
- Poplars Farmhouse (barely perceivable effect)

Scheduled monuments

Crop mark complex: this Orsett scheduled monument would receive physical impacts during construction and this high value asset would be considerably affected.

Two scheduled monuments of high value would receive non-physical temporary impacts due to visible and audible construction work within their setting, creating perceivable adverse effects. These are:

- Causewayed Enclosure and Anglo-Saxon cemetery 500 metres east-northeast of Heath Place
- Springfield style enclosure and Iron Age enclosures south of Hill House, Baker Street

Structures of historical relevance

As a result of visible and audible changes within its setting, Orsett Post Mill Roundhouse would receive a barely perceivable and temporary non-physical effect during construction.

Measures to reduce impacts of construction on built heritage

The design and layout of Brentwood Road Compound, Long Lane Compound, Stifford Clay Road Compound West, Stifford Clay Road Compound East and Mardyke Compound would take in to account the setting of heritage assets and avoid light glare, light spill and light pollution during night-time construction. More information can be found in the Design Principles (section S326). The Compounds would also be appropriately screened as set out in the CoCP. Dust and noise reduction measures are also relevant in protecting the setting of heritage assets. Please refer to air quality, noise and vibration and heritage asset section of the REAC measures.

The dismantling of the Grade II listed Murrells Cottages and Thatched Cottage would be mitigated by historic building recording in line with industry standards.

Mitigation in the form of archaeological excavation and recording would take place for the scheduled monument Crop mark complex, Orsett. Refer to the cultural heritage asset section of the REAC measure.

16.11.2 Operations

Operational impacts

Nine Grade II listed buildings would receive non-physical impacts such as light and noise due to changes within their setting caused by the operation of the new road. The presence of the project would increase traffic noise and at night increase the background lighting of the area. The buildings are:

- Whitecrofts Farmhouse (barely perceivable effect)
- Greygoose Farmhouse (barely perceivable effect)
- Heath Place (barely perceivable effect)
- Thatched Barn at Whitfields (barely perceivable effect)
- The Wilderness (barely perceivable effect)
- Mill House (barely perceivable effect)
- Baker Street Windmill (perceivable effect)
- Whitfields (barely perceivable effect)
- Little Wellhouse (barely perceivable effect)

Measures to reduce built heritage impacts of the operational project

Our engineering and landscape designs seeks to avoid or reduce negative impacts to heritage assets. Impacts can be physical or result from changes in their surroundings. In these circumstances the impact occurs as the asset's surroundings contribute to the value of the heritage asset. To preserve the rural and historic character of the landscape, road lighting would be minimised where it is safe and practical, and complies with relevant standards (Design Principle LST.02 and LST.03). The Brentwood Road Compound, Long Lane Compound, Stifford Clay Road Compound West, Stifford Clay Road Compound East and Mardyke Compound would be reinstated after construction to reflect existing field patterns and the surrounding landscape character as outlined under Design Principle S3.05.

16.12 Contamination

Potential sources of contamination have been identified based on land uses, from the review of desk-based sources (historical maps and environmental data). Within this ward, the following have been identified;

- Millers sand and gravel pit landfill. Historical landfill (1948-1965), commercial and household wastes. This gravel pit was excavated in approximately 1938-1955, and removed from historical maps during 1965-1975.
- Welcome Villa petrol filling station (PFS), a former PFS (approximately 1960 onwards) is now residential property. Tanks may still be present.
- Vehicle repair and maintenance garage at A13/A128 junction. This former garage and PFS from approximately 1938-1954, has buildings still present at the site.

The overall impact from these contamination sources is considered to be low, given the mitigation proposed.

16.12.1 Construction

Construction impacts

Construction activities in this ward could include utility diversions, topsoil stripping, earthworks/movements and excavations which could cause the mobilisation of contamination (if present).

There are a number of construction compounds within the ward and stockpiling of soils may occur, along with the storage of materials/chemicals.

During construction, there is the possibility for existing contamination within the ground to become mobilised. There is also a potential risk of accidental oil, cement and fuel spills from construction traffic and the storage of materials.

Some utility diversions would take place close to areas identified as potential sources of contamination. The utility trenches may create pathways for existing contamination to migrate into the wider area.

Measures to reduce contamination management impacts of construction

To reduce the impact to an acceptable level, good practice measures include appropriate storing of equipment and clear soil handling, storage of chemicals and re-use guidance. These would be used during construction to reduce the risk of spreading contamination and spillage or pollution.

To reduce the risk of accidental spillages, procedures would be in place such as designated areas to re-fuel plant, tanks would be bunded, spill kits would be available and incidents would be recorded and managed, with impacted soils being assessed and removed if necessary.

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

For the utility diversions, to reduce the risk of existing contaminant migration, the design of utility works would use ground investigation data should any site-specific remediation be required.

Contamination 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.

16.12.2 Operations

Measures to reduce contamination management impacts of the operational project

Verification reports would be prepared for the remediation that is undertaken in site-specific areas and this would be provided to the local authority. 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.