

Chapter 21: Upminster ward

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

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

21.1 Overview

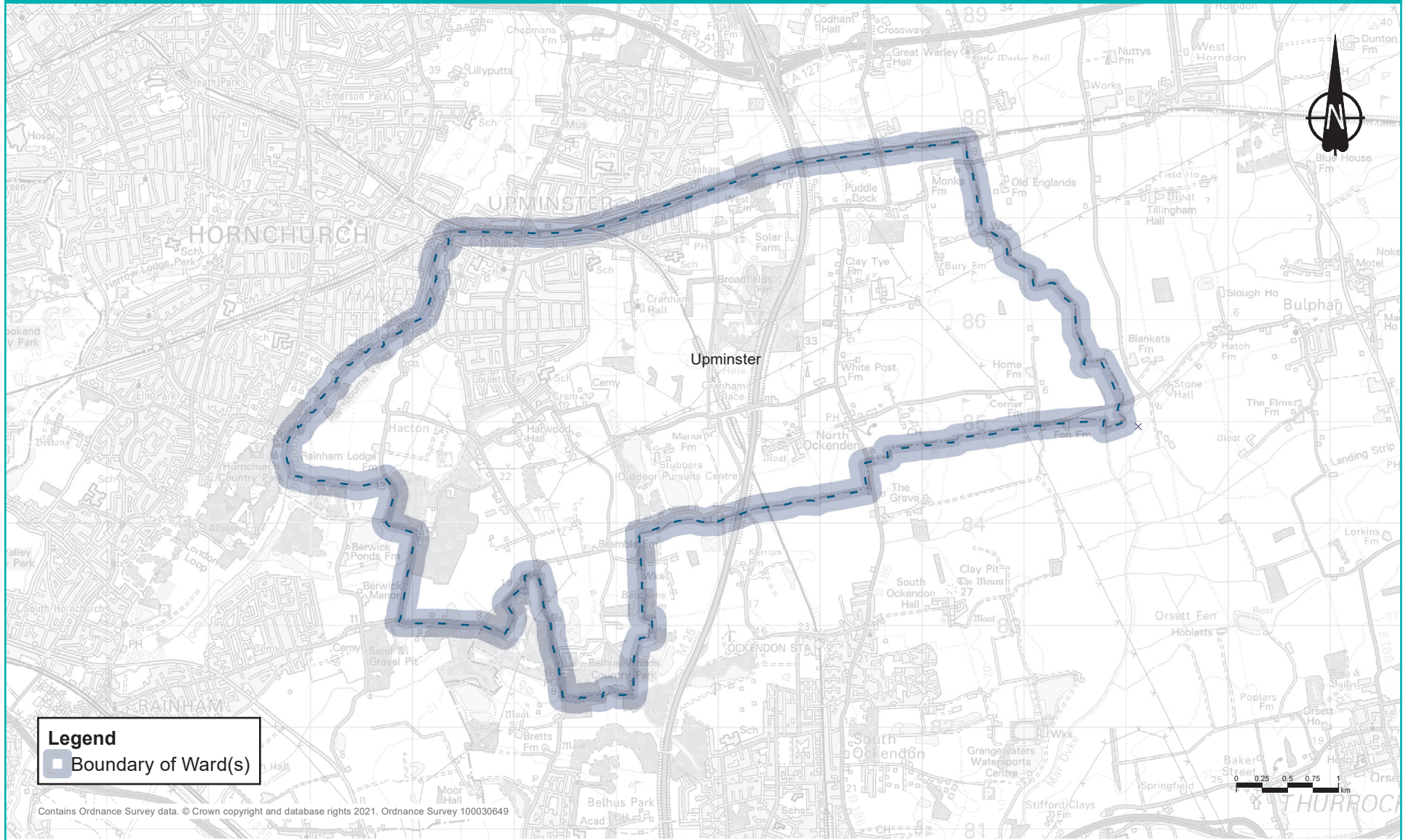
21.1.1 About this ward

Upminster ward is north of Ockendon ward and south of Cranham ward, in the London Borough of Havering. The ward has an area of around 23km² and an estimated population of 13,154¹. The ward is predominantly farmland in the east, with the large residential area of Corbets Tey in the west, along with areas of open space and recreational land including Thames Chase Community Forest and Cranham Golf Course. The M25 runs roughly through the centre of the ward north-south, as does the London, Tilbury and Southend railway line, with the two intersecting in the south of the ward.

Upminster Underground station is on the northern boundary with Cranham ward, while the nearest overground station is Ockendon in Ockendon ward to the south-east.

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

Figure 21.1: Ward boundary map for Upminster ward



21.1.2 Summary of impacts

Table 21.1: Summary of impacts during the project’s construction and operation

Topic	Construction	Operations
<p>Traffic</p>	<p>Impacts</p> <p>Increases to journey times are predicted on Ockendon Road, St Mary’s Lane and the M25. Further details about the impacts of the construction process on traffic flows can be found in the Traffic section of this chapter.</p> <p>Mitigation</p> <p>There are several mitigation measures to reduce the impact of construction on local residents including reducing the use of local roads by construction vehicles. Further details on the mitigation measures can be found in the Traffic section of this chapter.</p>	<p>Impacts</p> <p>Minor changes are predicted in traffic flows once the project is operational. Further details about the impact of the project once operational can be found in the Traffic section of this chapter.</p> <p>Mitigation</p> <p>Regular reporting would take place once the project is operational. Further details about the mitigation measures for Upminster ward can be found in the Traffic section of this chapter.</p>

Topic	Construction	Operations
<p>Public transport</p>	<p>Buses</p> <p>There would be increases to journey times for some local buses within the ward, associated with the traffic management works and, in the early stages of the project construction, with additional traffic on the local roads. While Ockendon Road is closed the 370 bus would have to be diverted. There may be increases to journey times for regional coach services using the M25 between junctions 29 and 30.</p> <p>Rail</p> <p>There would be a night-time rail closure of the London, Tilbury and Southend railway while a new footbridge is constructed. Services would not be disrupted. No impacts on journey times to Upminster station are expected during construction.</p>	<p>Buses</p> <p>In addition, there would be no changes to bus routes through the ward nor any discernible changes to journey times once the project is operational.</p> <p>Rail</p> <p>There would be no discernible changes in access times to Upminster station and no predicted changes to rail services once the project is operational.</p>

Topic	Construction	Operations
<p>Footpaths, bridleways and cycle routes</p>	<p>Impact</p> <p>Five footpaths and one track (not a current public right of way) in Upminster ward would be impacted during the construction of the project. Closures of the footpaths would be between one and five and a half years to allow for utilities diversions, main works construction, the construction of a new footbridge over the Upminster to Grays railway line and for a construction compound. The track (not a current public right of way) would be permanently closed.</p> <p>Mitigation</p> <p>Closures of footpaths would be as short as possible to reduce the impact on the existing public right of way network.</p>	<p>Impact</p> <p>Two footpaths would be permanently diverted and one realigned to form part of a new route that would cross the M25 and link to the Ockendon Road. One footpath would have a section permanently closed west of the M25. An existing track (not a current public right of way) that would be permanently closed during construction would be diverted and connect to the local public right of way network.</p> <p>Mitigation</p> <p>Footpaths that are permanently diverted or realigned would be as close to the existing routes as practicable and would open up new local connections in the existing public right of way network. Three of the footpaths impacted during construction would be upgraded to bridleways. A new bridleway connection would also open in this ward.</p>

Topic	Construction	Operations
<p>Visual</p>	<p>Impacts</p> <p>Views towards construction activities from residential properties on the western edge of North Ockendon would include the construction of the M25 slip road and new views of traffic on the M25. The M25 Compound would be a prominent feature in the views from footpaths on the southern outskirts of North Ockendon. Construction work to build the M25 slip roads on embankments and cuttings would be prominent in views from the Thames Chase Forest Centre.</p> <p>Mitigation</p> <p>The taller facilities within the M25 Compound would be situated as far west as possible. Earth bunds would be created to provide visual screening. The visual impact of the project would be controlled through a range of good practice measures set out in the CoCP and REAC.</p>	<p>Impacts</p> <p>New lighting and parts of Ockendon Road overbridge would be visual from residential properties and footpaths on the western edge of North Ockendon. The tops of new lighting columns would remain visible from Thames Chase Forest Centre.</p> <p>Mitigation</p> <p>False cuttings and landscaping would be used to screen views of traffic and integrate the new road in to the surrounding landscape.</p>

Topic	Construction	Operations
<p>Noise and vibration</p>	<p>Impacts</p> <p>The construction activity associated with the M25 upgrade, the works entrance and exit slips on to the M25, the new road and utility works are expected to create noise in this ward. There would also be 24-hour, seven-day working in some locations. There would be negligible changes in noise from road traffic for a majority of roads within this ward during the construction period, except for Stubbers Lane, Dennis Road, Pike Lane and Pea Lane where increases in noise levels have been predicted.</p> <p>Mitigation</p> <p>Construction noise levels would be controlled through the mitigation measures set out in the REAC. There are also measures presented in the CoCP.</p>	<p>Impacts</p> <p>Once the project is built, communities living in the centre of the ward would experience direct noise impacts from the route and the proposed upgrades. There would also be indirect noise impacts from the changes in traffic flow and speed on the existing road network.</p> <p>Mitigation</p> <p>Low-noise road surfaces would be installed on all new and affected resurfaced roads, and noise barriers would be installed.</p>

Topic	Construction	Operations
<p>Air quality</p>	<p>Impacts</p> <p>As the majority of properties are more than 200 metres, they are unlikely to be affected by dust or emissions during construction activities. Those near Ockendon Road and Clay Tye Road, are within 200 metres and may be affected by dust or emissions. Analysis of the construction phase traffic flows associated with the project indicate a temporary minor improvement in air quality around the M25 from 2025 to 2028, and on the B1421 in 2025, 2027 and 2028. There would be temporary worsening in air quality in the area around Pea Lane, Dennises Lane and Dennis Road as a result of traffic increase during 2025.</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 would be no exceedance of NO₂ and PM₁₀.</p> <p>Mitigation</p> <p>No mitigation is required.</p>

Topic	Construction	Operations
<p>Health</p>	<p>Impacts</p> <p>There are likely to be health benefits as a result of access to work and training opportunities. There are also likely to be changes in the area that may result in negative impacts on health, including mental health and wellbeing. There could also be perceivable changes in the levels of noise from the construction of the new road and construction traffic. There would also be temporary air quality and visual impacts.</p> <p>Mitigation</p> <p>The negative impacts would be mitigated through the good practice construction measures presented in the CoCP and REAC relating to dust emissions, working hours, noise and visual screening, traffic management measures and community engagement. This includes the establishment of Community Liaison Groups.</p>	<p>Impacts</p> <p>There would be positive health benefits associated with reductions in noise levels, and the visual impact would be minimal.</p> <p>Mitigation</p> <p>No essential mitigation is required for health other than those measures described in the noise mitigation and visual sections.</p>

Topic	Construction	Operations
<p>Biodiversity</p>	<p>Impacts</p> <p>The construction of the project would involve the removal of areas of habitats, including woodland, both temporarily and permanently for the new road. The removal of these habitats would affect protected and notable species including badgers, bats, water voles, reptiles, great crested newts, breeding birds and invertebrates.</p> <p>Mitigation</p> <p>Vegetation clearance would be undertaken in winter to avoid disturbing breeding birds. Protected species would be relocated, carried out under a Natural England licence. Boxes to support bats, birds and barn owls would be erected. A green bridge would be built over North Road to connect habitats. New areas of grassland, scrub and bare earth would be created to provide homes for a number of species. Woodland would be created to the south of the Thames Chase woodland to compensate for the loss of wooded areas. Impacts would also be controlled through a range of good practice measures set out in our 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>Newly created areas of habitat would be managed to ensure they provide high-quality environments to support a broad range of plant and animal species. Impacts would also be managed through the range of good practice measures set out in the CoCP and REAC.</p>

Topic	Construction	Operations
<p>Built heritage</p>	<p>Impacts</p> <p>There would be no direct impact to built heritage assets but there would be temporary additional noise, lighting and visible construction activity.</p> <p>Mitigation</p> <p>The design and layout of the M25 and Ockendon Road Compounds would aim to avoid or minimise light pollution during night-time construction. Good practice measures associated with air quality, noise and heritage are set out in the CoCP and REAC.</p>	<p>Impacts</p> <p>Grade I listed Church of St Mary Magdalene and Grade II listed Franks Farmhouse and Barn and Stable Block to the north of Broadfields Farmhouse would likely experience a slight impact through increased traffic noise along the M25.</p> <p>Mitigation</p> <p>Road lighting would be minimised where it is safe and practical to do so. The proposed landscaping and tree planting aims to reduce the impact on these buildings.</p>
<p>Contamination</p>	<p>Impacts</p> <p>None identified.</p> <p>Mitigation</p> <p>No mitigation would be required.</p>	<p>Impacts</p> <p>None identified.</p> <p>Mitigation</p> <p>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.</p>

21.2 Project description

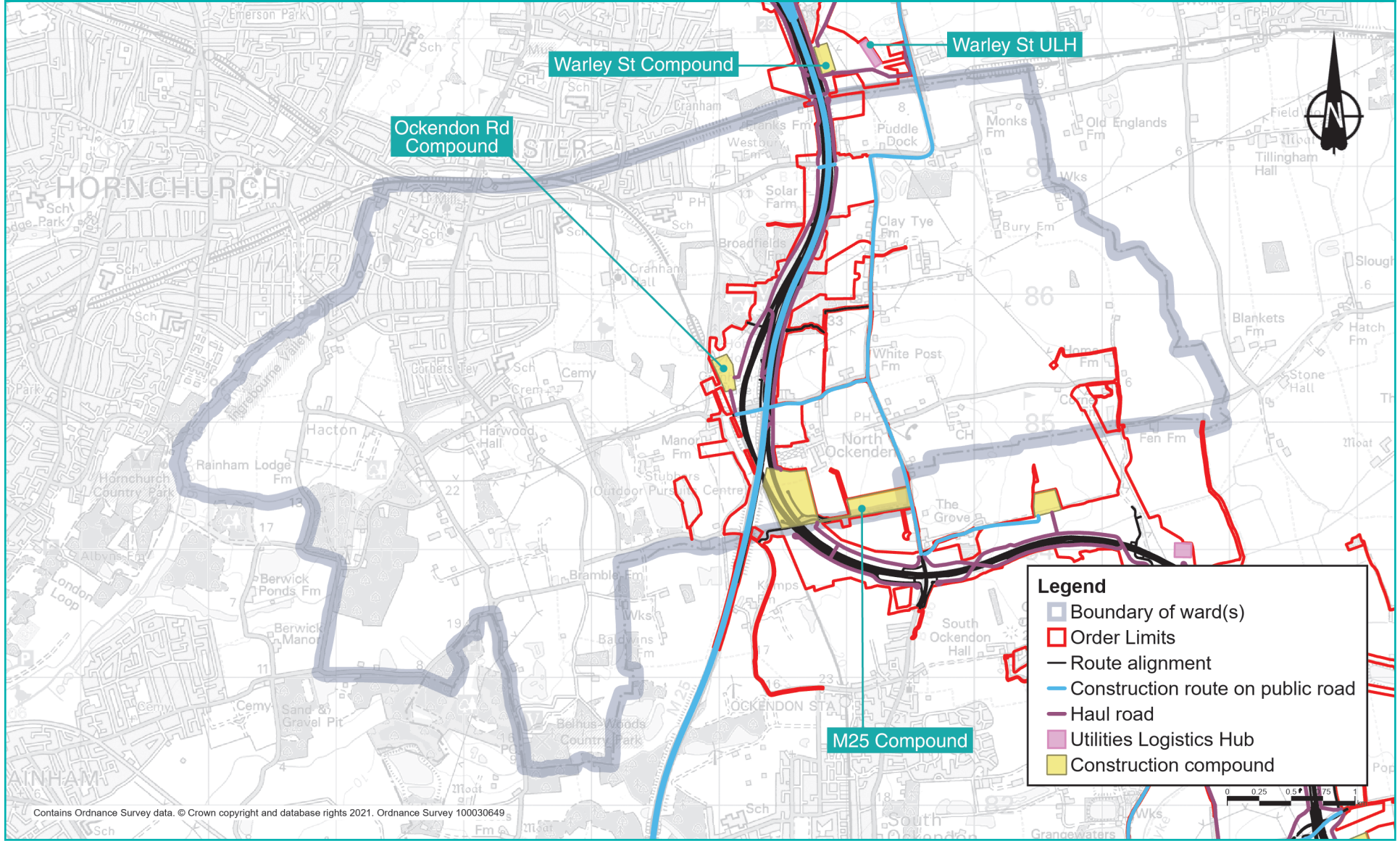
21.2.1 Construction

Construction activities

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

There would be major works in this ward to build the proposed junction between the new road and the M25, along with works to widen the M25 north of the new junction and to move the existing offslip from the M25 northbound towards junction 29. Figure 21.1 shows the proposed Order Limits (the area of land required to construct and operate the project, formerly known as the development boundary) and construction areas within Upminster ward. These works would require the widening of St Mary's Lane bridge and the Shoeburyness railway line bridge. Ockendon Road would be closed to allow the construction of the new overbridge to carry Ockendon Road over the project's route.

Figure 21.2: Main construction areas in Upminster ward



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Widening of the M25 is expected to take two to three years. We would introduce temporary traffic management on the M25, including lane reductions to 60mph speed limit, with these implemented in sections to reduce the impact on traffic. To allow for widening works between the Shoeburyness railway line and St Mary's Lane, we would add two crossing points for construction vehicles on St Mary's Lane either side of the M25. Pedestrian access would be maintained, although traffic management would be required to manage construction traffic.

Works on the Shoeburyness railway line bridge would be carried out in agreement with Network Rail and would likely take place towards the end of the construction programme for around 12 to 14 months. Works on St Mary's Lane would also take about 12 to 14 months, with most taking place without closing the road because construction vehicles would use haul routes running alongside the M25. Specific works would need short-term overnight or weekend closures of St Mary's Lane.

Ockendon Road would be closed for around 18 to 24 months to allow construction of a new overbridge to carry Ockendon Road over the Lower Thames Crossing northbound carriageway. During the period of the closure, necessary to construct the new bridge, we would use a short section of Ockendon Road to allow construction vehicles to cross over the M25.

Works to move the M25 northbound offslip towards junction 29 would take place offline, which would avoid disrupting traffic flow. The onslip from the Lower Thames Crossing to the M25 would be built at the same time. Works to connect the new slip roads to the existing road network would take place towards the end of the construction programme and would require overnight or weekend lane closures on the M25.

As part of the works to build the M25 northbound slip-road and to carry out utility diversions, we propose permanently acquiring part of the Thames Chase Community Forest. We would acquire replacement land to the north and south of Thames Chase Community Forest, which we would landscape to blend in with the current site, with connections to the existing network of footpaths and bridleways. To improve connectivity between sections of the forest east and west of the M25, we would build a new bridge over the M25, suitable for walking, cycling and horse-riding. More information can be found in the section on open space land below.

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.

The M25 Compound and Ockendon Road Compound would be located in Upminster ward. The M25 Compound would be located to the west of North Road and would be the main compound for this section of the project. It would support construction of the M25 widening and the underpass that takes the new northbound slip road beneath the M25. Initially, construction vehicles would use Clay Tye Road to access this compound and the nearby Ockendon Road Compound, which would be built east of Pike Lane. We would build an access road directly from the M25, near Ockendon Road, to allow construction vehicles to access the project worksite without using local roads, this would be done early in the programme. Once complete, Clay Tye Road would no longer be used by HGVs. Smaller workforce vehicles would continue to use Clay Tye Road throughout the construction period.

The Ockendon Road Compound would be located east of Pike Lane, to the north of Ockendon Road. It would support the construction of the new Ockendon Bridge over the new road. We would use Ockendon Road to allow work vehicles to cross over the M25 and access the sites either side of the motorway.

The daily average number of vehicles going to the M25 and Ockendon Road Compounds are shown in table 21.2. These are the number of vehicles going to each compound and there would be the same number of vehicles, on an average weekday, leaving each compound.

Table 21.2: Daily average number of vehicles going to the M25 and Ockendon Road Compounds

Time period	M25 Compound		Ockendon Road Compound	
	HGVs	Cars	HGVs	Cars
January to August 2024	42	138	0	32
September 2024 to February 2025	41	201	60	52
March to May 2025	51	241	65	59
June to October 2025	54	254	180	42
November 2025 to March 2026	42	240	213	33
April to August 2026	58	240	219	44
September 2026 to March 2027	44	240	219	44
April to November 2027	74	217	35	38
December 2027 to March 2028	73	180	32	16
April to July 2028	58	150	0	0
August 2028 to December 2029	10	108	0	0

Utilities

No Utility Logistics Hubs are currently proposed in Upminster ward. Utilities works proposed includes 2km of temporary foul water pipeline to be installed in the B186 North Road, of which 1.6km is in this ward. Traffic management would be required as set out in table 21.3 and in the OTMPfC.

Re-stringing of the existing overhead power lines in the east of the ward is required to complete works associated with crossing the project's main route.

A 3km water main from St Mary's Lane to the south of Ockenden Road would be installed, including a trenchless crossing of the M25 and the London, Tilbury and Southend railway line with works located largely through Thames Chase Community Forest on the western side of the M25.

Multiple trenchless crossings of the M25 are required at St Mary's Lane to divert assets within the vicinity of the M25 widening proposals.

Existing utilities along Ockenden Road would be temporarily diverted south of the works area to complete the construction of the Ockenden Road new bridge and then located into the bridge structure.

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 6. 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 six years from 2024 to 2029. To deliver an efficient and coordinated construction programme, we would divide activities into packages of work. Maps and programmes for the work packages including those for the proposed M25 junction and the M25 widening works can be found in chapters 5 and 6 of the Construction update.

Construction working hours

Most construction work would take place during the core construction hours, 7am to 7pm on weekdays, and 7am to 4pm on Saturdays. Additional repair and maintenance periods (if required) would be 8am to 5pm on Sundays. Noise-generating works would not be carried out outside core hours wherever practicable. However, there would be circumstances when hours may be extended. Typically, this would be to reduce inconvenience to road users by working at night or at weekends when there is less traffic. Activities that would involve works outside core hours within this ward include implementing traffic management measures, joining new roads to existing ones, resurfacing existing carriageways, demolition of structures, and removal or re-stringing of overhead power lines over roads. For safety reasons it would be necessary to carry out work close to railway lines outside core hours when trains are not in service. There may be extended working hours for earth works when days are longer (spring to autumn) and during periods of fine weather. More information about working hours is set out in the Noise and vibration section below and in the Code of Construction Practice (CoCP).

Traffic management

The main traffic management measures in Upminster ward are presented below.

Table 21.3: Main traffic management measures in Upminster ward

Road(s) affected	Proposed traffic management	Purpose	Duration
M25	Closure	To connect the temporary access roads to the M25 and complete removal of the overhead power lines	Night-time closures over short periods associated with specific works activities
M25 southbound	Narrow lanes	To allow construction access works	7 months between March 2025 and October 2025
M25 northbound	Narrow lanes	To allow construction access works	7 months between March 2025 and October 2025
M25 southbound	Narrow Lanes and reduced speed limits	To carry out nearby works	38 months between June 2025 and July 2028
M25 northbound	Narrow Lanes and reduced speed limits	To carry out nearby works	28 months between November 2025 and July 2028
Ockendon Road	Lane closures and traffic lights	To build a temporary 200-metre water connection linking the Ockendon Road Compound to a supply on Ockendon Road	2 weeks between January and August 2024
Ockendon Road	Full closure	To allow construction of new Ockendon Road overbridge	19 months between June 2025 and March 2027
Ockendon Road	Crossing point	To allow construction vehicles to cross	Full construction period (January 2024 to December 2029)
Ockendon Road	Lane closures and traffic lights	To allow modifications to local utility networks and installation of temporary Ockendon Road Compound connections	2 sets of works lasting 6 months each (January to August 2024 and April to August 2026)
Ockendon Road	Closure	To allow for new road alignment to be connected	1 weekend between September 2026 and March 2027
St Mary's Lane	Crossing point	To allow construction vehicles to cross the road	Full construction period (January 2024 to December 2029)
St Mary's Lane	Traffic lights and lane closures	To carry out nearby works and modifications to local utility networks	9 months between September 2024 and May 2025
St Mary's Lane	Closure	To allow for bridge works and modifications to local utility networks	Occasional nights and weekends for specific tasks during the construction period

M25

There would be construction works near the M25 that will require the implementation of narrow lanes and a reduction in the speed limit on the M25 in both directions. The timings of these traffic management measures are:

- M25 northbound, 5.1km in length starting south of junction 29 and running through junction 29 to finish before junction 28, over 28 months from January 2026 to May 2028
- M25 southbound, 5.8km in length, between south of junction 29, through junction 29 and finishing before junction 30, over 38 months from April 2026 to July 2028
- M25 northbound, 0.4km in length, over 7 months from February 2025 to August 2025
- M25 southbound, 0.4km in length, over 7 months from February 2025 to August 2025
- There will be a night-time temporary road closure on the M25 for bridge works, and removal of overhead line equipment.

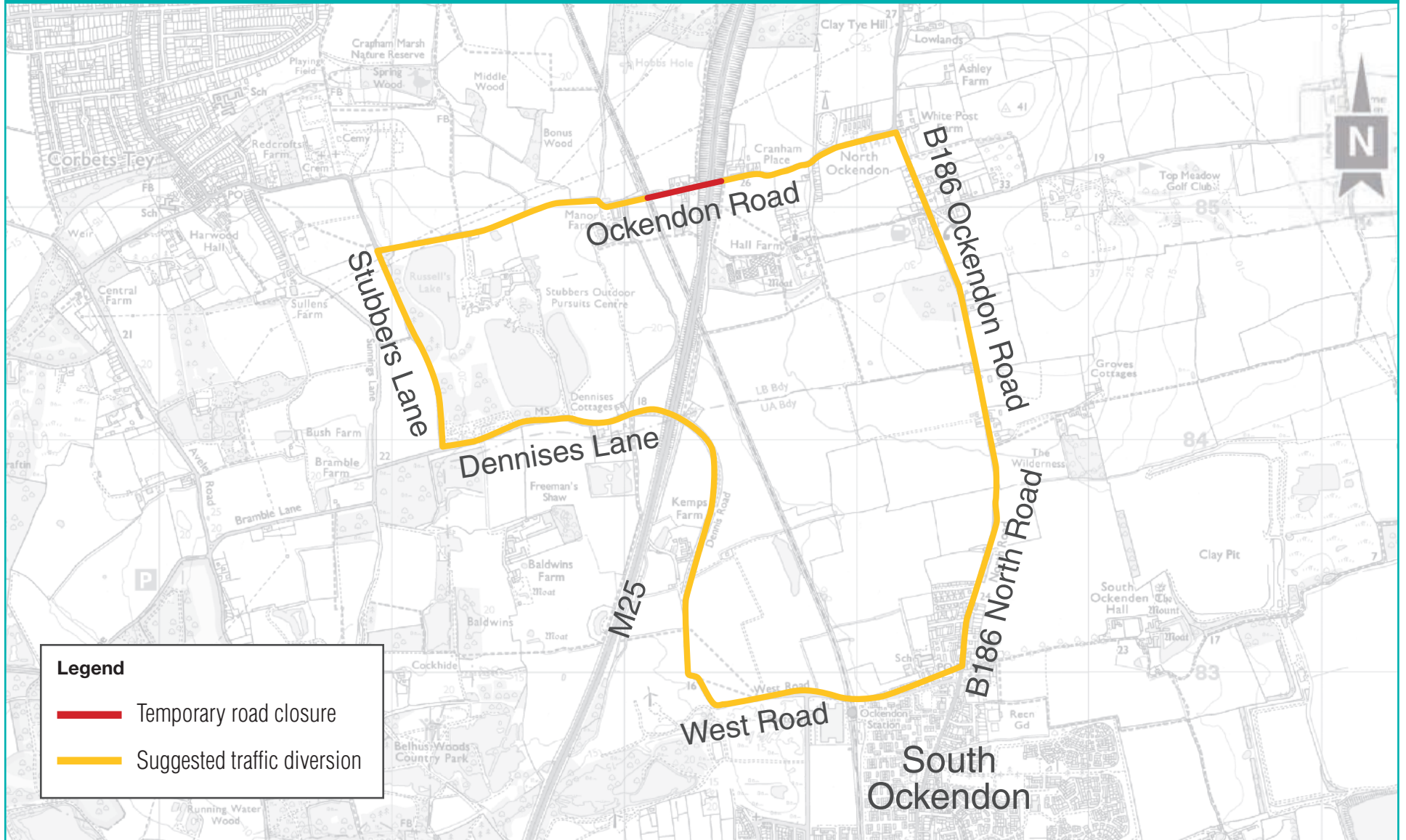
Ockendon Road

There will be a 19-month road closure on Ockendon Road for bridge works, earthworks and modifications to the local utility networks. The section of Ockendon Road approximately between the rail bridge and the existing properties would be closed for approximately 19 months. This is needed to ensure safe management of significant earthworks in the area and for the construction of elements of the project.

The proposed diversion route, as shown in figure 21.3 below, would be via B186 North Road, West Road, Dennis Road, Dennises Lane and Stubbers Lane.

Outside of the closure period there may also be contraflow on the Ockendon Road. A switchover to new permanent alignment on Ockendon Road is planned for March 2027. The works will occur over a weekend.

Figure 21.3: Suggested diversion during temporary closure of Ockendon Road



St Mary's Lane

It is intended that the underpass under the M25 on St Mary's Lane would be used by appropriately sized construction vehicles to enable access to the east side of the M25. In order to facilitate the construction vehicle movements using the underpass, the pavement may be narrowed or closed, however pedestrian access would remain open in some form. Traffic signals or similar would be used to manage the public and construction traffic in this short stretch of St Mary's Lane, which is around 120 metres long under the M25.

There would also be works on St Mary's Lane for bridge works and modifications to local utility networks. There would be a contraflow in place, in 300-metre sections, while work is carried out on a 2km section of road. The works are to divert utility assets affected by the project which are currently located adjacent to and within the carriageway. The works are scheduled for years 1 and 2 of the construction programme and would take approximately nine months to complete. There would also be a crossing point on St Mary's Lane by construction vehicles on the western side of the M25 as they travel alongside the M25 in a north-south direction.

There would be occasional night-time and weekend temporary closures of St Mary's Lane.

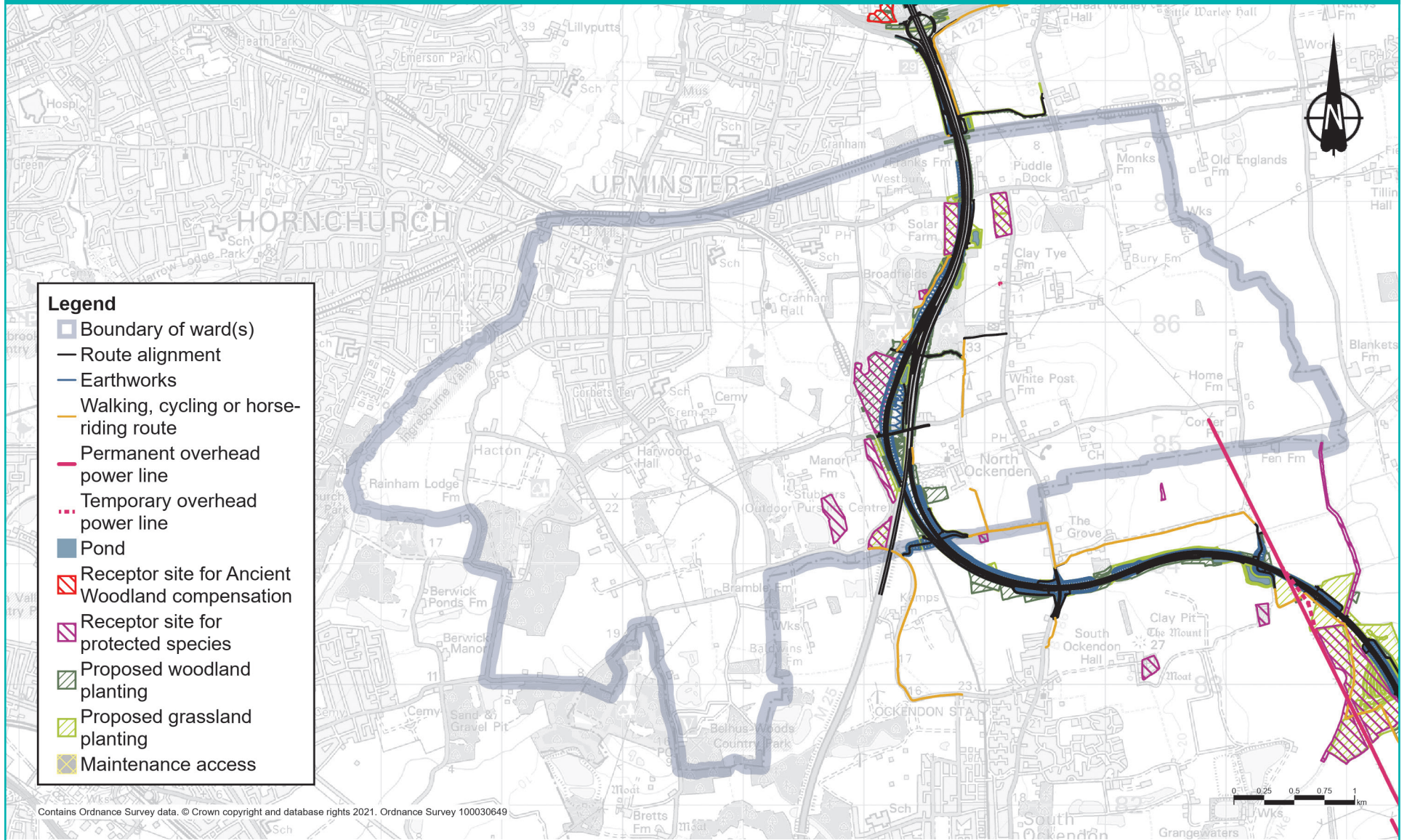
Measures required across the project would include narrow lanes, reduced speed limits, lane closures and temporary traffic lights. We have sought to minimise traffic management measures wherever practical. However, they would be necessary in some places to allow construction traffic and local communities to travel 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 will be subject to final approval by the Secretary of State for Transport, following consultation with the local highways authority.

21.2.2 Operations

The completed project

For more information about the completed project, see the Operations update, as well as the large-scale figures in Map Book 1: General Arrangements. Here, we set out the main features of the new road that would be within Upminster ward once it opens (see figure 21.4).

Figure 21.4: Main features of the completed project in Upminster ward



Legend

- Boundary of ward(s)
- Route alignment
- Earthworks
- Walking, cycling or horse-riding route
- Permanent overhead power line
- Temporary overhead power line
- Pond
- ▨ Receptor site for Ancient Woodland compensation
- ▨ Receptor site for protected species
- ▨ Proposed woodland planting
- ▨ Proposed grassland planting
- ▨ Maintenance access

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The route would connect to the M25 between junctions 29 and 30 via a new junction. A two-lane parallel link road would run to the west of the M25 connecting to junction 29 and the A127. We would carry out improvement works and widen along this stretch of the M25, up to and including junction 29.

- We would carry out modification works on the M25 between its junction with the new road and to the north of junction 29. A northbound one-way two-lane parallel link road would connect to the junction 29 northbound offslip road. In the southbound direction, we would widen the M25 from four lanes with a hard shoulder to five lanes with an intermittent hard shoulder between the junction 29 southbound onslip and the new road's southbound offslip.
- The new route would pass under the M25 through an underpass then remain in a deep cutting under the realigned Ockendon Road bridge. Around 500 metres north of the Ockendon Road, the northbound slip road would divide with two lanes continuing to connect to the M25 northbound and the third lane linking to J29 and merging with the parallel link road.
- Where the project link road would pass through the Thames Chase Forest, we would build a new footbridge to provide access to the east and west of the woodland.
- Approaching the M25 from the east, the new road would be in a cutting, and to the west of North Road, the northbound and southbound carriageways would divide. The northbound carriageway would descend into a deeper cutting passing under the M25 just to the north of its crossing of the Upminster and Grays branch railway. East of the railway it would remain in cutting to pass under Ockendon Road.
- We would create flood mitigation ponds between the north and southbound connecting slip roads, parallel to the Thames Chase Forest on the southbound side of the M25, and parallel to Cranham Golf Course on the southbound side of the M25.
- A number of public rights of way would be affected by construction and in some cases would be rerouted permanently once the new road opens. For more information, please see the Footpaths and bridleways section.

Changes to the project since our design refinement consultation

As part of our continuing design development and discussions with utility companies, we have made several changes to the project and its Order Limits within Upminster 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.

- In an earlier version of the project, land to the north of Ockendon Road across the railway corridor was included in the Order Limits. However, after further investigations, we now propose using land to the south instead, so the land to the north has been removed. Following ongoing discussions with Network Rail and utility companies, we have also removed a vegetated area of land to the west of Pea Lane from our Order Limits.
- Following feedback from residents and further work with the utility provider, we have been able to remove Church Lane, North Ockendon and some additional land from the Order Limits.
- We have changed our design downstream of the culvert carrying the Mardyke West under the M25 by Puddleduck Farm Fishery, reducing the size of compensatory flood storage.
- Our discussions with utility companies have enabled us to remove the following areas of land from the Order Limits as they are no longer required for utility diversions:
 - The parcel of land between Cranham Golf Course and the M25
 - The parcel of land parallel to the M25 southbound and Thames Chase Community Forest
- We are proposing some additional land to connect to an existing substation at St Mary's Lane, which requires an extension to the Order Limits.

Impacts on open space and common land

Within Upminster ward, we propose to permanently acquire part of the Thames Chase Community Forest for the new road and earthworks. Permanent rights would also be required for the diversion of utilities. We plan to acquire replacement land to the north and south of Thames Chase Forest Centre, which would be landscaped to complement the current site and connect to existing paths in the area. To further improve connectivity in the area, we are proposing a new bridge over the M25 suitable for walkers, cyclists and horse-riding, better linking the western and eastern sections of the Thames Chase Community Forest.

Since our design refinement consultation, we have reduced the amount of replacement open space land, removing a previously proposed area of land on the eastern side of the M25. Now, all the proposed replacement land would be on the western side of the M25, situated north and south of the existing Thames Chase Community Forest. More information about our proposals for open space can be found in chapter 3 of the Operations update.

Impacts on private recreational facilities

Within Upminster ward, we have removed a small area to the north-east of the Cranham Golf Course site from the Order Limits since our design refinement consultation. Another small area of land owned by the club remains in the Order Limits, along an existing water course. This is required for flood mitigation works and would not impact the operation of the golf course following construction.

The Order Limits have been reduced since our last consultation and we have now removed any direct impacts on Cranham Golf Course. More information about our proposal's impact on private recreational facilities can be found in chapter 3 of our Operations update.

21.3 Traffic

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

21.3.1 Construction

Construction impacts

Information about construction activities in this ward, including construction routes on public roads, can be found in the Project description section above, with table 21.3 setting out the proposed construction traffic management.

Journey times would be longer along the M25 between junctions 30 and 28 due to the narrow lane and the reduced speed limit.

The users of Ockendon Road would have a longer journey time when the road is closed and at other times they may experience some delay when there are temporary lane closures and traffic lights in place. Existing traffic on the diversion route, North Road, West Road, Dennis Road, Dennises Lane and Stubbers Lane may have a delay to their journeys because of the diverted traffic, with the impact being greatest at the junctions along the route.

Users of St Mary's Lane may also have a longer journey time if they are required to stop at the traffic lights managing traffic at the lane closure. On the few occasions when the road is closed at night, then their journey would take noticeably longer as they take an alternative route.

Measures to reduce construction traffic impacts

Our approach to construction has been refined after further investigations and feedback. A summary of the proposed measures introduced to reduce the volume of construction materials transported in and out by road can be found in chapter 2 of the Construction update. To reduce the construction traffic impacts in Upminster ward, we would carry out measures such as the following:

- Minimise use of the local road network as far as practicable through construction of temporary offline haul routes directly from the strategic road network.

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

21.3.2 Operations

Operational impacts

We have carried out traffic modelling in the wards to predict changes in traffic on the roads, including those within or on the boundary with these wards for the first year of the project's operation, 2029.

Figures 21.5, 21.7 and 21.9 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 21.6, 21.8 and 21.10 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.

Traffic flows on project and change on M25

On the M25 north of junction 30, the decrease in flows northbound would be over 1,000 PCUs per hour in the morning peak period, the interpeak hours and the evening peak hour. In the morning peak period and the interpeak period this is a decrease of between 20% and 40%. In the evening peak hour, the decrease is between 10% and 20%. Southbound, the decrease in traffic flows would be between 500 and 1,000 PCUs, which is between 10% and 20% in the morning peak hour, and a decrease of over 1,000 PCUs (between 20% and 40%) in each average interpeak hour and in the evening peak hour.

St Mary's Lane runs across the north of the Upminster ward. Starting in the west of the ward there is a decrease of between 50 and 250 PCUs (a decrease of between 10% and 20%) westbound on St Mary's Lane west of Corbets Tey Road in the morning peak hour. There is a similar decrease in traffic flows on St Mary's Lane east of Corbets Tey Road. This decrease in traffic extends along the St Mary's Lane as it passes under the M25. In all other time periods and in the eastbound direction the change in traffic flows is less than 50 PCUs an hour.

On St Mary's Lane east of the M25 between the junctions with Clay Tye Road and Warley Road, as well as this decrease in traffic westbound in the morning peak hour there would also be a decrease eastbound in an average interpeak hour of between 50 and 250 PCUs (a decrease of less than 20%). East of the junction with Warley Road, the decrease in traffic on St Mary's Lane westbound occurs in the morning and evening peak hours. In both time periods, the decrease in traffic flows is between 50 and 250 PCUs an hour, which is a decrease of between 20% and 40% in the morning peak hour and between 10% and 20% in the evening peak hour. Eastbound there would be a decrease in all modelled time periods of between 50 and 250 PCUs, which is a decrease of between 20% and 40% in the morning peak hour and between 10% and 20% in the interpeak and evening peak hours.

Two other roads would also have a decrease in traffic flows in the morning peak hour. The decrease between 50 and 250 PCUs in the morning peak hour on Clay Tye Road northbound is a decrease of between 0% and 10%. The decrease between 50 and 250 PCUs in the morning hour on Ockendon Road westbound between Corbets Tey Road and Stubbers Lane is a decrease of between 20 and 40%.

Figure 21.5: Predicted change in traffic flows (PCUs) with the project during the morning peak in 2029

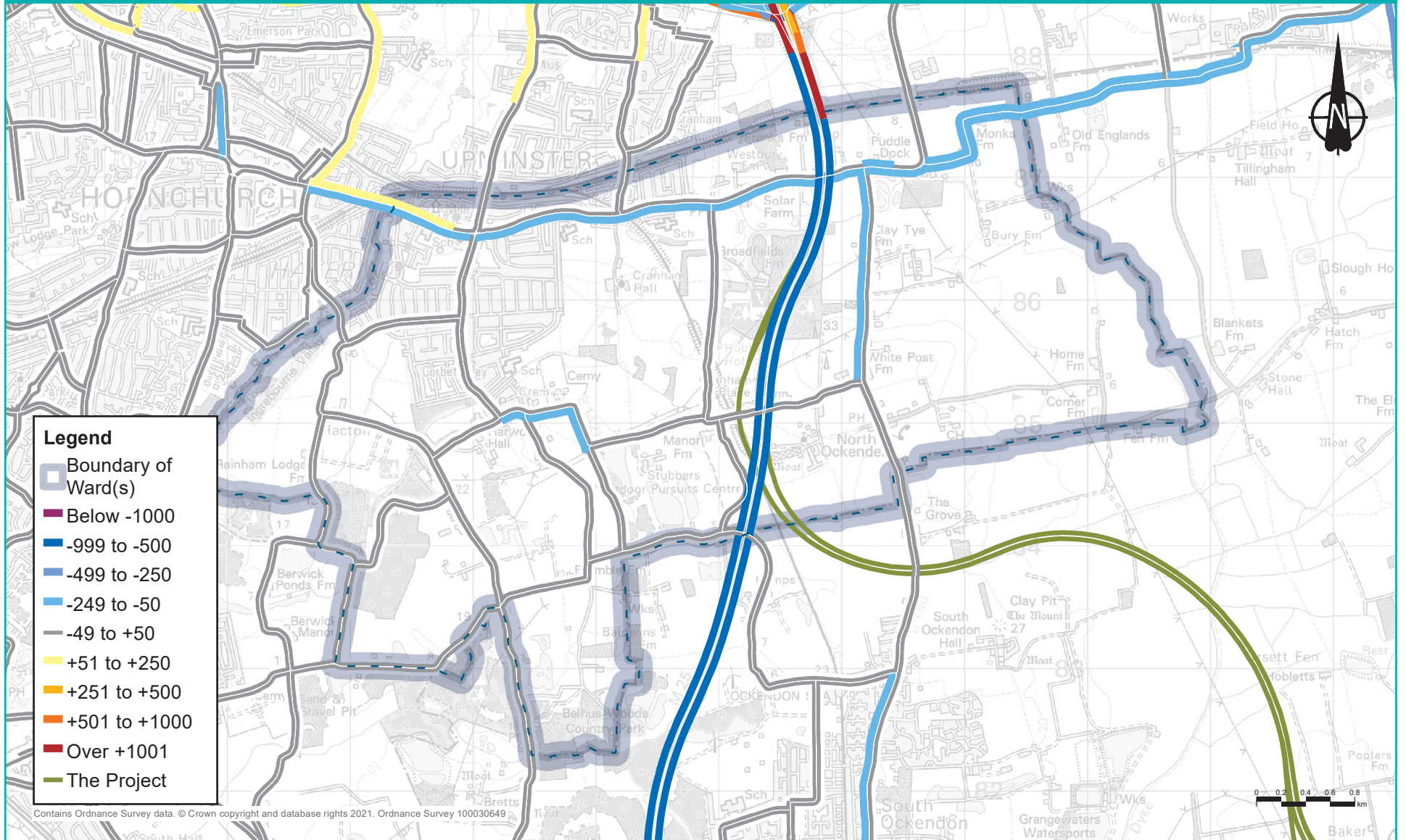


Figure 21.6: Predicted percentage change in traffic flows with the project during the morning peak in 2029

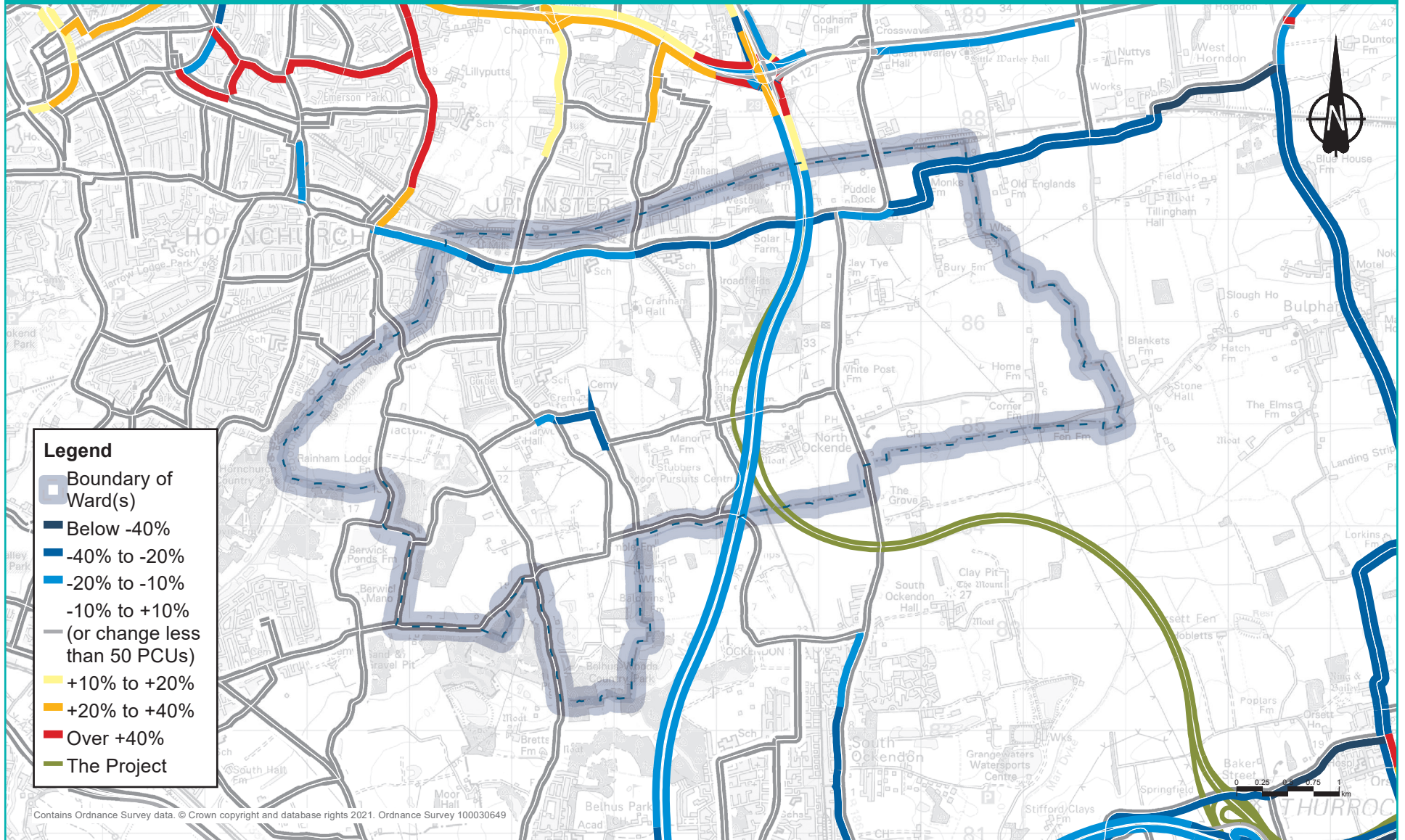


Figure 21.7: Predicted change in traffic flows (PCUs) with the project during the interpeak period in 2029

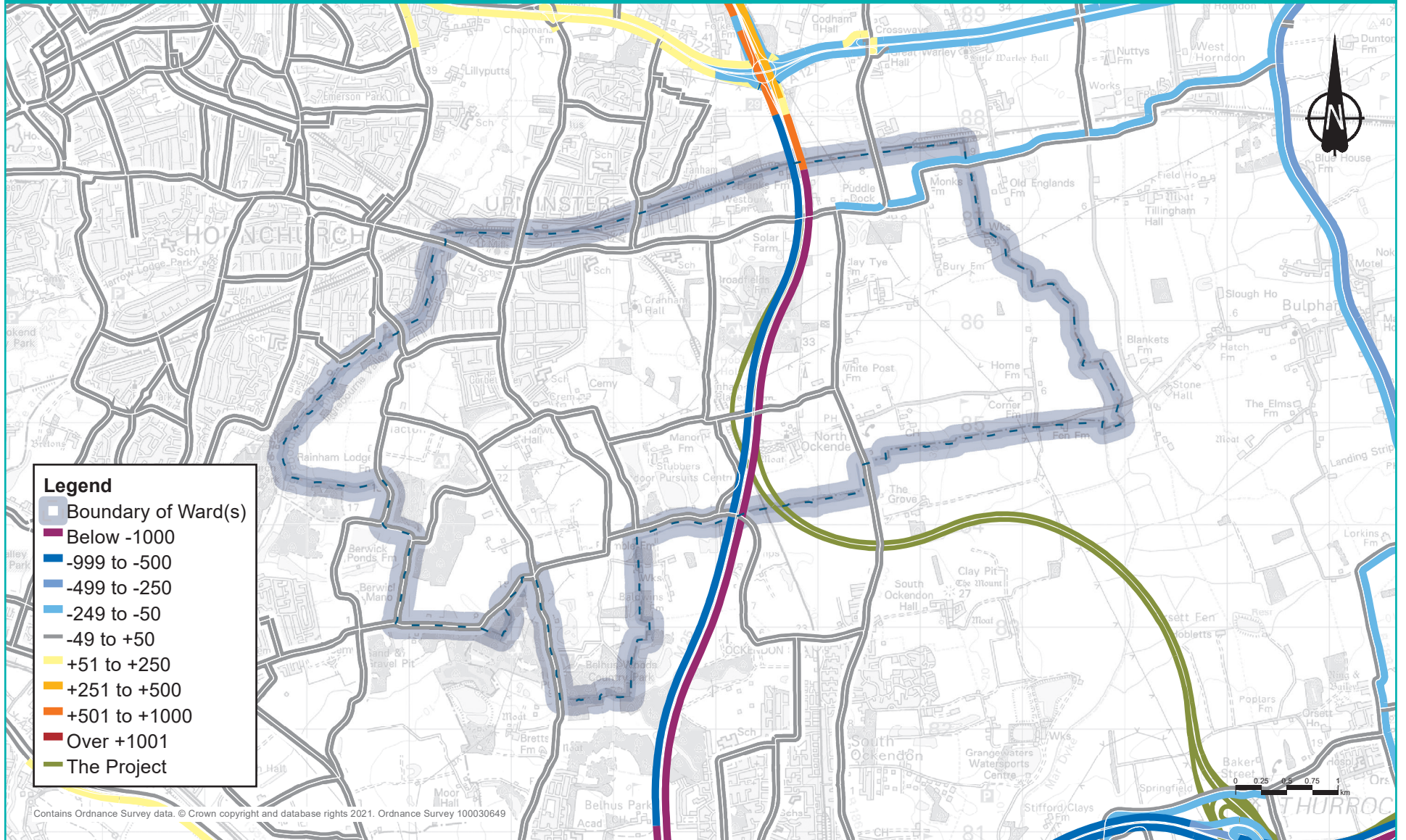


Figure 21.8: Predicted percentage change in traffic flows with the project during the interpeak period in 2029



Figure 21.9: Predicted change in traffic flows (PCUs) with the project during the evening peak in 2029

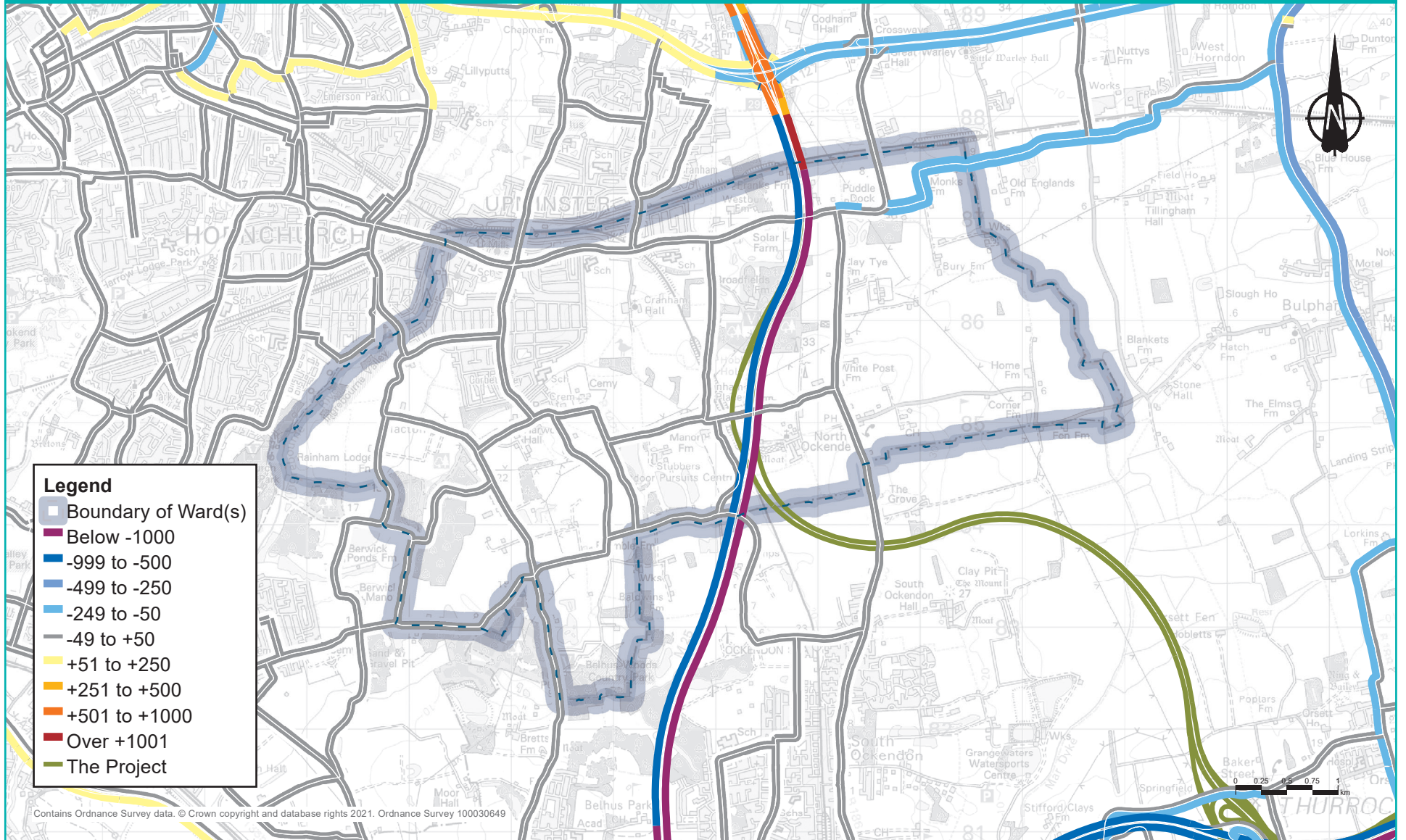
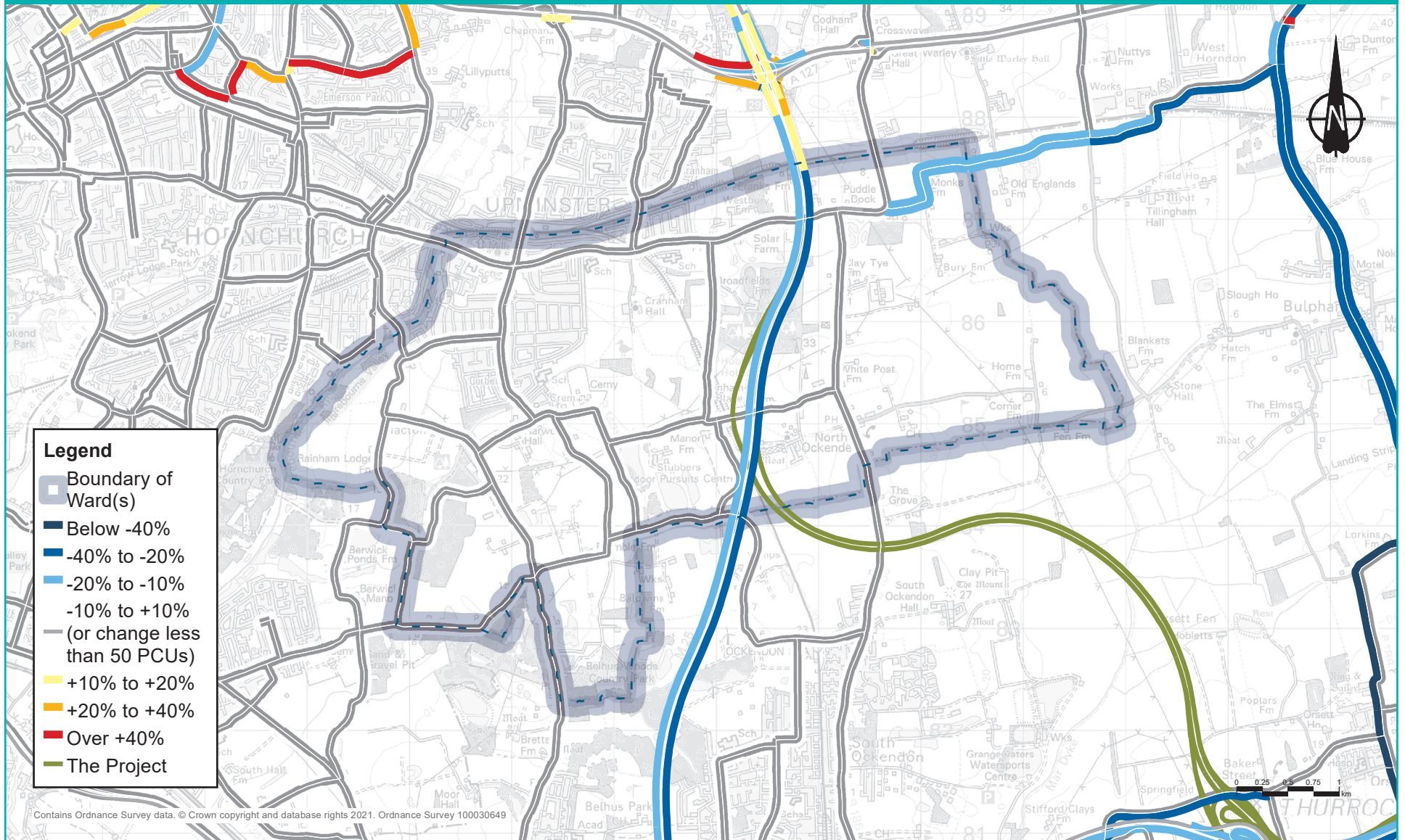


Figure 21.10: Predicted percentage change in traffic flows with the project during the evening peak in 2029

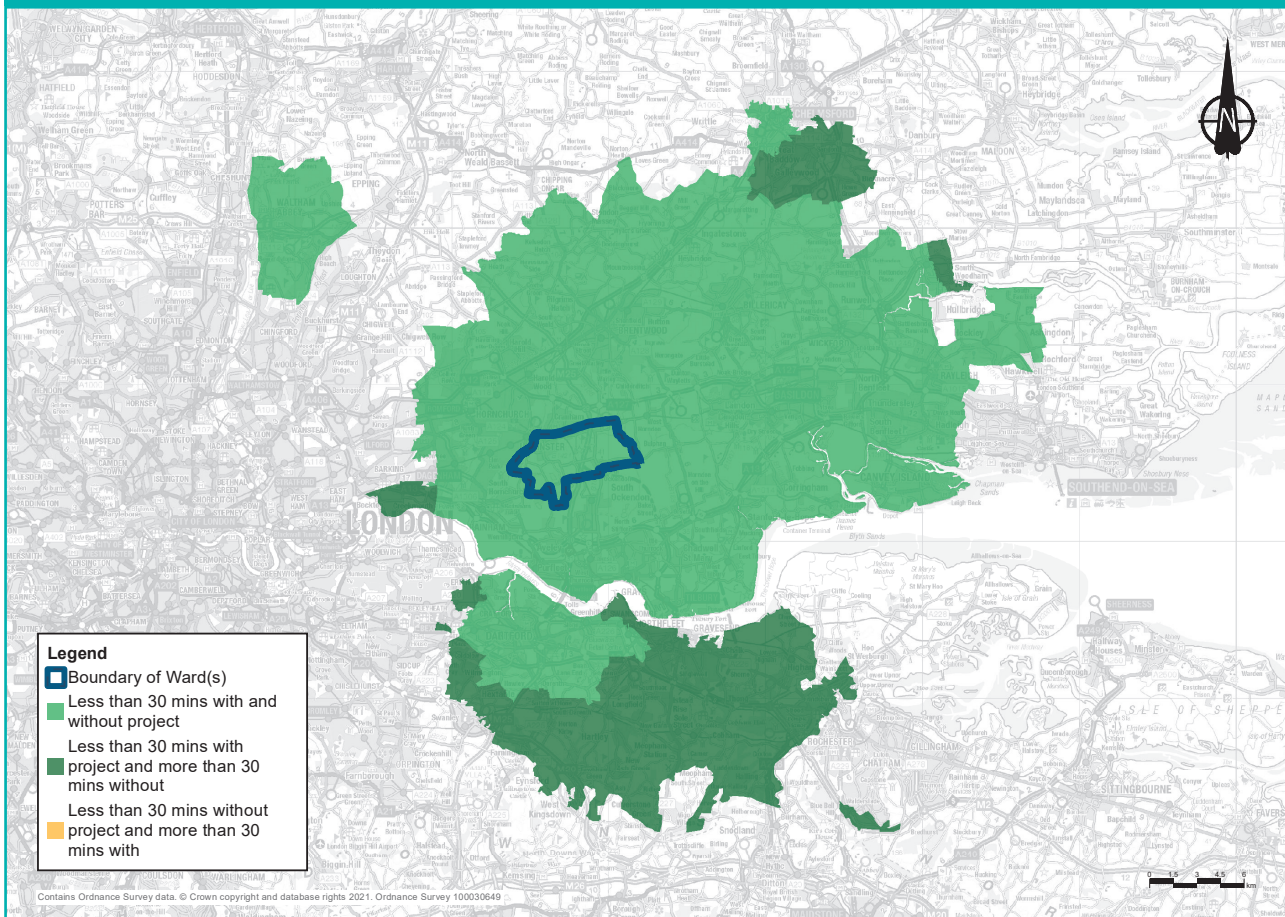


Changes to journey times

Figure 21.11 shows the change in the area that could be reached within a 30-minute drive from the centre of the ward both without the project and with the project. Figure 21.12 shows the change in areas that could 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 with the project in place would increase by 17% which would mean access to an additional 88,300 jobs with the project. Within a 60-minute drive, the number would increase by 5%, which would mean access to an additional 165,000 jobs. Despite the project providing a substantial net gain in access for motorists within Upminster ward, there is an area (shown in orange) that would no longer be accessible by car within 60 minutes because of changes to traffic flows on the wider road network.

Figure 21.11: Change in area that motorists could drive to within 30 minutes from Upminster ward

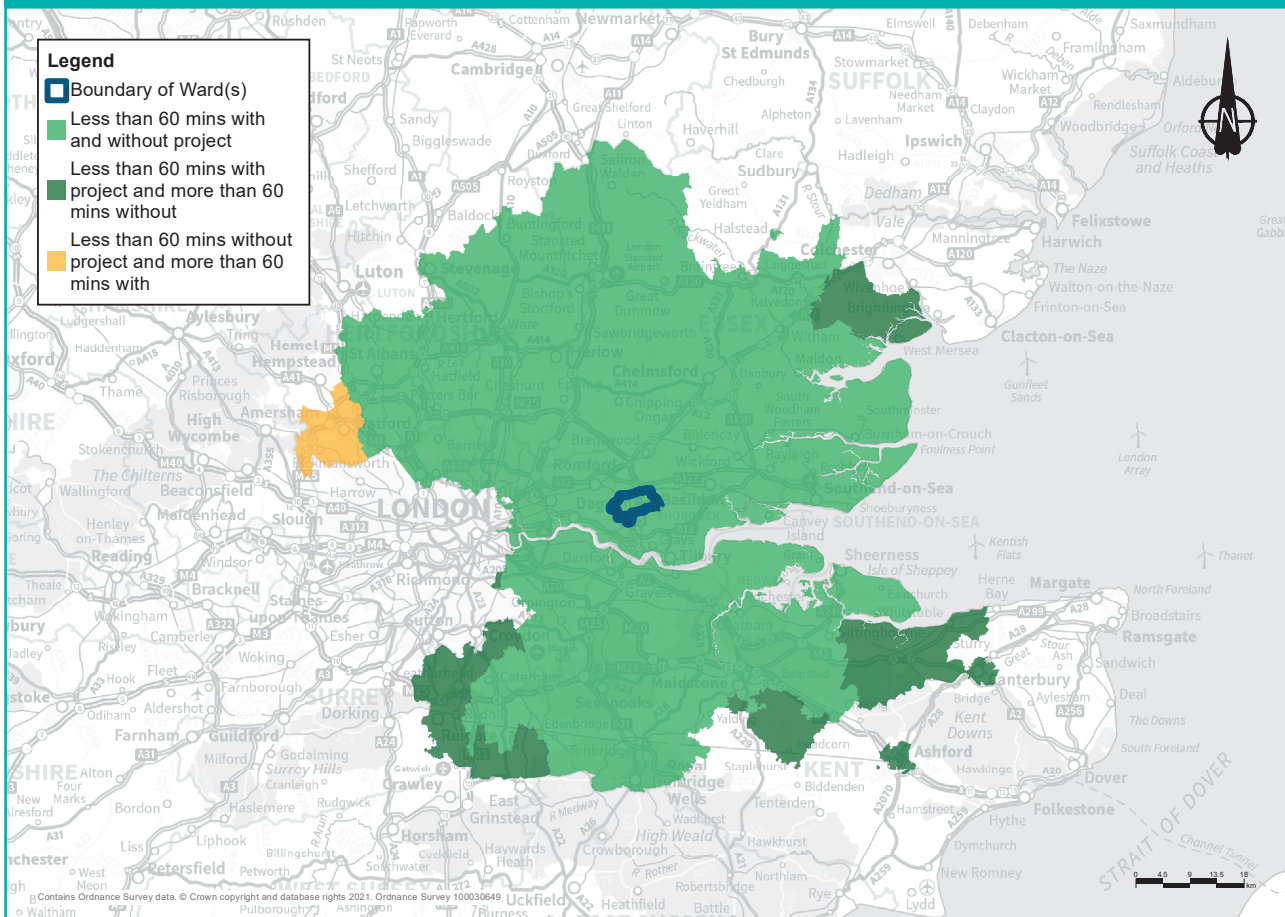


Operational traffic flows

Once the project is operational, traffic impacts on the affected road network would be monitored, including local roads.

Where appropriate, we would work with the relevant highway authority to seek funding from the Department for Transport for further interventions.

Figure 21.12: Change in area that motorists could drive to within 60 minutes from Upminster ward



21.4 Public transport

Existing situation

Upminster station is on the London, Tilbury and Southend railway line which is served by c2c. It is also the eastern terminus for the London Underground District line and the eastern terminus of the London Overground Romford to Upminster line.

The ward is served by several bus routes including the 24, 248, 346, 646, 648, 652, 269, 347, and the 370. The M25 is used by regional coach services.

21.4.1 Construction impacts

Buses

There would be increases to journey times for some local buses within the ward, including the 269, 347 and the 370. This would be associated with the traffic management works and, in the early stages of the project construction, with additional traffic on the local roads.

While Ockendon Road is closed the 370 bus would have to be diverted. The diversion would be agreed with the bus operator.

There may also be increases to journey times for regional coach services using the M25 between junctions 29 and 30.

Rail

There would be a night-time rail closure of the London, Tilbury and Southend railway while a new footbridge is constructed. This closure would be agreed with the network operator. It is intended that the works will take place outside train operational times, and so services would not be disrupted.

No impacts on journey times to Upminster station are anticipated during construction.

21.4.2 Operational impacts

Buses

There would be no changes to bus routes through the ward once the project opens and no discernible change to bus journey times.

Rail

There would be no discernible change in local access times to Upminster or Ockendon stations and no change to the services at these stations. It would be quicker to access HS1 at Ebbsfleet International station, with the journey time to that station decreasing by around five minutes in the morning peak hour and four minutes in the evening peak hour.

21.5 Footpaths, bridleways and cycle routes

Existing situation

Upminster ward is a largely rural ward divided by the M25, with a suburban area in the north-east of the ward and a network of footpaths connecting to North Ockendon. For other potential impacts, see the other topic areas in this chapter, such as Visual and Noise and vibration.

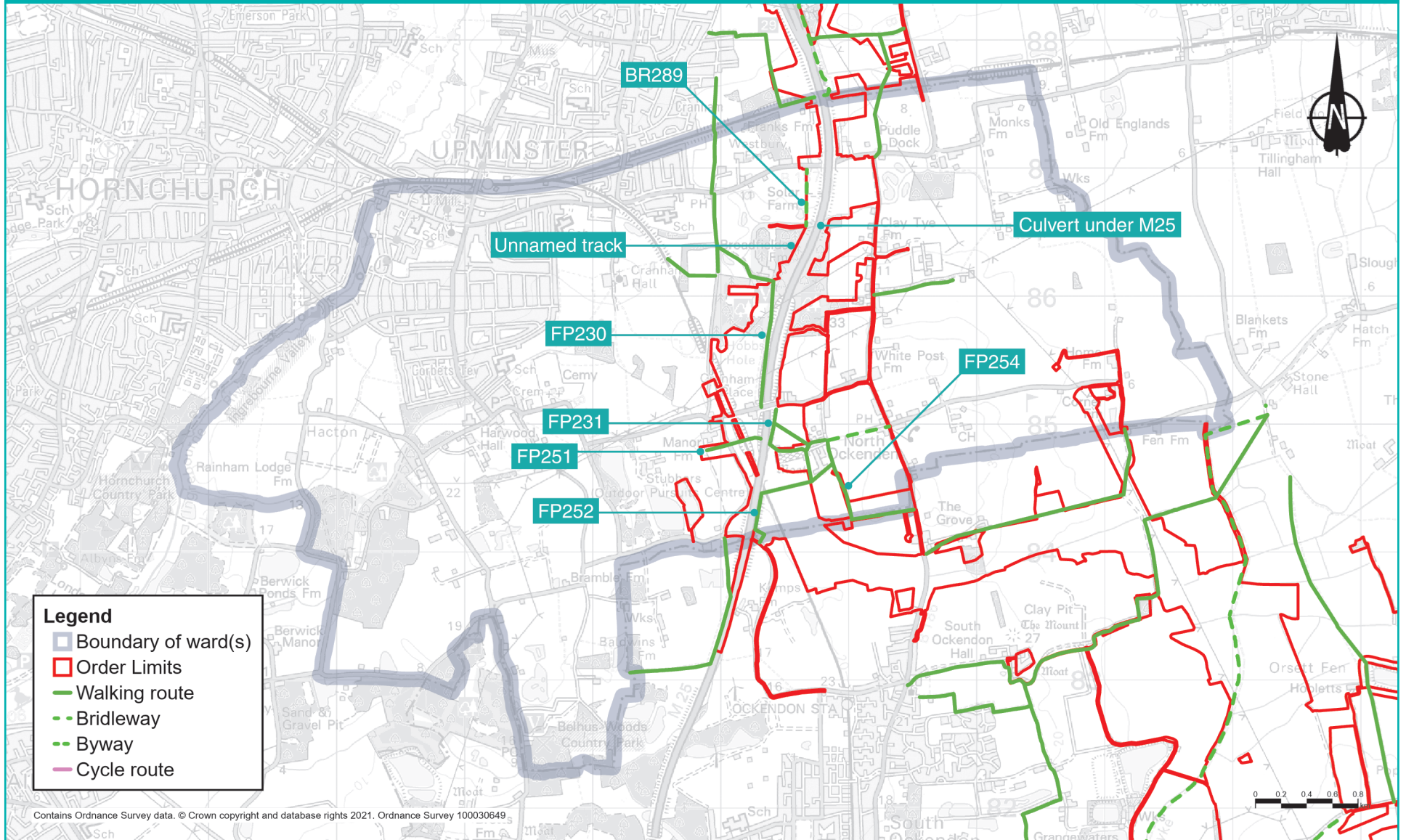
21.5.1 Construction

Construction impacts

Due to the project route joining with the M25 in Upminster ward, there would be a number of closures during construction. More information about the proposed network of footpaths, bridleways and cycle routes after completion of the project can be found in the Operational impacts section.

- Footpath FP230 would be closed for three years while it is realigned, upgraded to a bridleway, and a new bridge is built to carry it over the M25 and the new road.
- Footpath FP231 would be closed for one year to allow utilities diversion works and main works construction, due to the interface with haul routes, including closure of the Ockendon Road bridge and M25 temporary access roads.
- The section of footpath FP251 between the M25 and the Upminster and Grays railway line would close permanently. The section on the east side of the M25 would close for three years due to construction of the new road.
- Footpath FP252 would need to be closed for three years to allow main works construction of the new footbridge over the Upminster to Grays railway line and new road.
- Footpath FP254 crosses the proposed location of M25 Compound and would require a closure of five and a half years while the compound is used to build the new road.
- The unnamed track (not currently a public right of way) from the Thames Chase Community Forest that connects with bridleway BR289 would be closed permanently, with a replacement built parallel to it to the west.
- The existing culvert under the M25 at the north of the Thames Chase Community Forest would be closed for five years during construction. 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.

Figure 21.13: Existing footpaths, bridleways and cycle routes in the vicinity of the project in Upminster ward



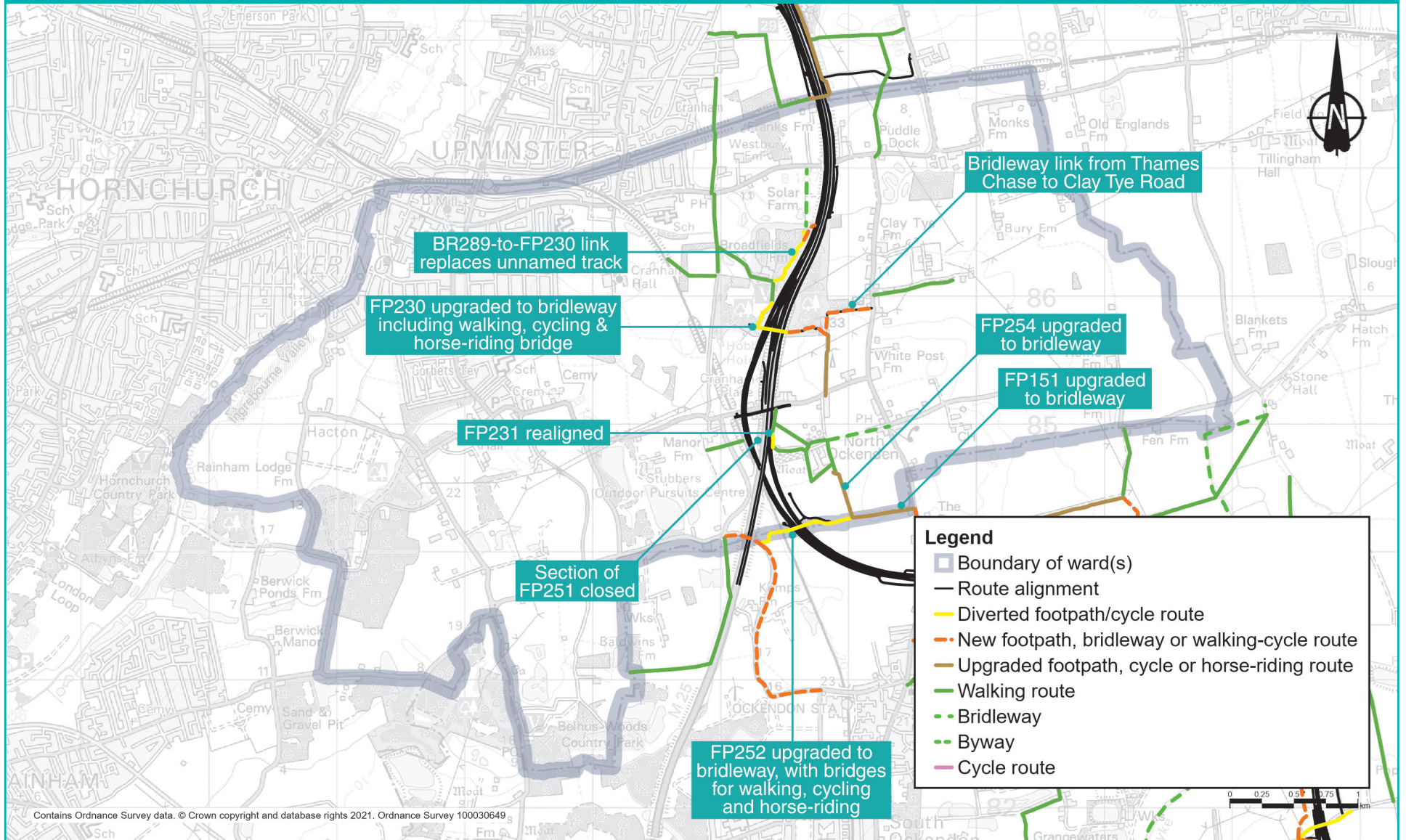
21.5.2 Operations

Operational impacts

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 much improved connectivity across the area. The proposals were developed after consultation and engagement with local communities and stakeholders. For an overview of the proposed improvements to footpaths and bridleways across the project, see chapter 2 of the Operations update.

- Footpath FP230 would be upgraded to a bridleway and realigned, forming part of a new route linking the eastern and western sections of Thames Chase Community Forest via a bridge suitable for walkers, cyclists and horse-riders. The new bridleway would continue southwards as far as Ockendon Road.
- Footpath FP231 would be realigned to accommodate the new road.
- The section of footpath FP252 between the new road and the M25 would be permanently realigned.
- Footpath FP252 would be upgraded to a bridleway and realigned to connect to footpath FP151, which would also be upgraded to a bridleway.
- Footpath FP254 would be resurfaced and redesignated as a bridleway.
- A new bridleway connection along a field edge has been designed to connect FP230 through the eastern side of Thames Chase Community Forest to Clay Tye Road, joining approximately 100 metres from the western end of FP232. Clay Tye Road has an existing footway along this stretch, which allows for a new connection between Thames Chase Community Forest and the existing public right of way network. The unnamed track that links bridleway BR289 with the northern edge of Thames Chase Community Forest would be diverted to connect footpath FP230 to BR289 and designated a public right of way.

Figure 21.14: Proposed footpaths, bridleways and cycle routes in Uppminster ward



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21.6 Visual

Existing situation

Views from the main populated area towards the land on which the project would be built are mainly limited to the western edge of North Ockendon and nearby homes along the B1421, Ockendon Road. There are also views from the static caravan park, located off the B1421, Ockendon Road, west of the M25. Most views from the local footpath network are experienced east of the M25, within the Thames Chase Community Forest.

Current views from the homes on the western edge of North Ockendon are of agricultural land, bounded by roadside planting along the M25 corridor. These views are filtered by garden vegetation or vegetation along Church Lane. From homes along the B1421 Ockendon Road, there are glimpses over agricultural land of M25 signage, densely filtered by roadside vegetation. Views from the static caravan park, located off the B1421, Ockendon Road are of adjacent agricultural land, filtered to the east by a line of trees.

From footpaths to the south of North Ockendon, there are views of the M25 and its embankment and associated traffic, partially filtered by vegetation. From footpaths on the western edge of North Ockendon, roadside planting along the M25 corridor screens views of the motorway and curtails views beyond the large arable field visible in the foreground. Views from the Thames Chase Forest Centre comprise open space enclosed by woodland, with M25 signage just visible among roadside tree planting.

21.6.1 Construction

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

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

- Establishment and operation of the M25 and Ockendon Road Compounds.
- Construction of the main route and the M25 junction.

More information about construction activities can be found in the earlier Project description section above.

Construction impacts

Views of construction activities from some homes on the western edge of North Ockendon, including those along the B1421 Ockendon Road, would be the building of the M25 slip road and new views of traffic on the M25, opened up by the removal of vegetation to enable the works. Similar views would be experienced from footpaths on the western edge of North Ockendon.

There would be filtered views of the Ockendon Road Compound from the static caravan park, located off the B1421. The M25 Compound would be a prominent feature in views from footpaths on the southern outskirts of North Ockendon. Road construction, including the new access track bridge, is also likely to be visible from these footpaths. From the Thames Chase Forest Centre, work to build the M25 slip roads on embankments and cuttings would be prominent in close range views.

Measures to reduce visual impacts during construction

Our mitigation measures would include locating the taller facilities in the M25 Compound as westerly as reasonably possible, and stockpiling excavated soil temporarily onsite in earth bunds on the eastern edge of the compound. This would help to reduce visual effects on North Ockendon.

We would locate any facilities taller than six metres in the Ockendon Road Compound as north-westerly as reasonably practical to reduce visual effects from the static caravan park located off Ockendon Road. Where soil is excavated and retained on site temporarily, it would be stockpiled in earth bunds on the south and west boundaries to provide visual screening.

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

21.6.2 Operations

By the opening year, all construction would be completed and the compounds dismantled. More information about the completed project is provided in the Project description section above.

Operational impacts

The visual impacts from homes on the western edge of North Ockendon would be limited to views of new lighting and part of the Ockendon Road overbridge, with other elements screened by proposed planting. Similar views would be experienced from footpaths on the western edge of North Ockendon. The proposed false cutting and associated woodland planting would largely screen views from footpaths on the southern outskirts of North Ockendon. Views from the Thames Chase Forest Centre would be largely screened by proposed planting, however, the tops of new lighting columns would remain visible. There would be no remaining views from the static caravan park, located off the B1421, Ockendon Road, following the dismantling of the construction compound.

Measures to reduce visual impacts during operation

The false cutting and landscape treatment along the new road's corridor are the main mitigation measures in this ward, helping to screen views of the traffic and integrate the road into the surrounding landscape.

21.7 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 noise within this ward is mainly characterised by road traffic but there is also some noise from the railway. The main sources of traffic noise are from the M25, running through the middle of the ward from north to south, coupled with noise from other main roads, including the A124, B187 and the B186.

As part of our environmental assessment process, we surveyed the existing background noise at six locations in the ward, which were agreed with the local authority. The levels monitored at these sites recorded average existing noise levels in the range of 57 to 65dB(A)² during the day and 50 to 60dB(A) during the night.

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

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.

In the opening year, noise levels without the new road are predicted to range, on average, from 41 to 77dB(A) during the day and from 30 to 63dB(A) during the night at the identified locations within the ward. As such, our noise assessments predict that by opening year noise levels would increase compared to the existing situation even if the road is not built. Information about noise levels with the project, during its construction and operation, are presented below.

21.7.1 Construction

Daytime construction noise impacts

The main construction activities expected to make noise and vibration in this ward are those associated with building the proposed M25 junction, widening the M25, building and operating the compounds and hubs, and carrying out utilities diversions.

Within the ward of Upmminster, two main works compounds but no Utility Logistics Hubs would be located. These are described in the Project description section above.

Although not located within the ward, the nearby Warley Street Compound and Warley Street Utility Logistics Hub may contribute to the noise impacts experienced within this ward due to how close they are to the ward.

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

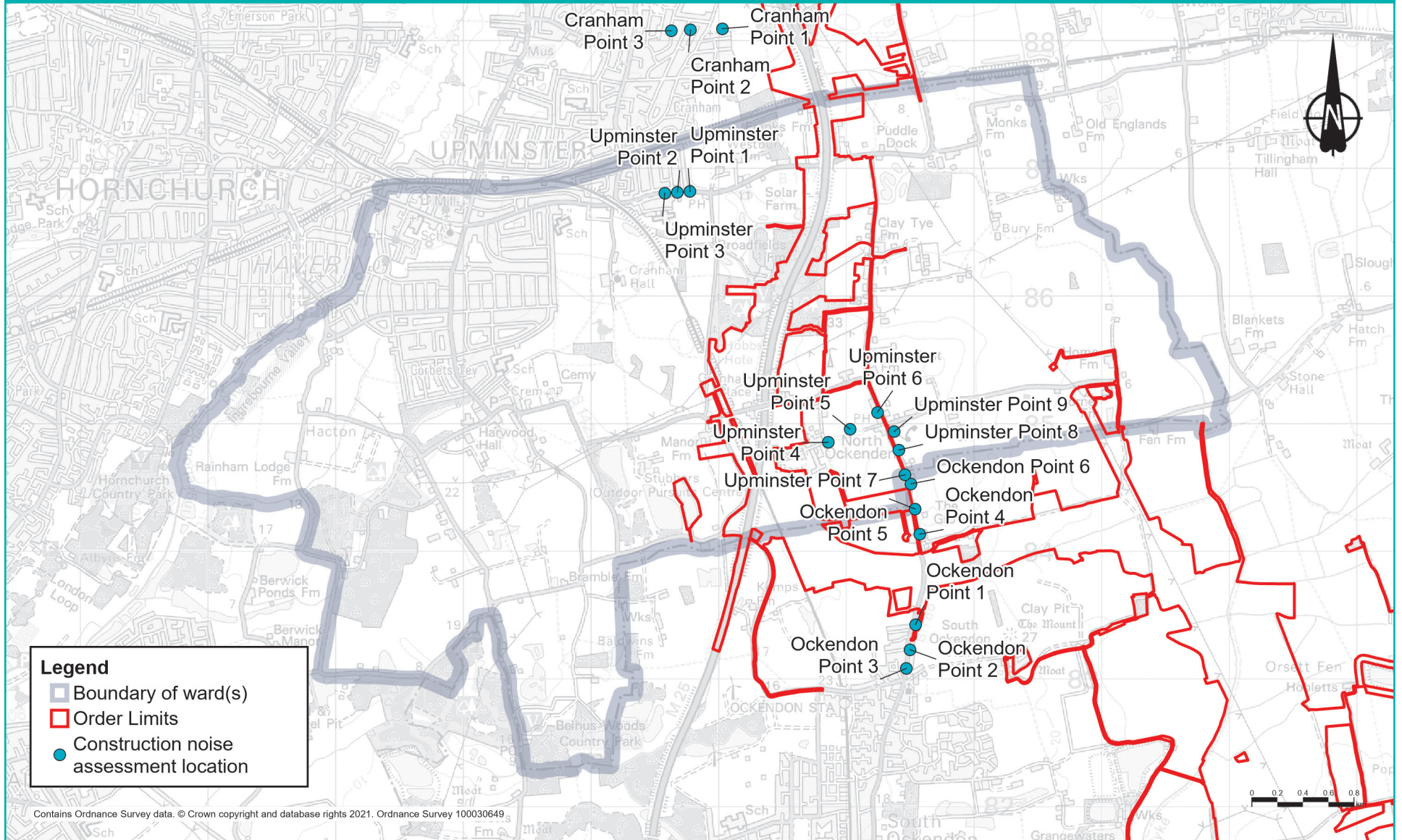
Within the ward, there are three proposed structures that would be constructed using vibratory or percussive piling. This would result in potential vibration impacts for up to 16 days if these techniques are used.

Construction noise levels have been predicted at nine locations across this ward, chosen to provide a representation of the 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 21.15 below shows the locations at which we have predicted the daytime construction noise during the project's construction period.

Figure 21.15: Construction noise assessment locations in Upminster ward



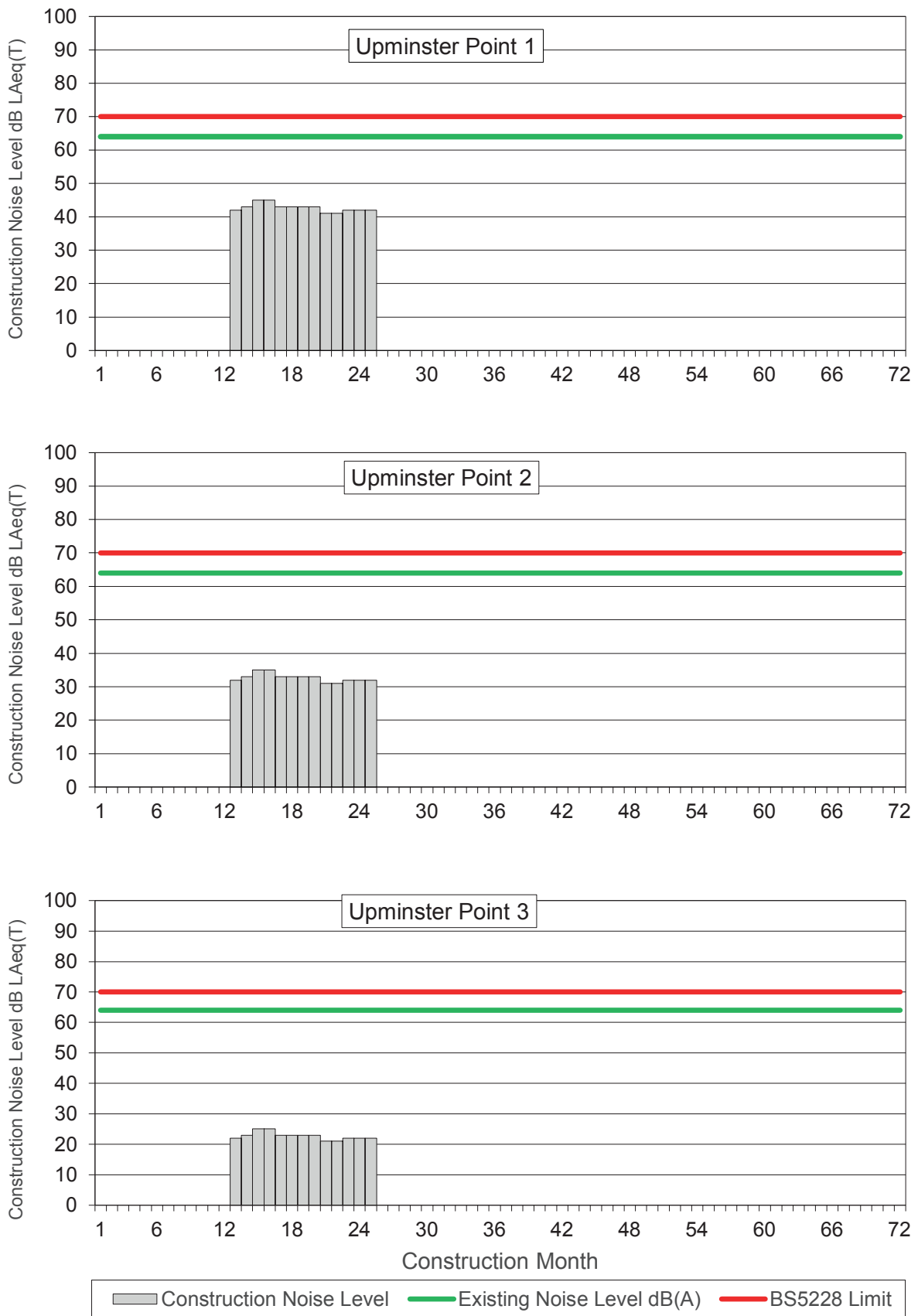
Each vertical bar in figures 21.16, 21.17 and 21.18 show the predicted noise levels for that month of the construction (from month 1 to month 72). The horizontal green line in each chart represents the existing background noise level at each assessment point without the project. The horizontal red line shows the level at which construction noise would exceed acceptable 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 the noise.

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

With reference to figure 21.16, 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 41 to 45dB LAeq (12hour). Construction noise is not expected to exceed the existing background noise levels.
- At point 2, construction noise levels are predicted to range from 31 to 35dB LAeq (12hour). Construction noise is not expected to exceed the existing background noise levels.
- At point 3, construction noise levels are predicted to range from 21 to 25dB LAeq (12hour). Construction noise is not expected to exceed the existing background noise levels.

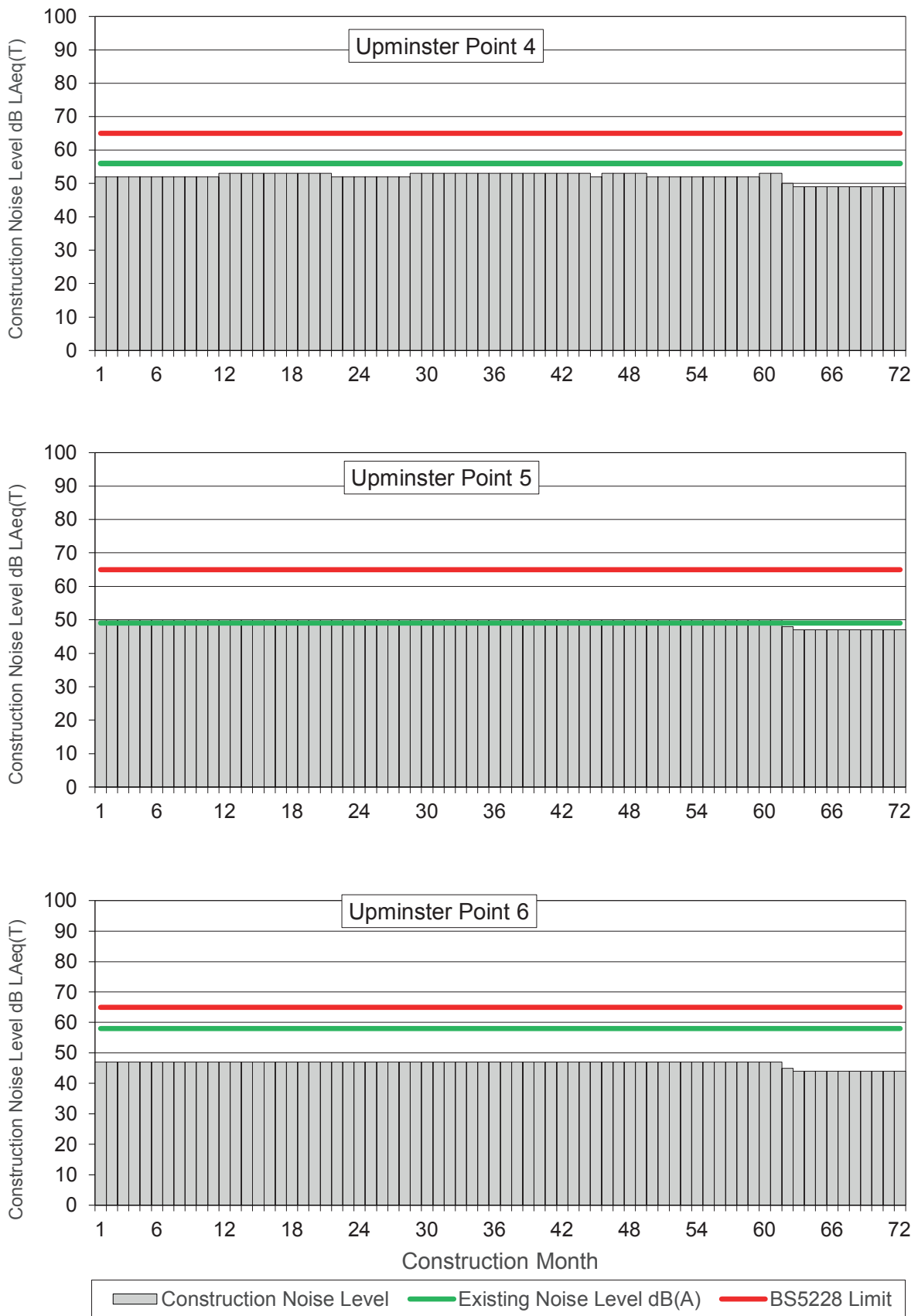
Figure 21.16: Construction noise by month for points 1-3 in Upminster ward



With reference to figure 21.17, 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 49 to 53dB LAeq (12hour). Construction noise is not expected to exceed the existing background noise levels.
- At point 5, construction noise levels are predicted to range from 47 to 50dB LAeq (12hour). Construction noise levels would exceed the existing background daytime noise level for around 61 months. However, they would not breach the defined threshold.
- At point 6, construction noise levels are predicted to range from 44 to 47dB LAeq (12hour). Construction noise is not expected to exceed the existing background noise levels.

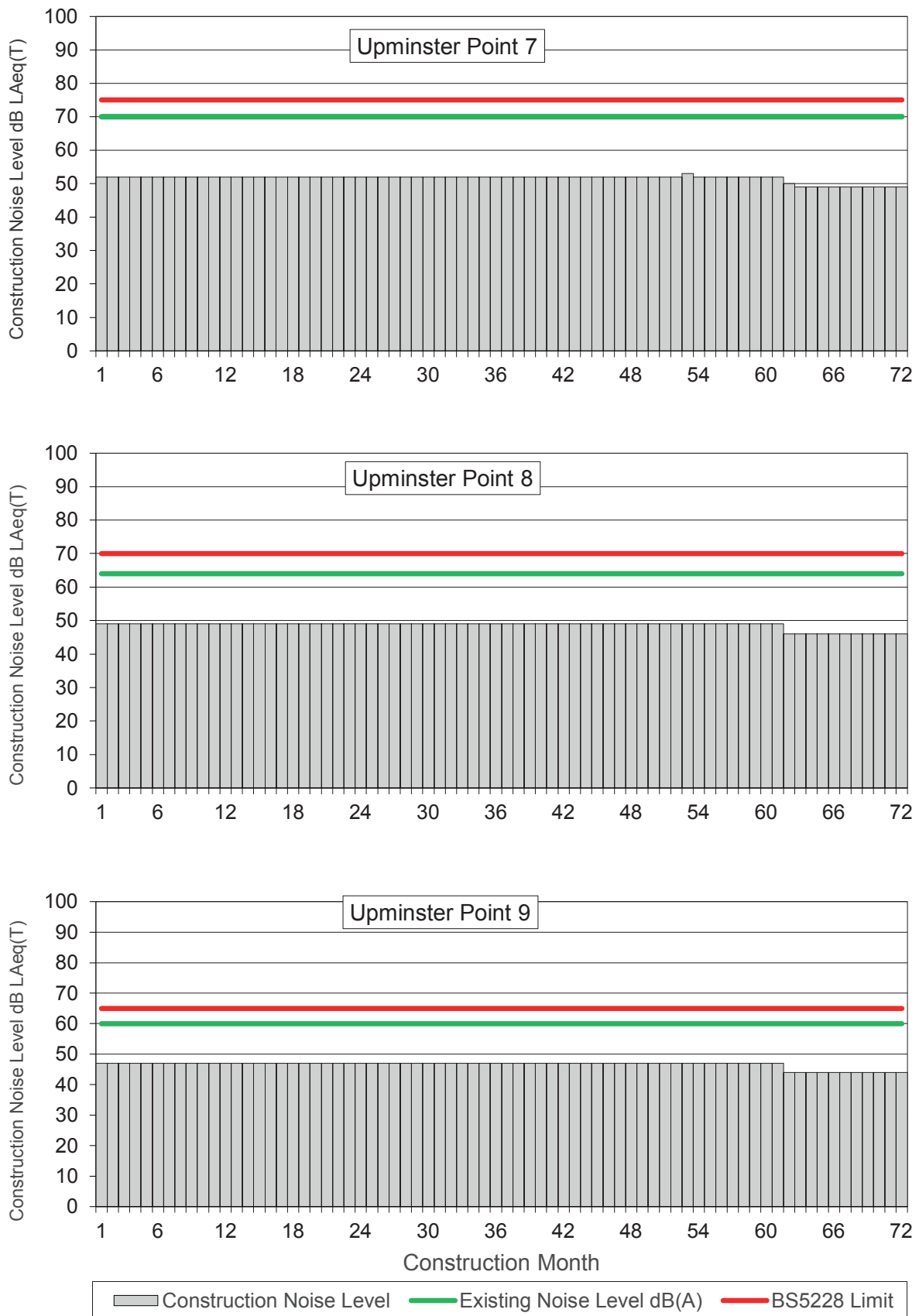
Figure 21.17: Construction noise by month for points 4-6 in Upminster ward



With reference to figure 21.18, the following summarises the noise level changes over the construction period for points 7 to 9:

- At point 7, construction noise levels are predicted to range from 49 to 53dB LAeq (12hour). Construction noise is not expected to exceed the existing background noise levels.
- At point 8, construction noise levels are predicted to range from 46 to 49dB LAeq (12hour). Construction noise is not expected to exceed the existing background noise levels.
- At point 9, construction noise levels are predicted to range from 44 to 47dB LAeq (12hour). Construction noise is not expected to exceed the existing background noise levels.

Figure 21.18: Construction noise by month for points 7-9 in Upminster ward

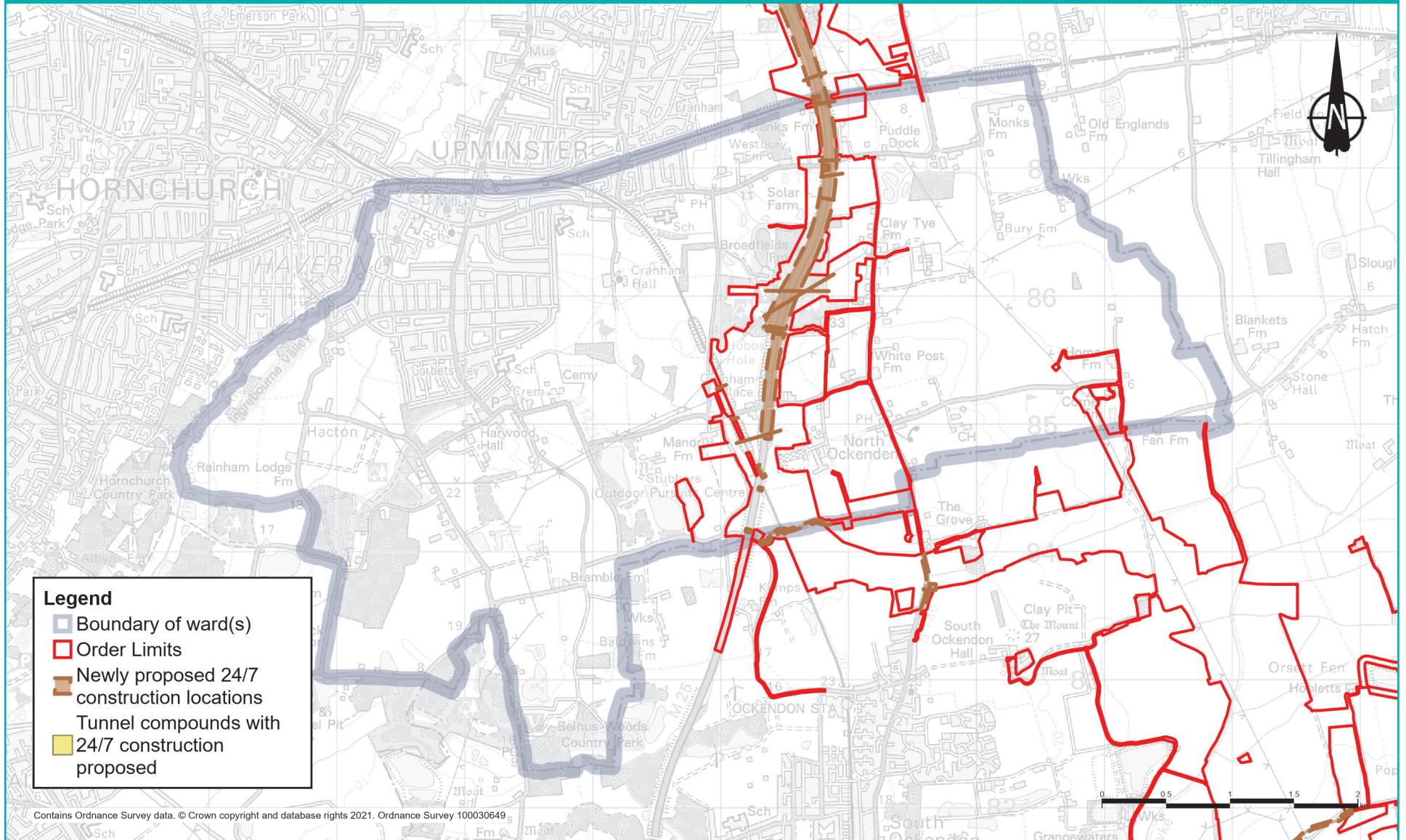


24/7 construction working

In addition to the changes to daytime noise presented in the section above, 24-hour, seven-day construction working is proposed at the locations shown in figure 21.19.

These locations are where works may need to be carried out at night to maintain safety and reduce disruption to road and utility networks. Night-time utility works within this area are expected to last around six months. These works could have an impact on local communities, and we would work with the local authority to manage these impacts.

Figure 21.19: Newly proposed and tunnel 24/7 working locations in Upminster ward



Construction traffic noise impacts

Maps showing the predicted change in road traffic noise on roads within Upminster ward during each year of the 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 (see table below). For more information about how we define noise impacts (negligible, minor, moderate and major) see chapter 1.

Table 21.4: Construction traffic noise impacts in Upminster ward

Affected road(s)	Predicted noise impact	Construction year(s)
Stubbers Lane	Minor increase in noise levels	2 and 3
Stubbers Lane	Major increase in noise levels	4 and 5
Dennis Road	Minor increase in noise levels	2
Pike Lane	Minor increase in noise levels	2, 4 and 5
Pea Lane	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 outdoors onsite for entertainment purposes.
- 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 rather than generators, where possible.
- Minimisation of construction vehicle traffic by, where practicable, selection of local suppliers along the project route, using local workforces and by minimising material transportation for earthworks construction along the project.

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

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

21.7.2 Operations

Operational impacts

Within this ward, the project route (see the Project description above) runs through the middle of the ward, with traffic joining the new road at its proposed junction with the M25. There would also be changes to the existing M25 to accommodate the predicted changes in traffic flow.

Direct noise impacts from the new road, the proposed M25 junction and widening of the existing M25 would be experienced in the middle of the ward. There would also be indirect noise impacts as a result of changes in traffic flow, the number of HGVs, and traffic speeds on the existing road network within the ward.

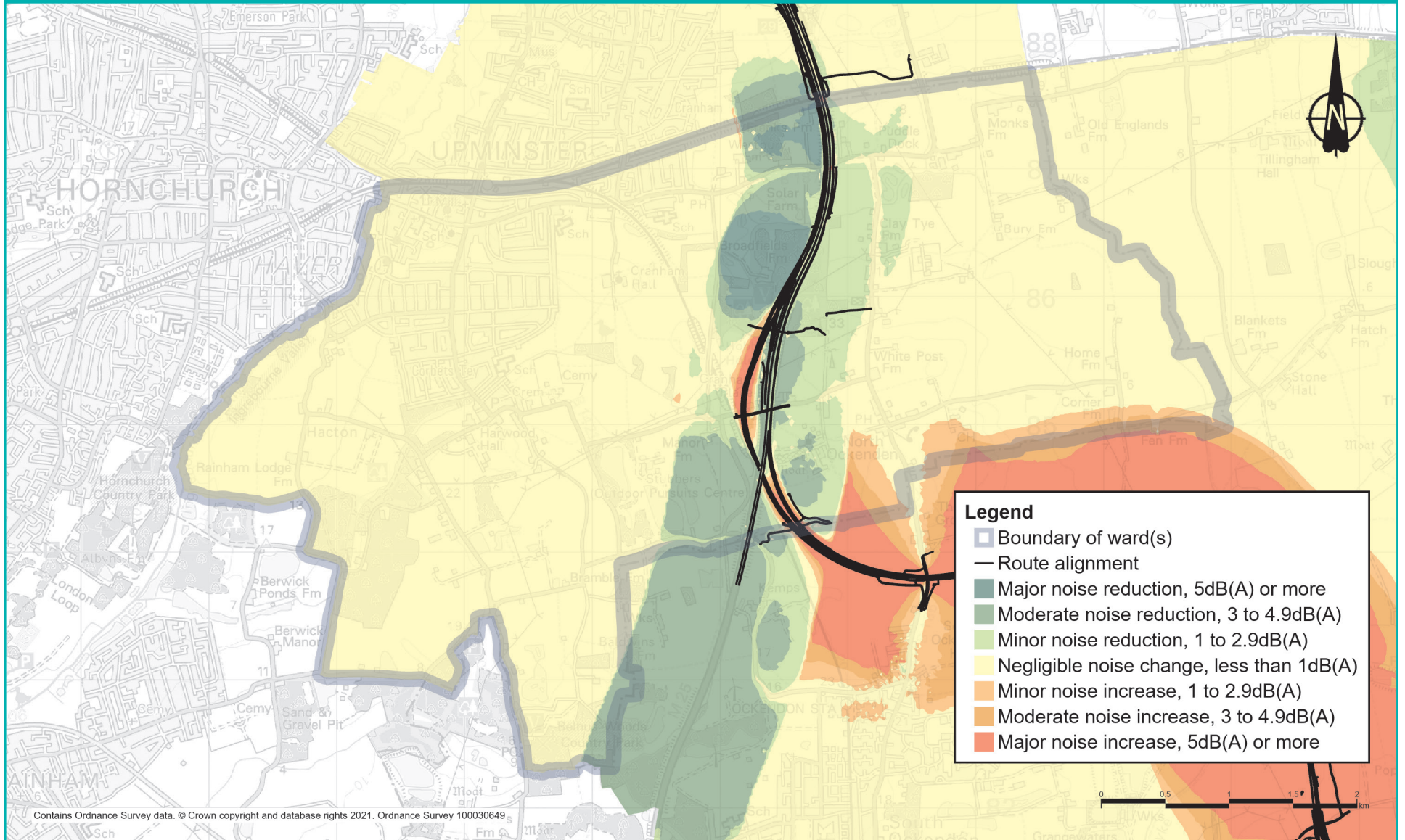
Figure 21.20 shows the predicted changes in traffic noise in the opening year of the project. Within the ward, changes in road traffic noise at identified noise sensitive locations (such as nearby properties) are predicted to range from major decreases in noise levels of greater than 5.0dB to a major increase in noise levels of greater than 5.0dB. For more information about how we define noise impacts (negligible, minor, moderate and major), see chapter 1.

Measures to reduce traffic noise and vibration during operation

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. 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 21.20: Noise impacts during operation in Uppminster ward



21.8 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

Upminster ward is within the London Borough of Havering, the entire area has been declared an Air Quality Management Area due to yearly levels of air borne pollution rising above accepted standards. These areas have been identified by local authorities as a way of monitoring and controlling areas of poor air quality.

21.8.1 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 near Ockendon Road and Clay Tye Road. Air quality impacts on these properties during construction would be temporary and we would put in place measures to minimise the dust impacts (see below). The proposed measures to reduce dust and emissions are ones that have been proven to be effective when used on similar construction projects in the past. The change in air quality during the construction phase would be negligible, and there would be no discernible effect on health.

Our analysis of construction traffic predicts that the impact on most roads in this ward would be negligible, although there would be a temporary minor improvement in air quality in the area around the M25 (from 2025 to 2028) and on the B1421 (2025, 2027 and 2028) as a result of traffic management in place. Also, there would be a temporary minor worsening in air quality in the area on Pea Lane, Dennises Lane and Dennis Road as a result of traffic management in place in 2025. 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 London Borough of Havering for consultation (see REAC entry AQ006).

21.8.2 Operations

Operational impacts

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

There are receptors (properties or habitats that are sensitive to changes in air quality) within the ward, close to the M25 junction off Ockendon Road and along St. Mary's Lane, 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 27.8 µg/m³, 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 and a reduction in exhaust emissions).

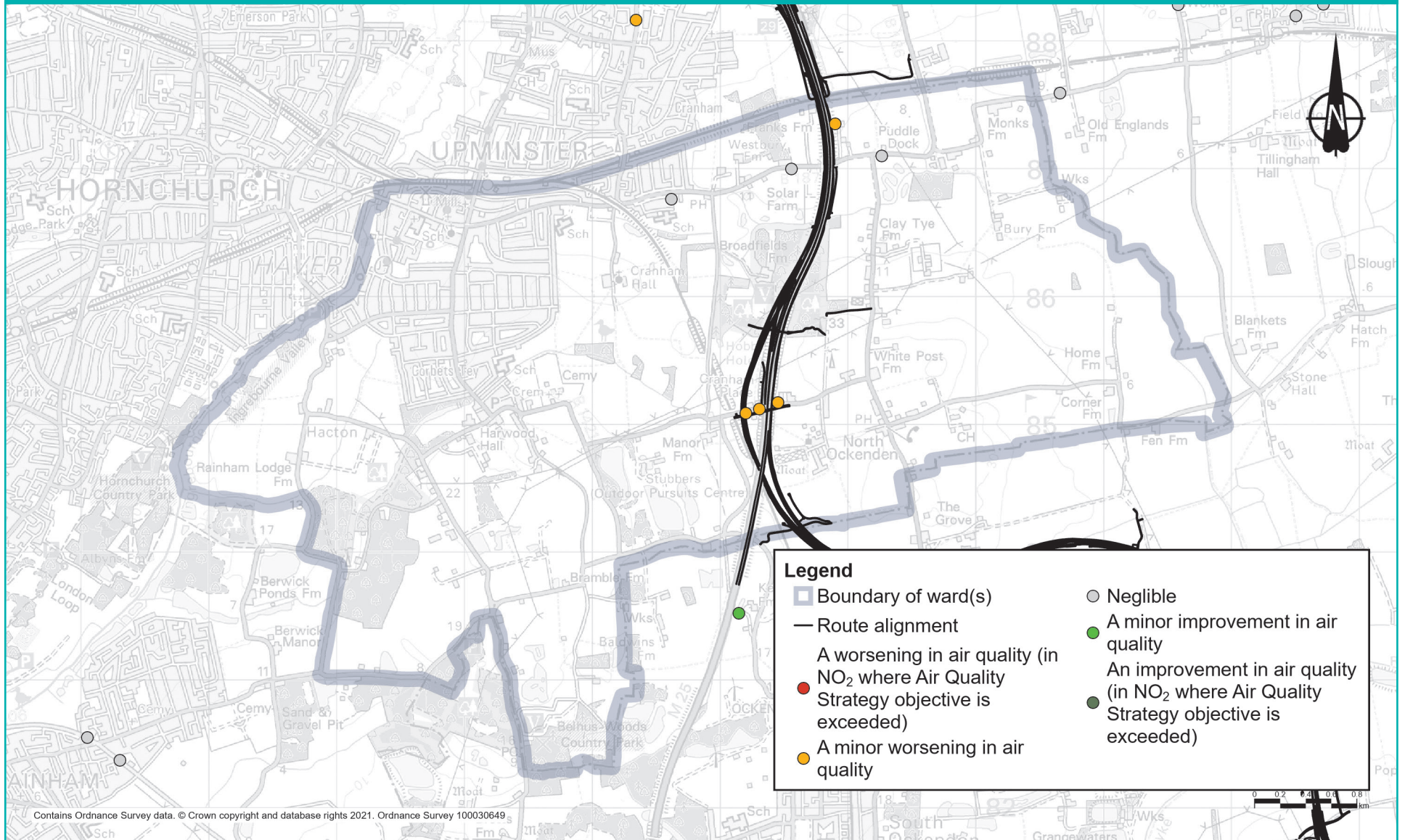
In addition to our assessment of NO₂, our assessment predicts that PM₁₀ levels (small particles of dust, mainly from vehicle exhausts and brakes) are unlikely to exceed threshold levels across the assessed area.

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.

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

Figure 21.21: Predicted changes in NO₂ levels within Upminster ward once the new road is open



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21.9 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.

Upminster is characterised by an older population, with a higher proportion of people aged 60 and over (30.8% compared with 23.3% for Havering). Upminster has a lower proportion of young people living in the ward, when compared with Havering as a whole, 18.0% and 21.2% respectively. Upminster has a significantly higher proportion of white residents when compared to Havering as a whole, 95.2% and 87.7% respectively.

According to the English Index of Multiple Deprivation, rates of deprivation are very low across Upminster. Economic activity rates are relatively low in the ward when compared with Havering as a whole. However, benefit claimant counts are lower in Upminster than for Havering as a whole, which reflects the relative older population living in Upminster compared with Havering. Upminster has a significantly higher proportion of residents in social grade AB (32.7%) than is the case for Havering as a whole (19.1%). The area has a significantly higher proportion of households which are owned outright when compared to Havering and England as a whole, 89.3%, 73.8% and 63.3% respectively. In respect of car or van availability for households, Upminster has a relatively low proportion of households with no car or van, when compared with Havering, 13.5% and 23.0% respectively.

Upminster residents generally have higher rates of self-reported very good health when compared with Havering and England as a whole, 49.0%, 46.0% and 47.2% respectively.

In looking at life expectancy and causes of death, except for deaths from all causes, Upminster performs significantly better than Havering across a range of measures, including male life expectancy at birth for both males and females, deaths from respiratory and coronary heart diseases, and deaths from all cancer.

21.9.1 Construction

Construction impacts

Construction activities affecting Upminster are presented in the Overview section and mainly relate to widening of the M25 and connecting works, the M25 Construction Compound and the Ockendon Road Compound. Elements of these activities have the potential to affect people's health, whether through noise associated with construction activities or traffic, air quality (as a result of dust emissions), severance of communities caused by construction traffic, road or footpath closures, or through impacts on mental health and wellbeing.

There are potentially both positive and negative effects on people's health and wellbeing as a result of construction. Good communication and engagement of our proposals with the community would help to reduce stress and anxiety related to the construction of the project. Equally, some residents would see health and wellbeing benefits from improved access to work and training opportunities presented by construction activities. More information can be found in the Traffic impacts section. There is a two-way relationship between mental health and unemployment. Good mental health affects a person's ability to find a job and remain in it, while 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.

We highlighted earlier that different groups of people may be more sensitive to factors that 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. These impacts may include:

- Positive health benefits as a result of access to work and training opportunities presented by construction activities.
- Views of construction activities from the Thames Chase Community Forest and the local footpath network on both sides of the M25. To the west of the M25 this would include views from residential properties along the B187 and located off the B1421. To the east of the M25, views of construction activities would include those from residential properties in North Ockendon and along the B186.

- Views of construction activities from some residential properties on the western edge of North Ockendon. These would include those along the B1421 Ockendon Road and construction of the M25 slip road, and new views of traffic on the M25, visible with the removal of vegetation to enable the works. Similar views would be experienced from footpaths on the western edge of North Ockendon.
- Filtered views of Ockendon Road Compound from the static caravan park, located off the B1421, Ockendon Road. The M25 Compound would be a prominent feature in views from footpaths on the southern outskirts of North Ockendon. Road construction is also likely to be visible from these footpaths. From the Thames Chase Forest Centre, construction of the M25 slip roads would be prominent in close range views.
- Properties within 200 metres of construction activity may experience poorer air quality through increased dust and emissions from nearby construction activities. Analysis of traffic during construction indicates the change in traffic and emissions between 2025-2028 along the M25 corridor could lead to a temporary beneficial impact on air quality at nearby receptors.
- Noise and vibration from main construction activities and from the M25 and Ockendon Road Construction Compounds.
- Perceptible increases in road traffic noise predicted along Stubbers Lane, Ockendon Road, Pea Lane, Dennis Road and Pike Lane.
- Stress and anxiety relating to construction.
- Increases in road traffic noise on the existing road network during the construction phase are predicted to be less than 1dB(A) on all road traffic links within this ward.

Measures to reduce construction health impacts

Proposed measures relating to health and wellbeing (including good practice for dust emissions, hours of working and visual screening) are described previously in the Visual, Noise and vibration, and Air quality sections. 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 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.

Effective two-way engagement with communities about how we would work and how we would minimise its impact is important. This helps to reduce problems with mental health and wellbeing associated with uncertainty, stress and anxiety. The CoCP sets out proposals for engagement, including how we would make efforts to inform communities, stakeholders and any affected parties of the construction works, their progress and associated activities.

21.9.2 Operations

Operational health impacts

Information about how the new road would impact the ward once open can be found earlier in the Project description.

Both positive and negative health outcomes may be experienced by residents in Upminster:

- Positive health benefits associated with reductions in noise levels.
- Forecast levels of traffic related pollutants – nitrogen dioxide and particulate matter are below the required air quality thresholds.
- The views for residential properties on the western edge of North Ockendon would be limited to new lighting and part of the Ockendon Road overbridge. Other elements of the road would be screened by planting. Similar views would be experienced from footpaths on the western edge of North Ockendon. The proposed false cutting and associated woodland planting would largely block views of the new road from footpaths on the southern outskirts of North Ockendon. Views from the Thames Chase Forest Centre would be largely screened by proposed planting, however, the tops of new lighting columns would remain visible. There would be no remaining views from the static caravan park, off the B1421, Ockendon Road, following dismantling of the construction compound.

Measures to reduce operational health impacts

The false cutting and landscaping along the new road are the main measures in place to screen views of traffic and to integrate the road into the surrounding landscape.

21.10 Biodiversity

Existing situation

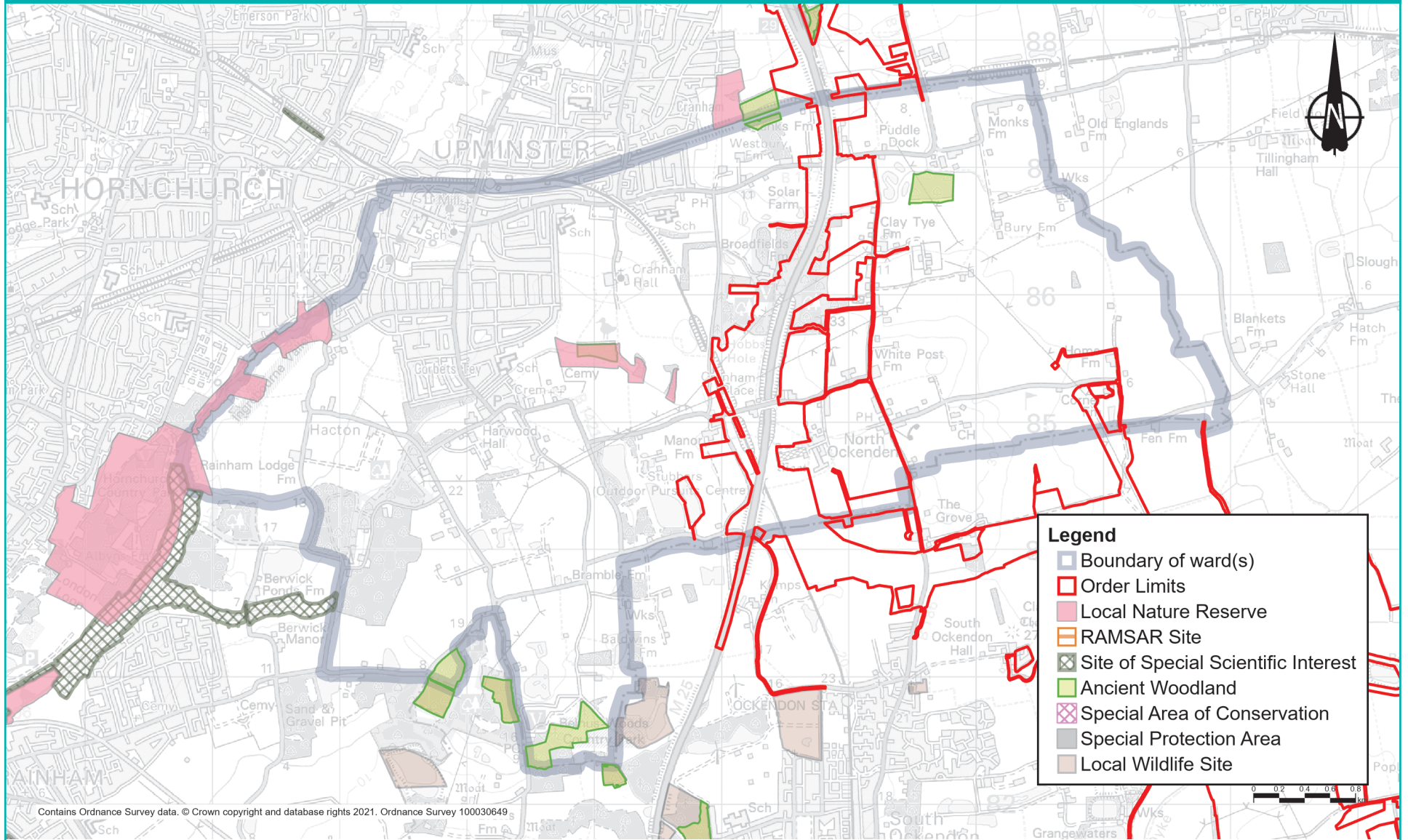
Of the habitats present within the Order Limits in Upminster ward, the main areas are arable land, with some areas of rough grassland that contain a number of watercourses. In addition, there are areas of pasture, scrub, woodland and community woodland.

There is one designated site within 2km of the Order Limits in Upminster ward, Cranham Marsh Local Nature Reserve. Within 500 metres of the Order Limits, the non-designated sites are Hall Farm moat, paddock and the following Sites of Importance for Nature Conservation (SINCs):

- St Mary Magdalene Churchyard
- Stubbers Adventure Centre
- Fields South of Cranham Marsh
- Fairplay Farm
- Thames Chase Forest Centre
- Puddledock Farm Fisheries
- Cranham Hall Shaws and Pasture
- Ockendon Railsides and North Ockendon Pit
- Clay Tye Wood and Ancient Woodland
- Franks Wood
- Cranham Brickfields and Ancient Woodland.

We carried out surveys across the project to set a baseline for assessment, and these identified the presence of a range of protected and notable species. These included bats, badgers, water vole, otter, terrestrial invertebrate species, great crested newt, barn owl and reptiles.

Figure 21.22: Designated and non-designated biodiversity sites in Upminster ward



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21.10.1 Construction

Construction impacts

Our construction work would require us to remove areas of habitat, both temporarily and permanently, from along the length of the route. These include areas of arable fields, scrub, rough grassland and woodland that support a range of protected and notable species that would be affected through direct habitat loss. This would include badger setts, bat roosts, water vole, reptile, great crested newts, breeding bird (including barn owl roosts) and invertebrate habitat; breakup of habitat; and disturbance to retained habitat.

Measures to reduce biodiversity impacts during construction

Where possible, we would clear vegetation during the winter to avoid any impacts on breeding birds. Where this is not possible, an Ecological Clerk of Works (ECoW) would supervise clearance to make sure we do not disturb or destroy any nests. Where protected species are found, we would move these from the site before any construction activities, either through habitat manipulation (for example strimming to reduce the height of vegetation and displace reptiles), or translocation. Where required, we would carry out works that affect protected species under a Natural England licence. We would also set up boxes within retained habitat to support bats, birds and barn owls.

We would create areas of open mosaic habitat consisting of grassland, scrub and bare earth, and larger areas of species-rich grassland to provide good quality homes for a number of species, particularly invertebrates, reptiles and amphibians, including great crested newts. This habitat would also be suitable for groups of breeding birds. We would also create a woodland to the south of Thames Chase woodland to compensate for the loss of wooded areas during construction, which would include ponds to further diversify the habitats for breeding great crested newts. These are shown in Map Book 1: General Arrangements.

To connect habitats, we would create a green bridge over North Road, to the south of the ward.

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

21.10.2 Operations

Operational impacts

The opening of the road has the potential to cause species mortality through contact with road traffic, habitat fragmentation and noise disturbance.

Measures to reduce biodiversity impacts during operation

We have designed landscape planting in a way that provides strong links for animals to move and forage along, guiding them to safe crossing points over the new road, such as the green bridge.

We would manage newly created habitat, including habitat created to support animals moved from the construction area, to ensure that they provide high-quality environments to support a broad range of different plant and animal species.

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

21.11 Built heritage

Existing situation

There are 17 buildings or structures of historic relevance identified within the Upminster ward in relation to the new road. The baseline has identified one Grade I listed building, with the rest Grade II. There are also two Conservation Areas: North Ockendon and Cranham.

- Grade II - Kilbro, Russell Cottage, The Forge, Castle Cottages, Garden Walls Entrance Gate and Brick Piers to Former Stubbers House, Franks Farmhouse, Church of All Saints, The Rectory, Bullens and Herds, Garden Walls at Cranham Hall, Farmyard Wall to Former North Ockendon Hall, Garden Walls of the Former Ockendon Hall, Cranham Hall, Railed Tomb to west of the Church of All Saints, Bury Farmhouse, Barn and Stable Block to the north of Broadfields Farmhouse.
- Grade I - Church of St Mary Magdalene

21.11.1 Construction

Construction impacts

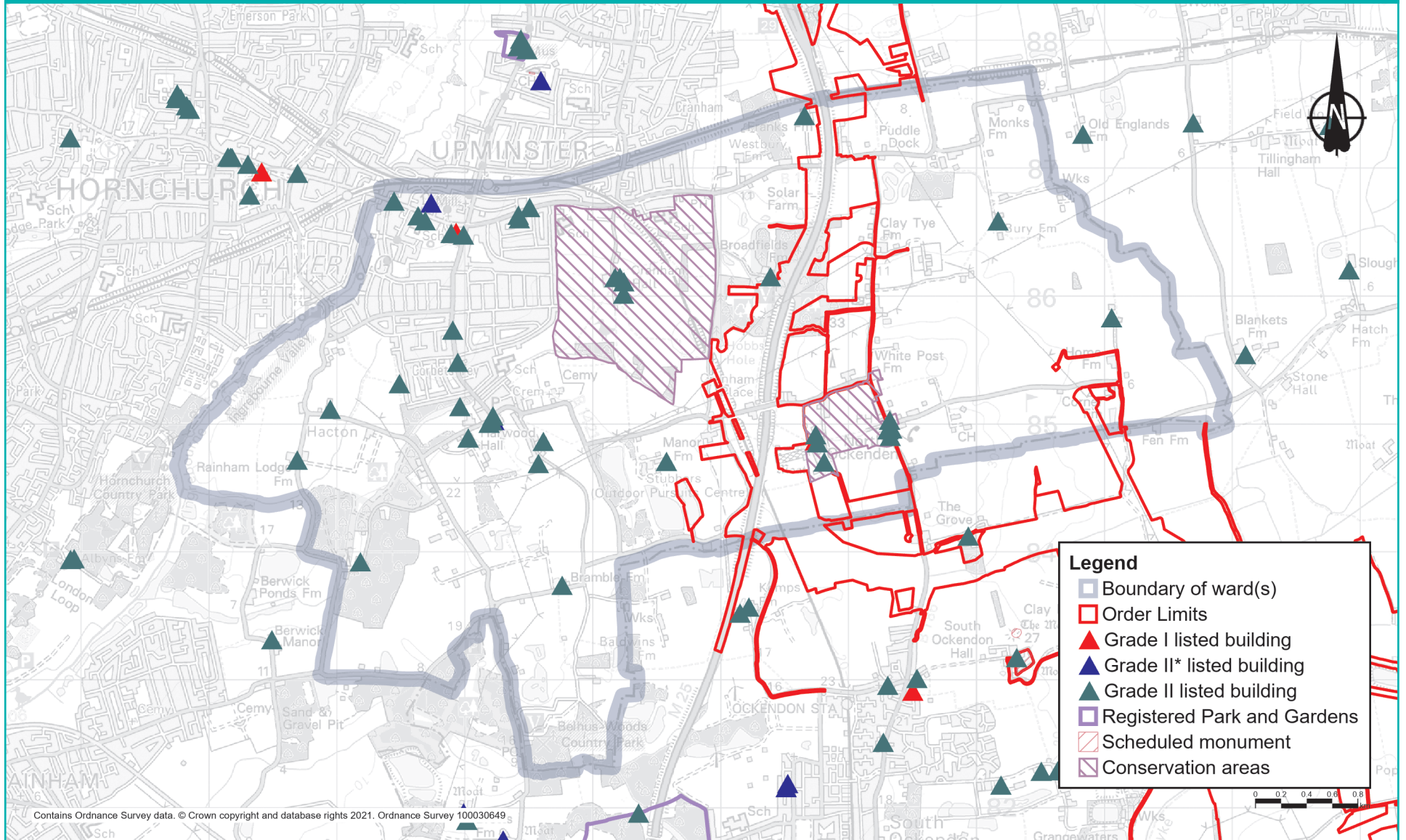
Construction activities affecting Upminster ward relate to the building of the main route, the setting up and operations of the M25 Compound and Ockendon Road Compound. Further details of construction activities in this ward can be found in the Project description section.

Our construction activity would not result in physical damage to listed buildings, but it would temporarily introduce additional noise, lighting and visible construction activity and machinery near the M25 and Ockendon Road Compounds. It would also increase noise and traffic along construction access routes.

Measures to reduce impacts during construction

The design and layout of the M25 and Ockendon Road Compounds would take account of the location of heritage buildings, and aim to avoid or minimise light glare, light spill and light pollution during night-time construction. More information can be found under Design principle (S326). Good practice measures, including reducing dust and noise, are also relevant mitigating impacts in the vicinity of heritage assets. Please refer to Air quality, Noise and vibration and Heritage sections of the REAC measures.

Figure 21.23: Built heritage in Upminster ward



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21.11.2 Operations

Further details about our operations activities can be found in the Project description section.

Operational impacts

The Church of St Mary Magdalene, Franks Farmhouse and Barn and Stable Block to the north of Broadfields Farmhouse would experience a slight impact through increased traffic noise along the M25 once the road opens.

Measures to reduce impacts during operation

The engineering and landscape design of the road aims to avoid or reduce negative impacts that could affect the significance of heritage assets and their surroundings. To preserve the rural and historic character of the landscape, we would minimise road lighting where it is safe and practical, but remain in accordance with relevant standards (Design principle LST.02 and LST.03). We would plant trees or landscape to reduce impacts to the buildings. The M25 and Ockendon Road Compounds would be dismantled after construction to reflect current field patterns and the surrounding landscape character as outlined under Design principle S3.05.

21.12 Contamination

Existing situation

We have reviewed historical maps and environmental data and found no known medium or high-risk sources of contamination that could potentially be disturbed during construction or after the road opens within the Upminster ward.

21.12.1 Construction

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

21.12.2 Operations

During the operation of the road, should an incident occur, for example, a traffic collision 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.