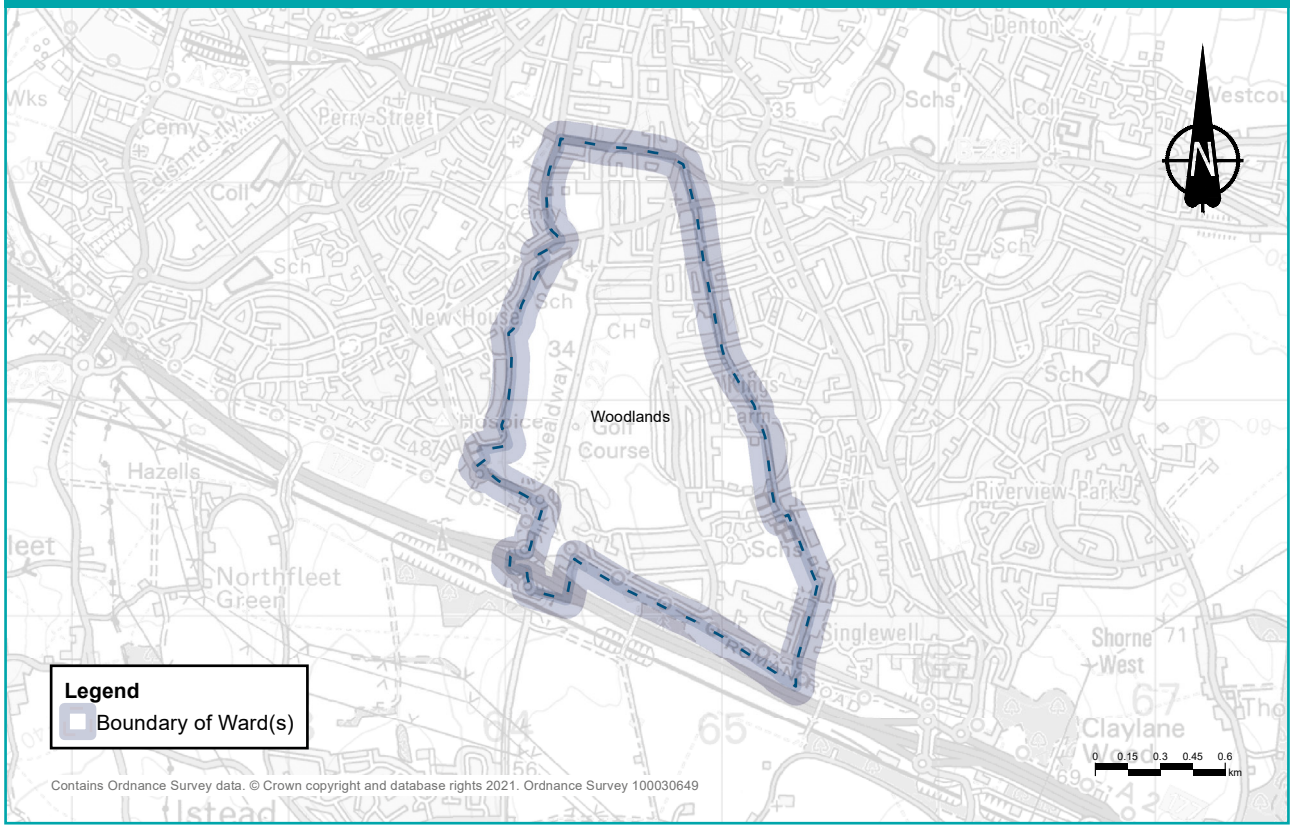
9

Chapter 9: Woodlands ward

This chapter summarises the activities in Woodlands 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 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.

Figure 9.1: Ward boundary map for Woodlands ward



9.1 Overview

9.1.1 About this ward

Woodlands is located south of the River Thames and forms part of Gravesend town in the borough of Gravesham. It is situated to the west of Singlewell ward and east of Painters Ash ward. Woodlands ward is approximately 2.2km^2 in area and has an estimated population of 6,934[1]. Woodlands ward is mostly residential and includes the suburbs of Christian Fields and King's Farm, as well as Mid Kent Golf Club. The A2 runs close to the southern boundary of the ward, with Roman Road bridleway on the ward's southern boundary.

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

9.1.2 Summary of impacts

Table 9.1: Summary of impacts during the project's construction and operation

Topic	Construction	Operations
Traffic	**Impacts** There may be some additional local vehicles on the A227 Wrotham Road if traffic is deterred from using the Gravesend East junction. This may lead to some delays at junctions along the Wrotham Road within the ward. **Mitigation** We have reduced HGV journeys. We propose haul roads off the public highway for construction vehicles, which would reduce their use of local roads. We would reduce A2 closures and limit them to nights and weekends as much as possible.	**Impacts** There would be very little change in traffic in the Woodlands ward as a result of the new road opening, except along Wrotham Road. Further details of the predicted changes in traffic flow can be found in the Traffic section of this chapter. **Mitigation** Once the project is operational, traffic impacts on the affected road network would be monitored, including local roads.

Topic	Construction	Operations
Public transport	**Buses** There may be some increases to journey times on coach services on the A2 due to activities in adjacent wards. **Rail** During construction, there would be no noticeable changes in local journey times to Gravesend station and no changes to rail services at that station.	**Buses** There are no discernible changes to bus journeys predicted once the project is operational. **Rail** There would be no discernible changes to rail services from or access times to Gravesend station once the project is operational.
Footpaths, bridleways and cycle routes	**Impacts** One bridleway and one cycle route would be impacted during the construction period to allow for utilities diversions works. **Mitigation** Closures of these two routes would be reduced as much as possible to lessen the impact on the local public rights of way network.	**Impacts** The section of a cycle route that runs through these wards would be unaffected by the road when it opens, but would be affected in other sections of the route in neighbouring wards to the west. **Mitigation** No mitigation required.

Topic	Construction	Operations
Visual	**Impacts** Views towards construction activities would be limited. A small number of homes along Epsom Close would be able to see the adjacent utility works along the Roman Road. Some taller elements, such as new tunnel entrance gantries may be visible. **Mitigation** None required.	**Impacts** None identified. **Mitigation** None required.
Noise and vibration	**Impacts** The construction activity associated with widening the A2 is expected to create noise in this ward. There would be 24-hour, seven-day working in some locations. There would be no percussive or vibratory works within this ward. There would be negligible changes in road traffic noise apart from Ridgeway Avenue, which is predicted to have a minor increase in noise and Harman Avenue, which is predicted to have a moderate increase in noise during year 1 of construction. **Mitigation** Construction noise levels would be controlled by mitigation measures set out in the REAC. There are also measures presented in the CoCP.	**Impacts** Once the new road is built, it is predicted there would be between a minor increase and decrease in noise in different areas of this ward. This is due to changes in traffic flow and the speed on the existing road network. **Mitigation** Low-noise road surfaces would be installed on new and resurfaced roads.

Topic	Construction	Operations
Air quality	**Impacts** A few properties located along the A2 corridor may experience dust and emissions from construction equipment and traffic during the construction phase. Analysis of the construction phase traffic flows associated with the project indicate there would be a minor worsening in air quality in the area along Singlewell Road during 2024. **Mitigation** 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.	**Impacts** There are no predicted exceedances of NO_2 or PM_{10}. **Mitigation** No essential mitigation is required.

Topic	Construction	Operations
Health	**Impacts** The construction phase of the project would present opportunities to access work and training. There are limited impacts predicted on this ward although there is the potential for changes in the area that may result in negative impacts on health, for example, mental health and wellbeing. These include increased traffic noise, dust and emissions from construction equipment and traffic, and changes in access to open space such as the temporary closures of footpaths. **Mitigation** The negative impacts would be mitigated through the good practice construction measures presented in the CoCP and REAC relating to noise, working hours and community engagement.	**Impacts** Once the project is built, there would be a 10% increase in accessibility to open space for local people. **Mitigation** No essential mitigation is required for health other than those measures described in the noise mitigation section.

Topic	Construction	Operations
Biodiversity	**Impacts** The construction of the project would involve the removal of areas of habitat, both temporarily and permanently, and disturbance to retained habitat for the new road. These habitats support a number of protected and notable species which would be impacted including reptiles. **Mitigation** Vegetation clearance would take place in winter to avoid impacting breeding birds. Protected species would be relocated, carried out under a Natural England licence. Impacts would be controlled through the range of good practice measures set out in the CoCP and REAC.	**Impacts** None identified. **Mitigation** None required.
Built heritage	**Impacts** There is likely to be an indirect effect (additional noise, lighting and visible construction activity) on some built heritage assets due to construction work on the A2 Watling Street. Grade II listed Orchard House and Corner Cottage would experience temporary minor change to their setting as they are located just north of the A2. **Mitigation** Mitigation measures are presented in the REAC, the CoCP and the Design principles.	**Impacts** None identified. **Mitigation** None required.
Contamination	**Impacts** None identified. **Mitigation** None required.	**Impacts** None identified. **Mitigation** None required.

9.2 Project description

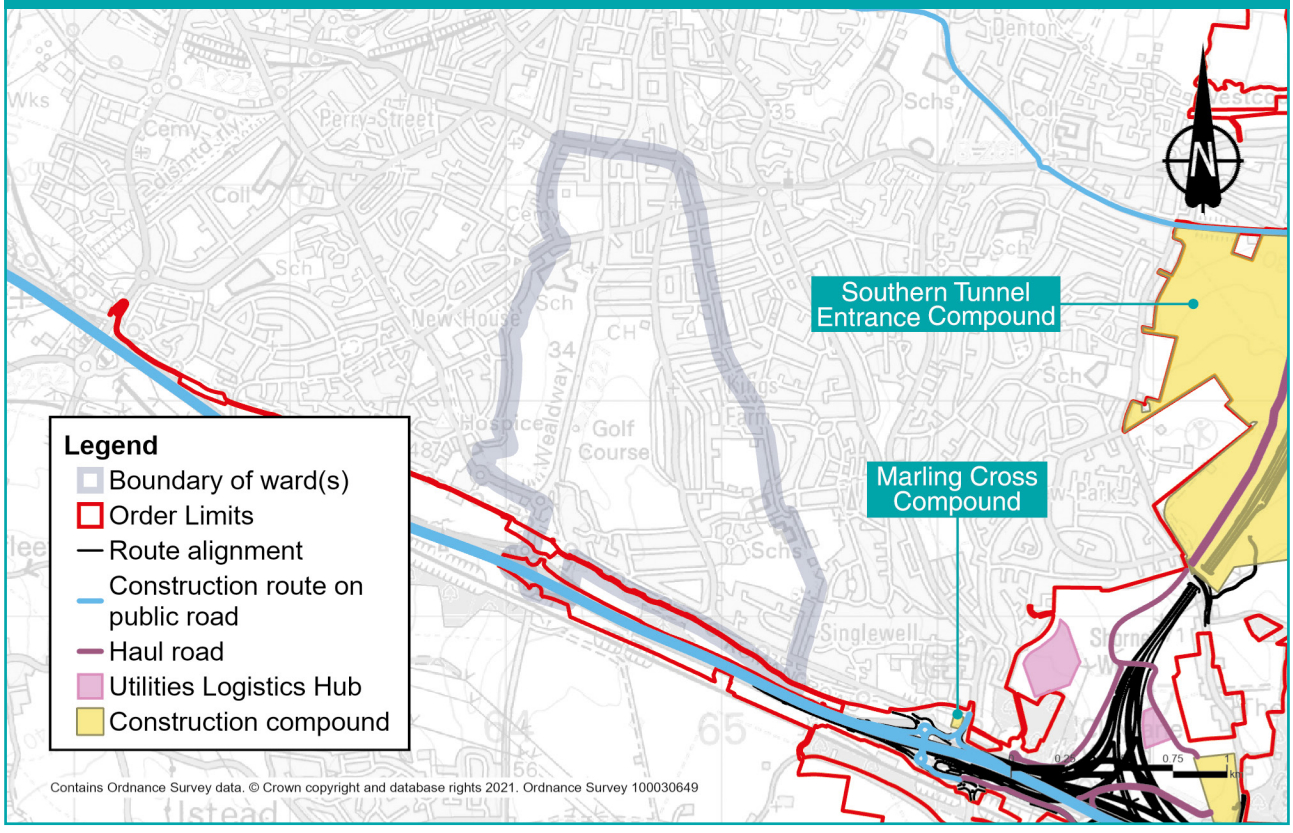
9.2.1 Construction

Construction activities

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

Part of our proposed Order Limits (the area of land required to construct and operate the project, formerly known as the development boundary), extends from an existing compound at Marling Cross in Shorne, Cobham and Luddesdown ward to a National Grid site west of Hall Road. This is to support the proposed installation of four underground power cables from the National Grid site to the new primary substation at the A226. The power cables and associated works would pass through Woodlands ward.

Figure 9.2: Main construction areas in Woodlands ward



The power cables would be installed using trenchless methods under Hall Road and Wrotham Road. The remainder, along the Roman Road bridleway, would be mostly open cut and delivered in sections, with barriers moving as work progressed. 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 3. 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 compounds and Utility Logistics Hubs

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.

No construction compounds or Utility Logistics Hubs are proposed in Woodlands ward.

Construction routes on public roads

The A2 would be used as a construction route.

Construction schedule

Construction of the entire project is scheduled to last for six years from 2024 to 2029. To complete our construction programme efficiently, we would divide activities into packages of work, carried out in a coordinated way. Maps and programmes for the work packages in Kent can be found in chapter 3 of the Construction update. The utility works in this ward are expected to take around 15 months, towards the beginning of the overall construction schedule.

Construction working hours

Most construction activities in this ward would take place during core hours, from 7am to 7pm on weekdays and 7am to 4pm on Saturdays. However, there would be circumstances when our working hours would need to be extended. For example, connecting new roads to existing ones would be carried out when there is less traffic, so it is safer for both construction workers and road users. Working outside the core hours can also benefit road users by reducing the need for traffic management measures during peak times. More information about working hours is set out in the Noise and vibration section below and in the CoCP.

Traffic management

There are no construction traffic management measures planned in the Woodlands ward.

Measures required across the project would include narrow lanes, reduced speed limits, lane closures and temporary traffic lights. We have tried 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 would be subject to approval by the Secretary of State for Transport, following consultation with the local highways authority.

9.2.2 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.

Changes to the project since our design refinement consultation

There have been changes to the Order Limits in Woodlands ward since our design refinement consultation in July 2020. These are in the area where the works on the underground power cables are proposed. Our ongoing discussions with the local authority and utility company have allowed us to realign the proposed utility works and we have reduced the Order Limits accordingly.

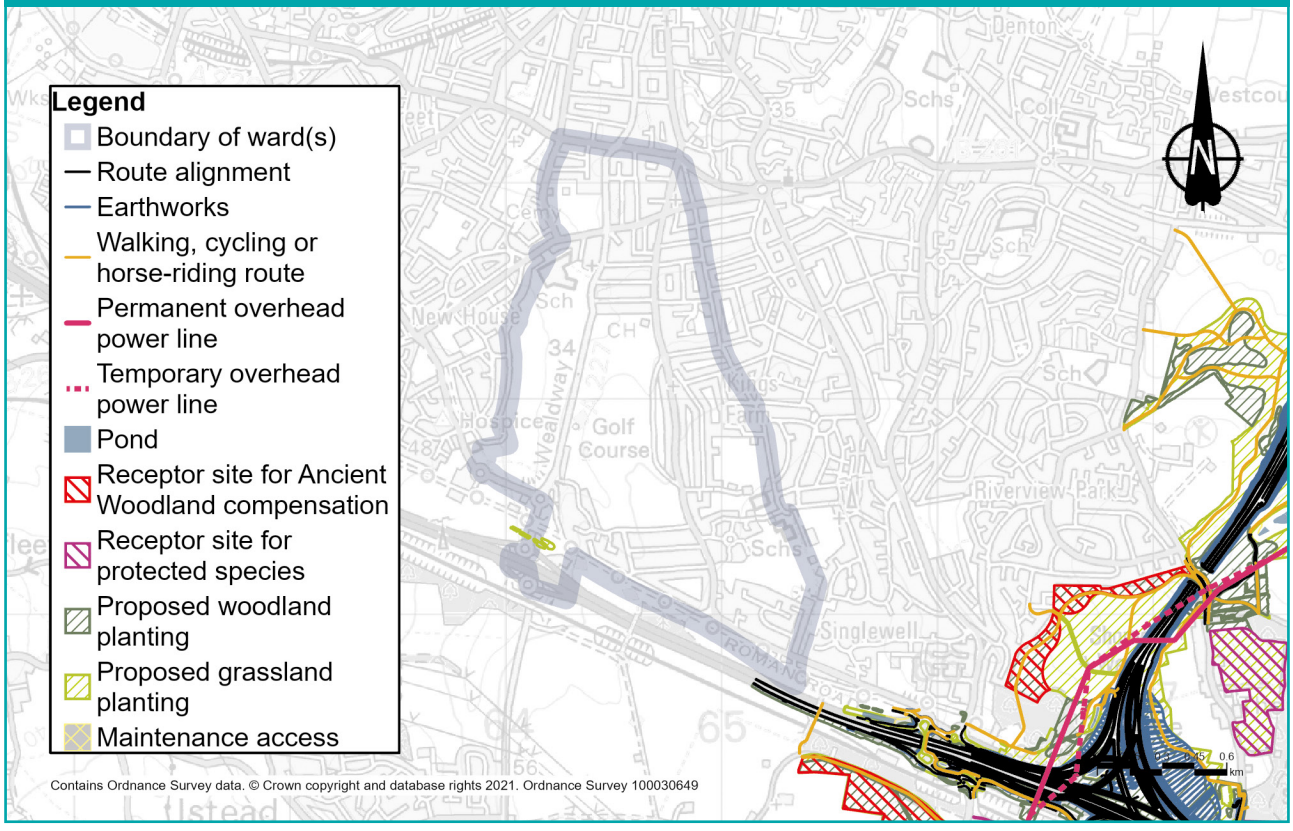
Impacts on open space and common land

In Woodland ward, we propose permanently acquiring rights within the Cyclopark for the purposes of maintaining the newly installed underground power cable along or adjacent to the existing bridleway on Roman Road. The open space affected by these utility works would be reinstated and access to the land would be unaffected once construction is complete.

The amount of land required within the Cyclopark has been reduced since the design refinement consultation, therefore reducing the temporary impact on the open space site.

More information about our proposals for compensating for impacts on open space land (which includes special category and recreational land), including proposals we have consulted on previously, can be found in chapter 3 of our Operations update.

Figure 9.3: Main features of the completed project



9.3 Traffic

We carried out traffic assessments to understand how roads near the project would be affected during the project's construction and once it is operational, compared with the situation if the project was not built. Information about how we carried out these assessments can be found in chapter 4 of the Operations update.

9.3.1 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.

There may be some additional local vehicles on the A227 Wrotham Road if traffic is deterred from using the Gravesend East junction. This may lead to some delays at the junctions along the Wrotham Road within the ward.

Measures to reduce construction traffic impacts

Our approach to construction has been refined after further investigations and feedback received from the public and stakeholders. A summary of the proposed measures to reduce the volume of construction materials transported in and out by road can be found in chapter 2 of the Construction update. In addition to reducing the volume of HGV journeys needed for the project's construction, we would avoid the long-term closure of the A2/M2 during the construction period to reduce the impacts on local communities and the wider road network. Instead, to carry out the required works on the A2/M2, we would only close the road overnight or at weekends when it is less busy.

- We would implement the Gravesend East junction northern roundabout works as early as possible during construction, so local traffic could benefit from the changes as soon as possible.
- We would minimise the use of the local road network as far as practical by building temporary offline haul routes that link the strategic road network directly to the construction areas, including directly from the A2 eastbound.

9.3.2 Operations

Operational impacts

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

Figures 9.4, 9.6 and 9.8 below show the predicted changes in traffic in the morning peak (7am to 8am), interpeak (an average hour between 9am and 3pm) and evening peak (5pm to 6pm) measured in Passenger Car Units (PCUs per hour), where 1 PCU is equivalent to a car, and 2.5 PCUs is equivalent to an HGV. Figures 9.5, 9.7 and 9.9 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.

There would be very little change in traffic in the Woodlands ward as a result of the new road opening, except along Wrotham Road and Coldharbour Road. Coldharbour Road would generally not experience any change in traffic greater than 50 PCUs an hour; the exception is eastbound in the morning peak hour where the increase is between 50 and 250 PCUs an hour. Along the Wrotham Road outside the St George's Church of England Academy, the traffic increases by between 50 and 250 PCUs northbound in the morning peak hour. This is an increase of between 10% and 20%. In all other time periods, the change in traffic flows would be less than 50 PCUs. Southbound, the change in traffic flows is less than 50 PCUs in all modelled time periods.

Coldharbour Road would generally not experience any change in traffic greater than 50 PCUs an hour; the exception is eastbound in the morning peak hour where the increase is between 50 and 250 PCUs an hour.

On the Wrotham Road, between the A2 and the junction with Coldharbour Road, northbound the traffic flows increase in the morning peak period by between 50 and 250 PCUs, an increase of less than 10%. Southbound traffic flows would increase by between 50 and 250 PCUs, an increase of less than 10% in the morning peak hour and an average interpeak period. Where the A227 Wrotham Road crosses over the A2, the traffic flows would increase northbound by between 50 and 250 PCUs in all modelled time periods. This is an increase of between 20% and 40% in the morning peak hour and less than 10% in the other time periods. Southbound, the increase in traffic flows would be between 50 and 250 PCUS in the evening peak hour, an increase of between 10% and 20%.

On the offslip westbound from the A2 onto the Wrotham Road junction, the increase in traffic flows would be between 50 and 250 PCUs in each modelled time period. This is an increase of over 40% in the morning peak hour and between 10% and 20% in the interpeak period and the evening peak hour. The eastbound onslip from the Wrotham Road onto the A2 would experience an increase in traffic flows of between 50 and 250 PCUs in the morning peak hour and an average hour in the interpeak period. This is an increase of between 10% and 20%.

Figure 9.4: Predicted change in traffic flows (PCUs) with the project during the morning peak in 2029

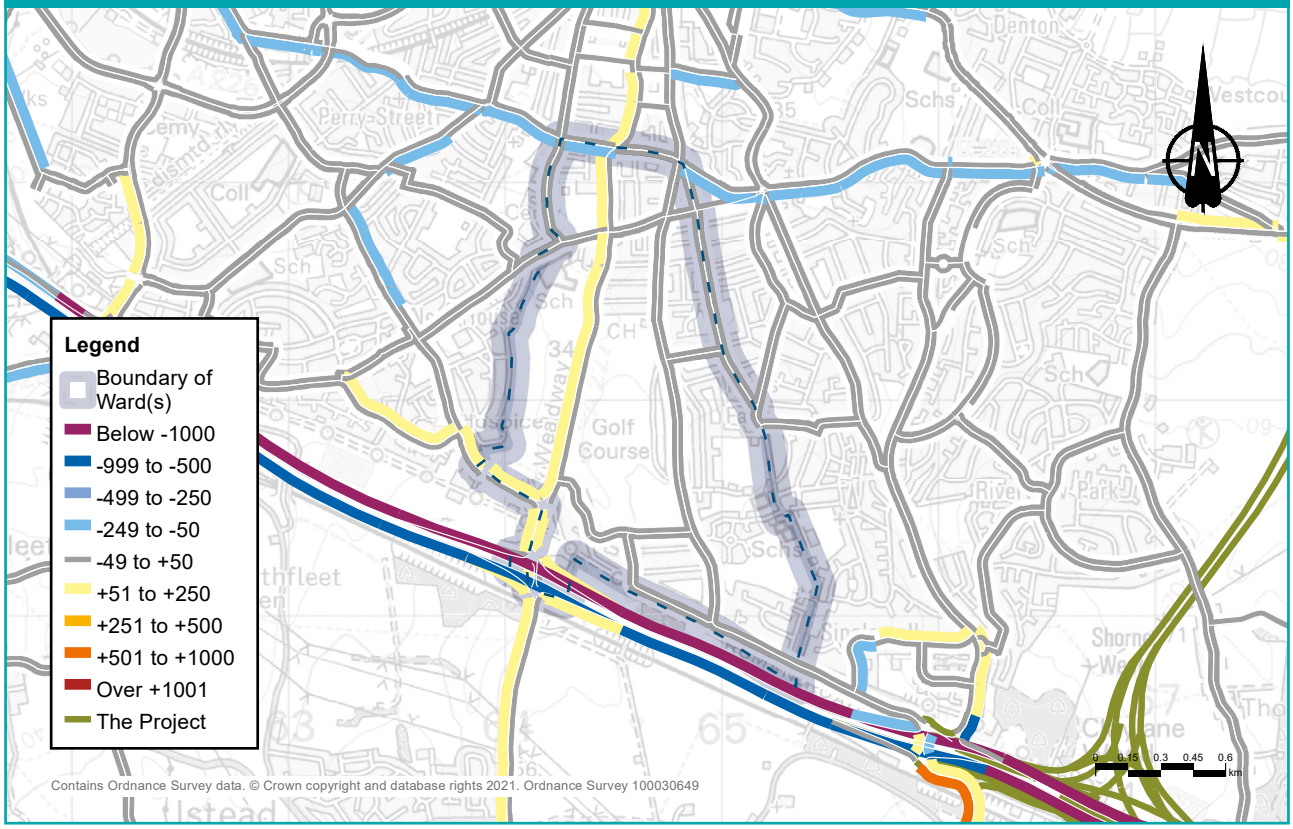


Figure 9.5: Predicted percentage change in traffic flows with the project during the morning peak in 2029

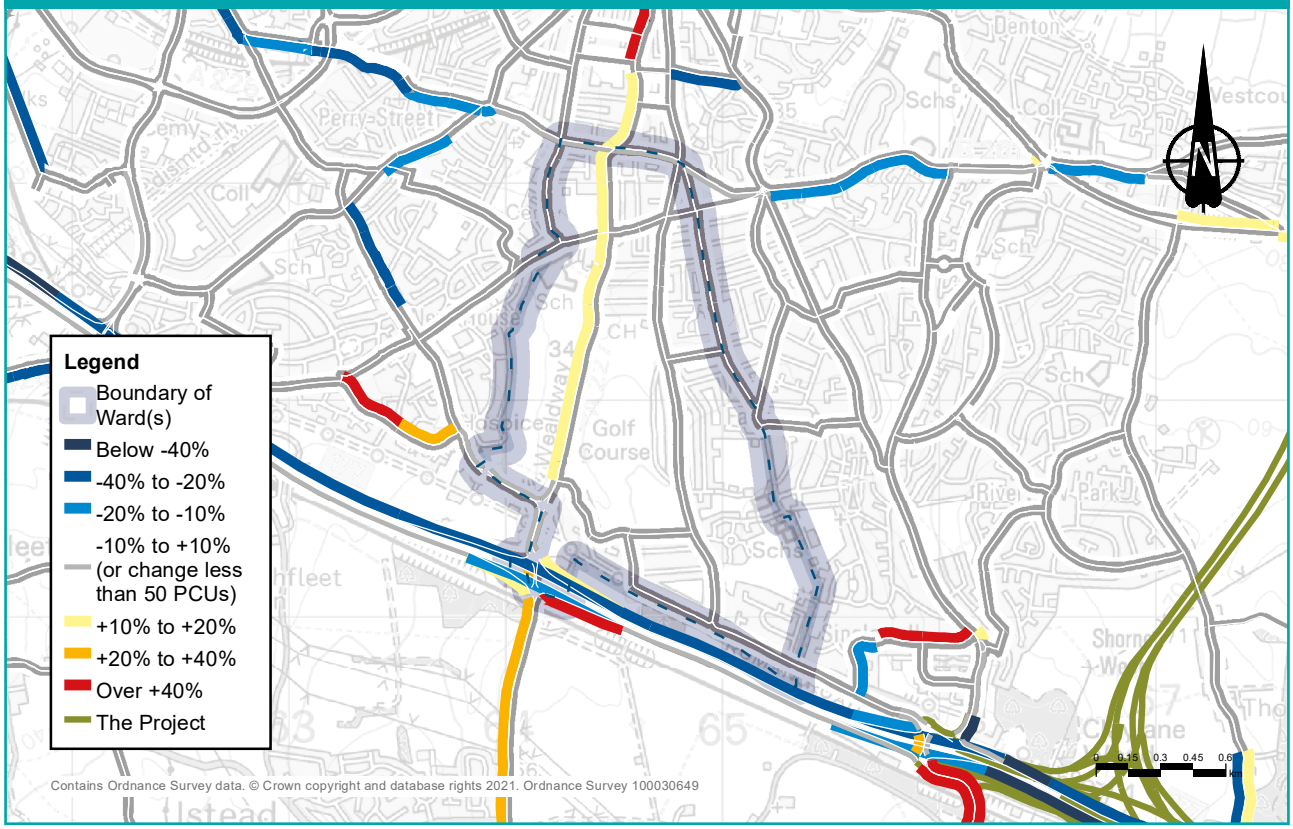


Figure 9.6: Predicted change in traffic flows (PCUs) with the project during the interpeak period in 2029

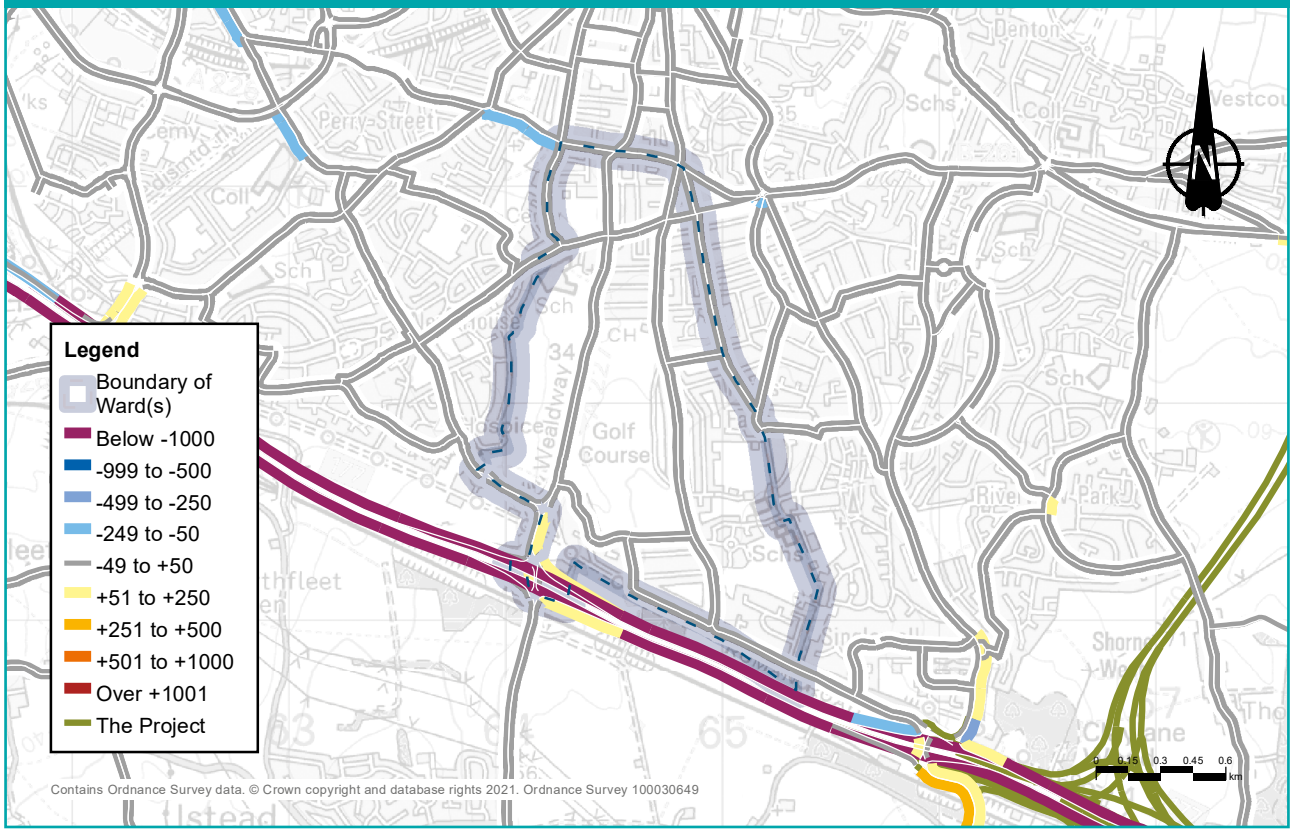


Figure 9.7: Predicted percentage change in traffic flows with the project during the interpeak period in 2029

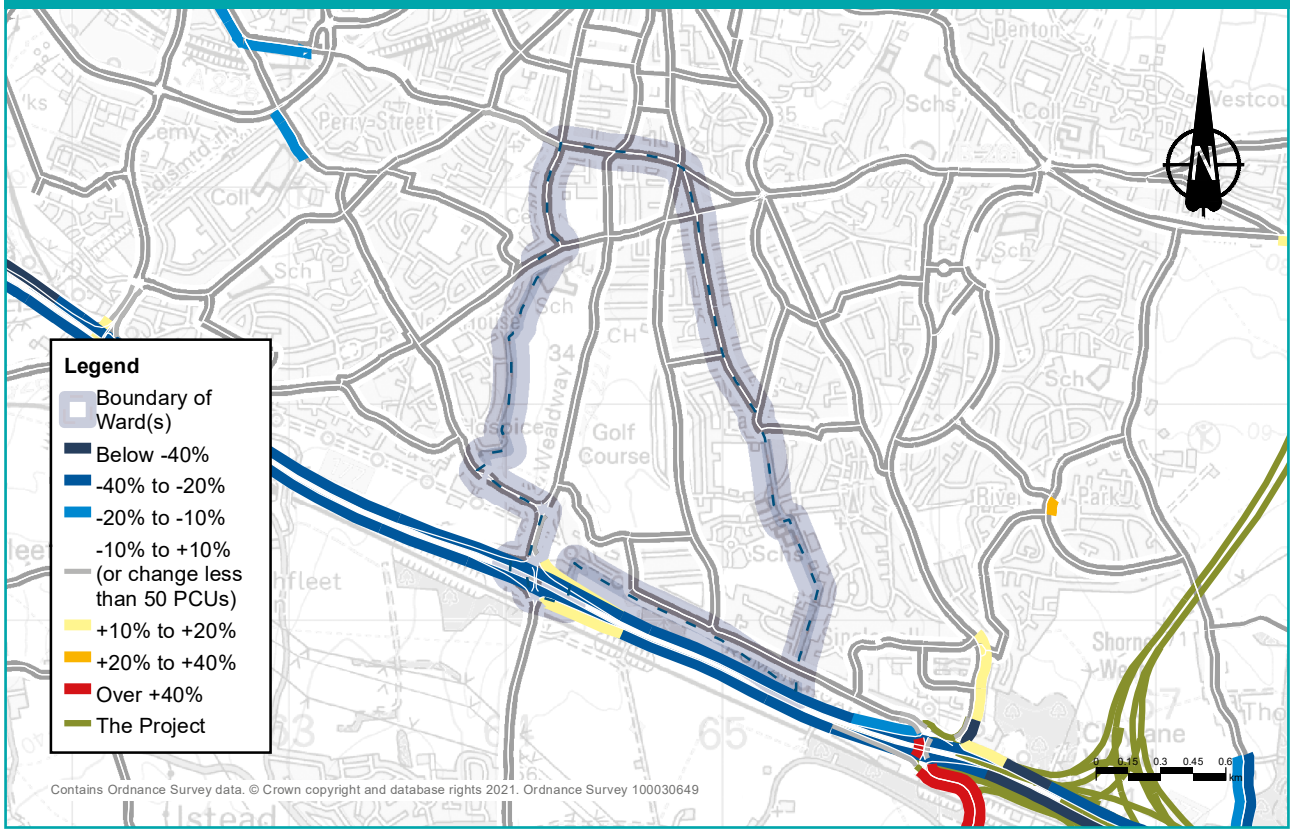


Figure 9.8: Predicted change in traffic flows (PCUs) with the project during the evening peak in 2029

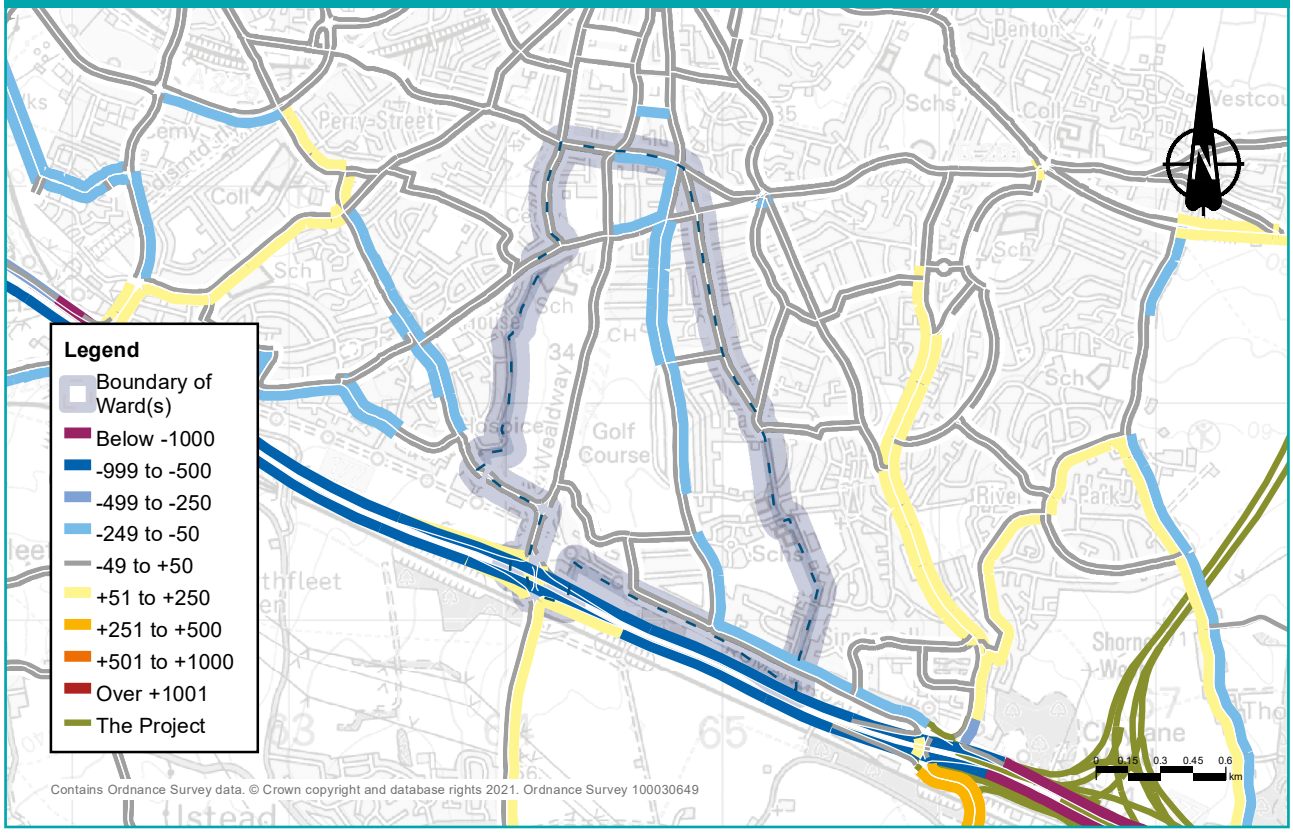
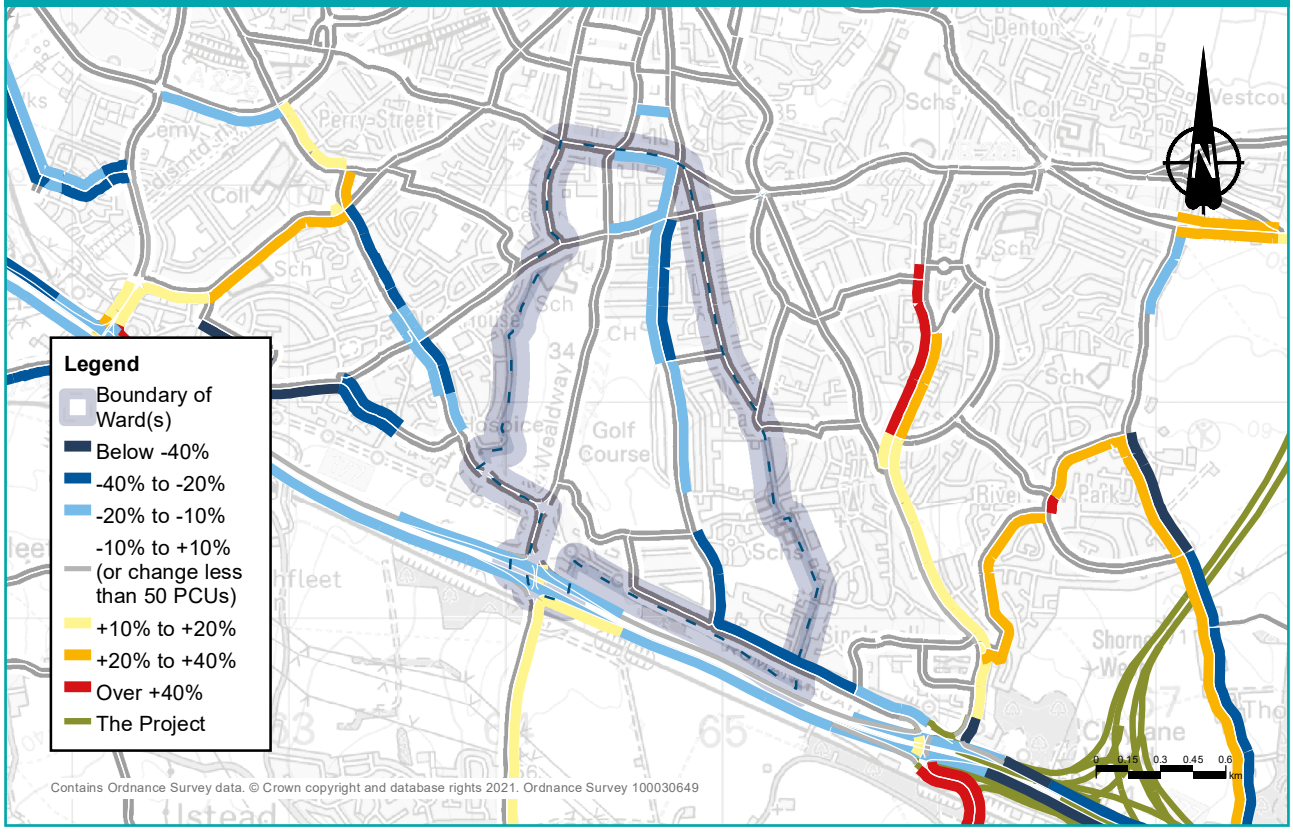


Figure 9.9: Predicted percentage change in traffic flows with the project during the evening peak in 2029



Changes to journey times

Figure 9.10 shows the change in the area that could be reached within a 30-minute drive from the centre of the ward with and without the project. Figure 9.11 shows the change in area that can be reached within a 60-minute drive. The areas have been calculated for the morning peak hour (7am to 8am). The number of jobs within a 30-minute catchment area would increase by 50% with the project, an increase of 187,700 jobs. The number within a 60-minute drive increases by 22%, and would provide access to an additional 555,000 jobs. Despite the project providing a substantial net gain in access for motorists within Woodlands ward, there are areas (shown in orange on the maps below) that would no longer be accessible by car within 30 or 60 minutes because of changes to traffic flows on the wider road network. The area of white space north of the River Thames within the 30-minute map reflects the predicted journey times in that area.

Figure 9.10: Change in the area that motorists could drive to within 30 minutes from Woodlands ward

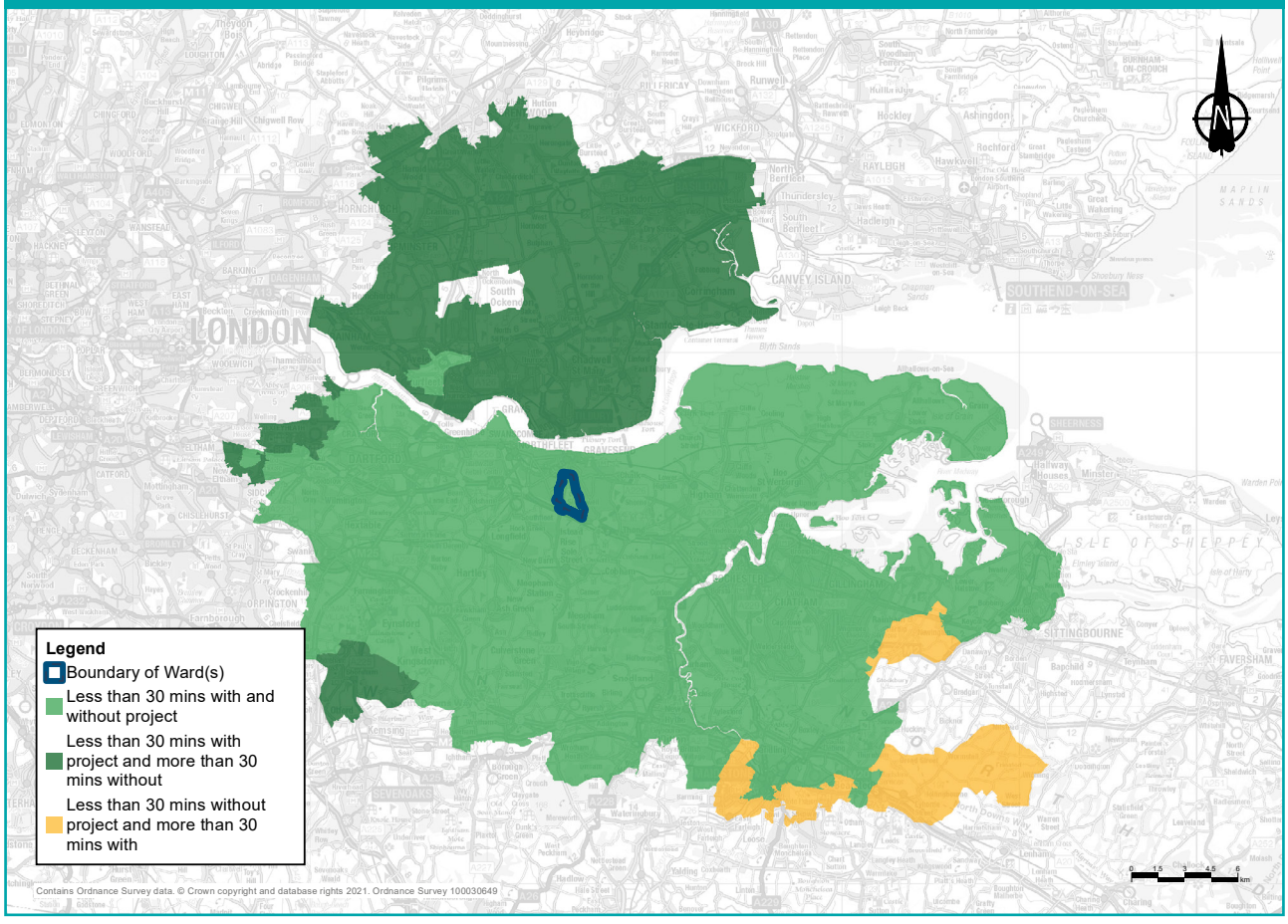
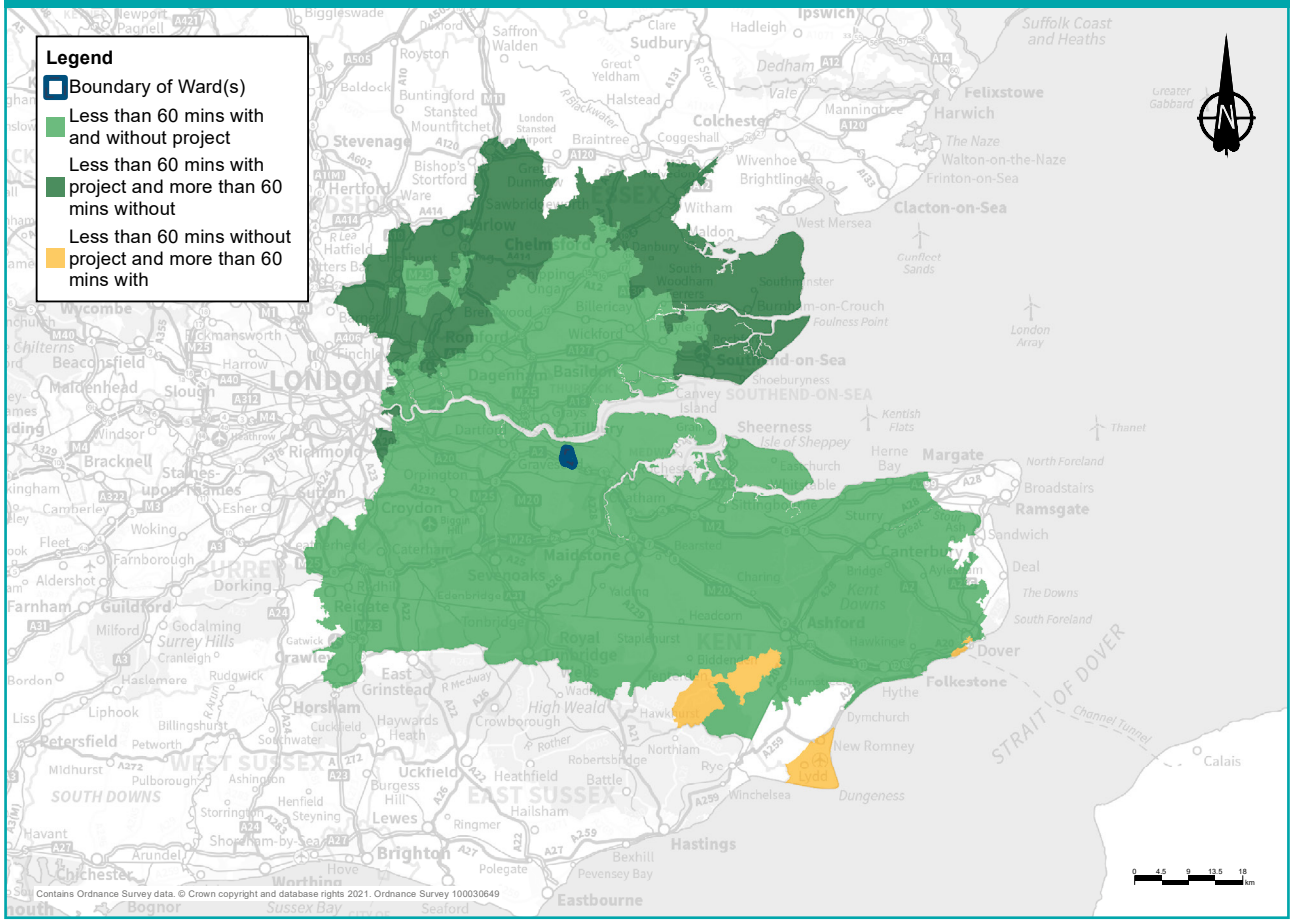


Figure 9.11: Change in the area that motorists could drive to within 60 minutes from Woodlands ward



Operational traffic flows

Once the road is open, 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.

9.4 Public transport

Current situation

There are no railway stations within the ward but Gravesend station is used by Southeastern and Thameslink services to run journeys from Kent through to London Charing Cross north of the ward. Woodlands ward is served by several bus routes including the 3, 223, 305, 306, 308, 416, 455, 717, 719, 720, 722, 750, 751, 765, 774, the school buses Meopham1, VIGO1, NAG2, and regional coach services using the A2.

9.4.1 Construction

Buses

There would be no changes to bus journey times during construction as a result of activities within Woodlands ward. There may be some increases to journey times for buses and coaches using the A2 due to activities in adjacent wards.

Rail

There would be no noticeable change in local journey times to Gravesend station and no change to rail services at that station.

9.4.2 Operational

Buses

Once the new road opens, there would be no changes to bus routes through the ward and no noticeable change to bus journey times.

Rail

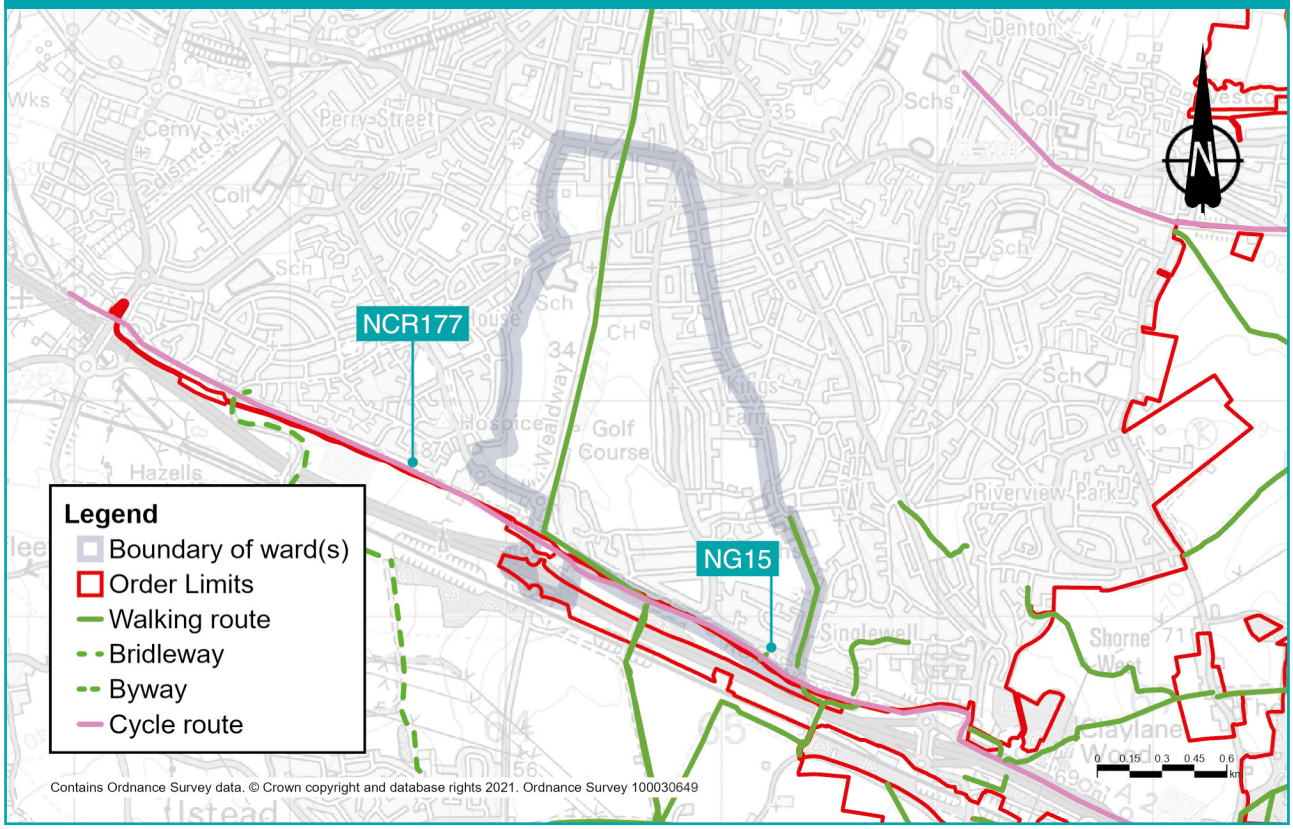
There would be no noticeable change in local journey times to Gravesend station and no change to rail services at that station.

9.5 Footpaths, bridleways and cycle routes

Existing situation

Woodlands is a largely suburban ward, split by the Singlewell Road and the Mid Kent Golf Club. The ward has a small network of local footpaths. For other potential impacts, see the other section areas in this chapter, such as Visual, and Noise and vibration.

Figure 9.12: Footpaths, bridleways and cycle routes in the vicinity of the project in Woodlands ward



9.5.1 Construction

Construction impacts

Due to the construction activities around the A2 in this ward, there would be minor disruptions during the construction period.

- Footpath NG15 would need to be closed for six months to allow utility works where it crosses the Order Limits.
- Cycle route NCR177 within Woodlands ward would remain open during the construction period.

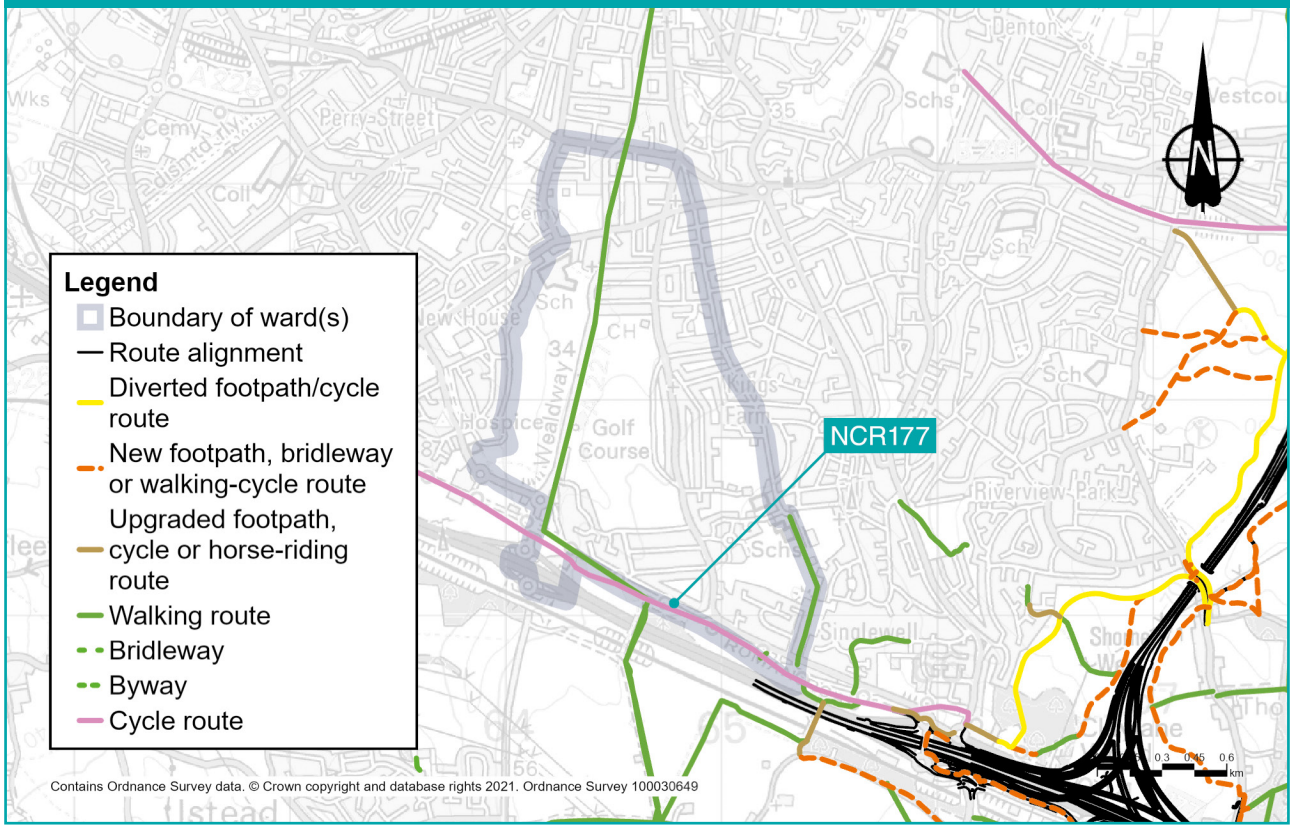
9.5.2 Operations

Operational impacts

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

- The section of NCR177 within Woodlands ward would not be affected by any permanent changes. However, a section of the route east of Gravesend East junction would close permanently, with two new routes being implemented south of the A2, one more direct route along the new connector road south of the A2 and a more scenic route through Jeskyns Woods. For more information, see the Footpaths, bridleways and cycle routes section in chapter 3.

Figure 9.13: Proposed footpaths, bridleways and cycle routes



9.6 Visual

Existing situation

Of the main populated areas, only those homes on the southern edge of Gravesend have views towards the land on which the project would be built. East of the A227, there are views of the land on which the project would be built from a short section of the Wealdway long-distance footpath along Roman Road, until the route crosses the A2 on a footbridge. Views of the land on which the project would be built are also visible from cycle route NCR177 along Roman Road.

Current views towards the land on which the project would be built from homes along Old Watling Street/Watling Street and Hever Court Road are largely screened or densely filtered by a combination of roadside hedgerows and garden vegetation. From Epsom Close, views towards the project include glimpses of gantries along the A2 corridor, partially screened by garden vegetation.

The Wealdway long-distance footpath along Roman Road lies within the land on which the project would be built. Current views from both the Wealdway and NCR177 include the green corridor between the edge of Gravesend and linear planting parallel with the A2. Views towards the land on which the project would be built, taking in the A2 corridor, are restricted by linear belts of trees and roadside vegetation.

East of the Wealdway footbridge crossing the A2, there are slightly more open views from NCR177 toward the project, including the A2 corridor, of grassland, scrub and intermittent trees, with glimpses of gantries.

9.6.1 Construction

Construction impacts

For more information about how the area would look during construction, refer to the construction visualisations in the Construction update. The main construction activities likely to be seen from this ward are:

- utilities diversions
- widening of the A2 corridor and connection works

Views of construction activities would be limited to a small number of homes along Epsom Close, where adjacent utilities works along Roman Road would be partially visible in filtered views and from NCR177. Beyond these works, construction activities along the A2 would be mostly screened by roadside vegetation, although taller elements such as new tunnel entrance gantries, may be visible.

From a short stretch of the Wealdway long-distance path, which follows Roman Road, there would be views of utility works taking place in or next to Roman Road.

Within this ward the route of NCR177 would remain unchanged, however to the east of this ward NCR177 would be permanently diverted as a result of the project.

Measures to reduce visual impacts during construction

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

9.6.2 Operations

Operational impacts

By 2029, the year of opening, the widening works to the A2 would be complete and the land affected by utilities works along Roman Road would have been restored. More information about the completed project can be found in the Project description section above. There would be no long-lasting visual impacts from the project on Woodlands ward.

Measures to reduce visual impacts during operation

Screen planting would form the primary mitigation in this ward.

9.7 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 put forward during this consultation.

Existing situation

The existing noise environment in Woodlands ward is mainly characterised by traffic noise, with a contribution from the railway, agriculture and human activity. The main sources of road traffic noise in this ward are from the A2 and B261.

As part of our environmental assessment process, we carried out surveys of existing background noise at one location in the ward, which was agreed with the local authority. The levels monitored at this location recorded an existing noise level of 61dB(A)[2] during the day.

To understand how noise levels would vary with and without the project, we used 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 the road was built.

In the opening year, noise levels without the project are predicted to range, on average, from 40 to 81dB(A) during the day and from 29 to 66dB(A) during the night at the identified location in 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.

2 Decibel (dB) is the unit used to measure noise levels, with dB(A) being a standardised way of averaging noise levels that account 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.

9.7.1 Construction

Daytime construction impacts

The main construction activities that are expected to give rise to noise and vibration in this ward are those associated with widening the A2. There are no main works compounds or Utility Logistics Hubs currently proposed to be located within the Woodlands ward, nor are there any haul roads proposed within this ward.

There are no percussive or vibratory works proposed in Woodlands.

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

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

Figure 9.14: Construction noise assessment locations in Woodlands ward

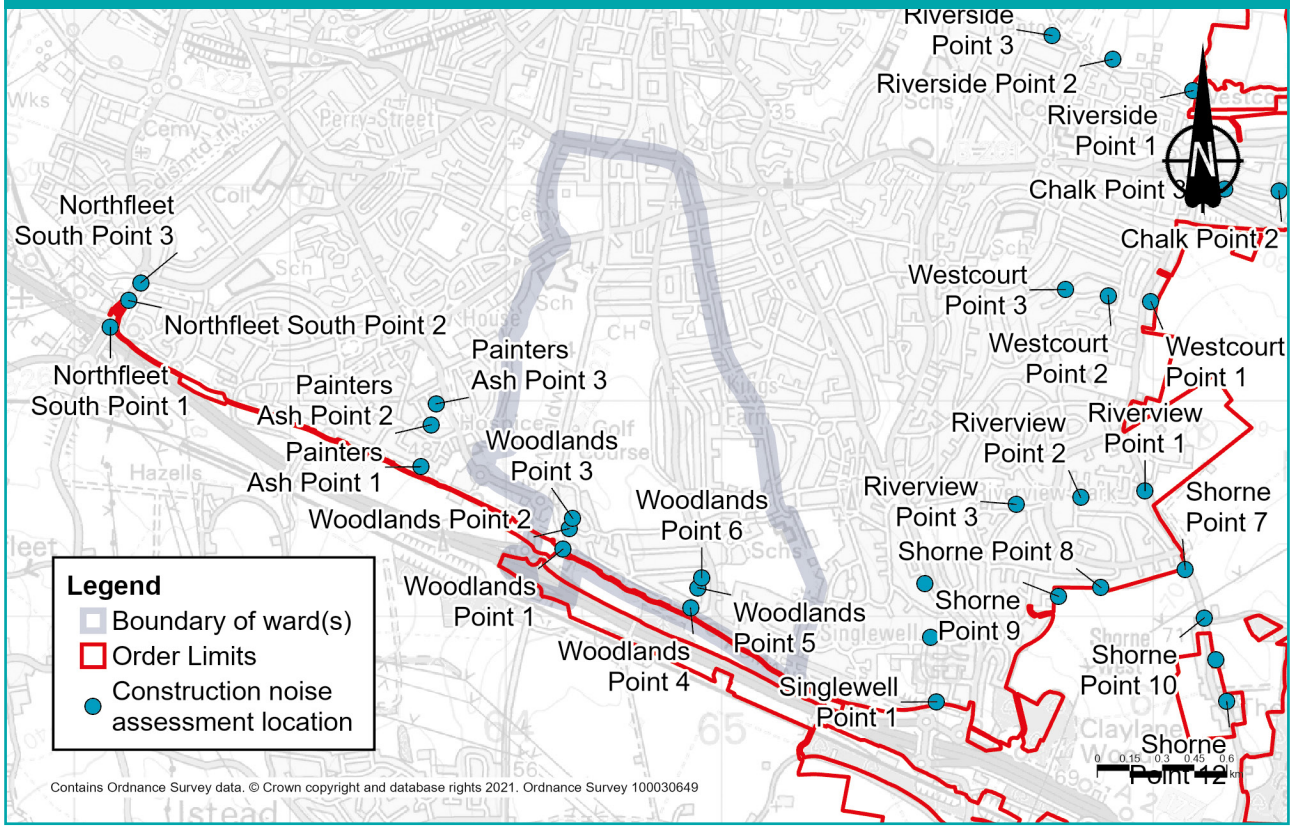


Figure 9.14 shows the locations at which we have predicted the daytime construction noise during the project's construction phase.

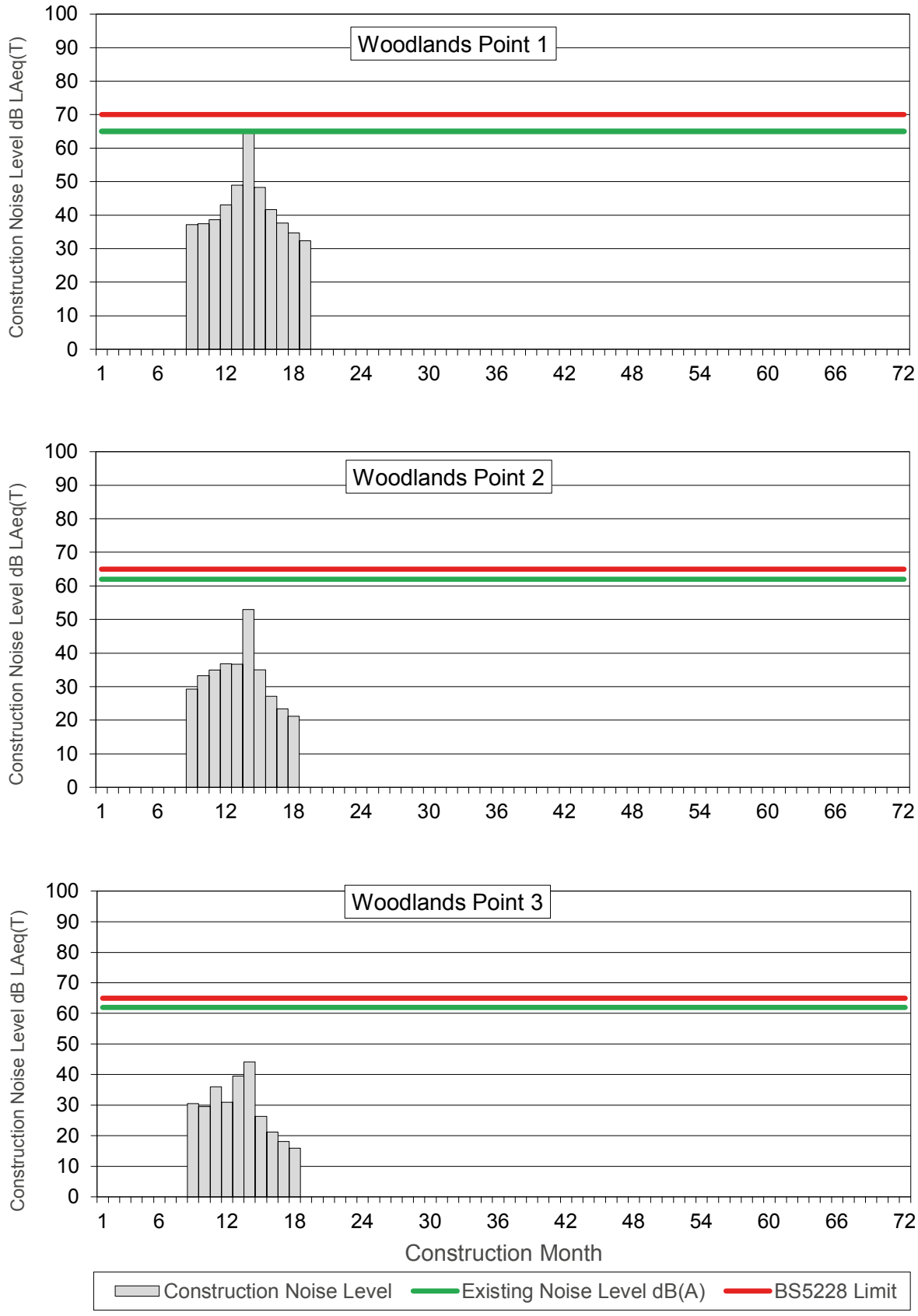
Each vertical bar in figure 9.15 and 9.16 shows the predicted noise levels for that month of the construction period (months 1 to 72). The horizontal green line in each chart represents the existing background noise level at each assessment point without the project. The horizontal red line shows the 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 levels and disturbance would be experienced closer to construction activity. Levels gradually diminish as a result of increased distance with additional buildings and other features screening the noise from more distant residential areas.

With reference to figure 9.15 the following summarises the noise level changes over the construction period for points 1 to 3:

- At point 1, construction noise levels are predicted to range from 32 to 65dB LAeq (12-hour). Construction noise is not expected to exceed the existing background noise levels.
- At point 2, construction noise levels are predicted to range from 21 to 53dB LAeq (12-hour). Construction noise is not expected to exceed the existing background noise levels.
- At point 3, construction noise levels are predicted to range from 16 to 44dB LAeq (12-hour). Construction noise is not expected to exceed the existing background noise levels.

Figure 9.15: Construction noise by month for points 1, 2 and 3 in Woodlands ward



With reference to figure 9.16 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 15 to 58dB LAeq (12-hour). Construction noise is not expected to exceed the existing background noise levels.
- At point 5, construction noise levels are predicted to range from 23 to 41dB LAeq (12-hour). Construction noise is not expected to exceed the existing background noise levels.
- At point 6, construction noise levels are predicted to range from 18 to 39dB LAeq (12-hour). Construction noise is not expected to exceed the existing background noise levels.

Figure 9.16: Construction noise by month for points 4, 5 and 6 in Woodlands ward

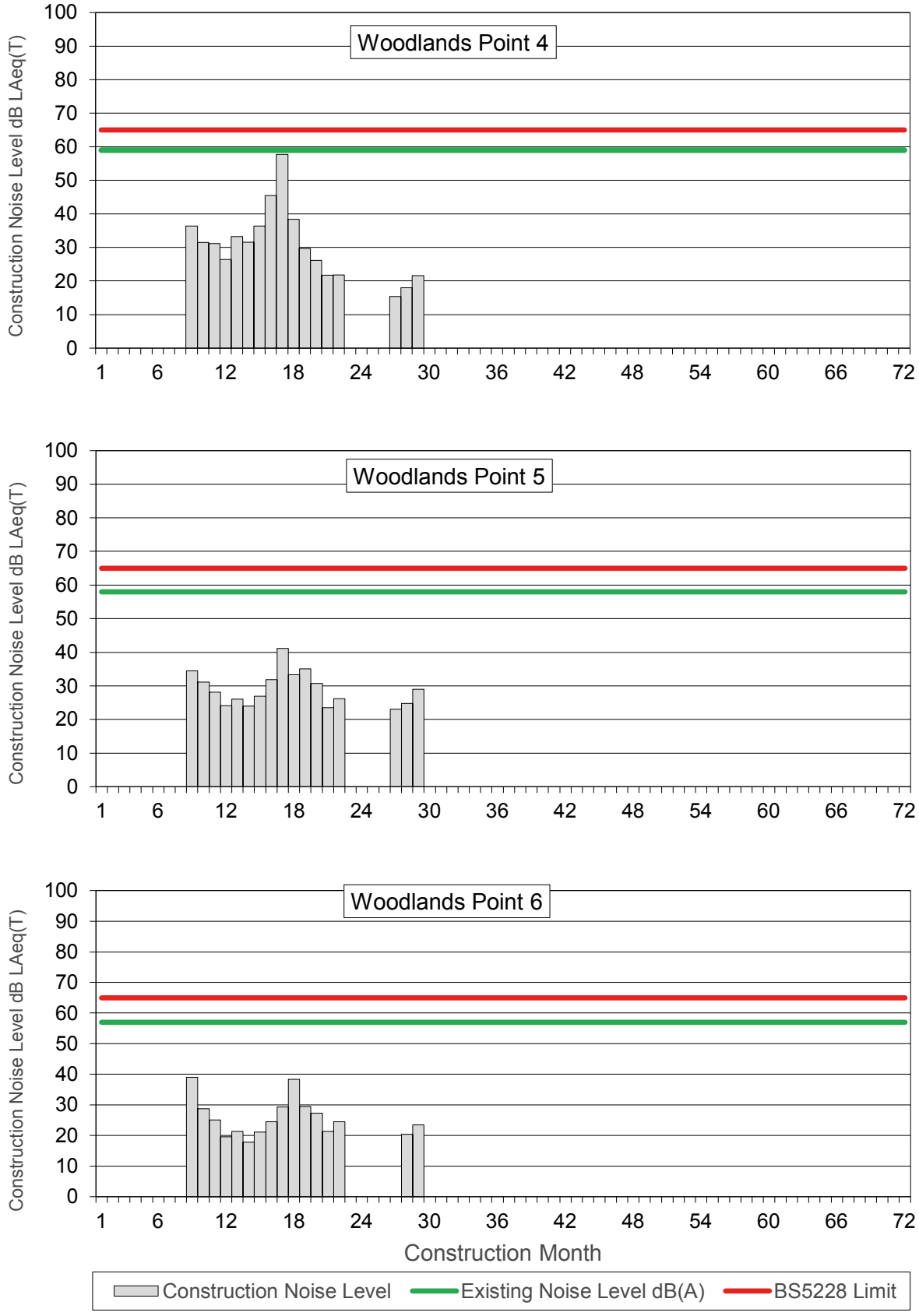
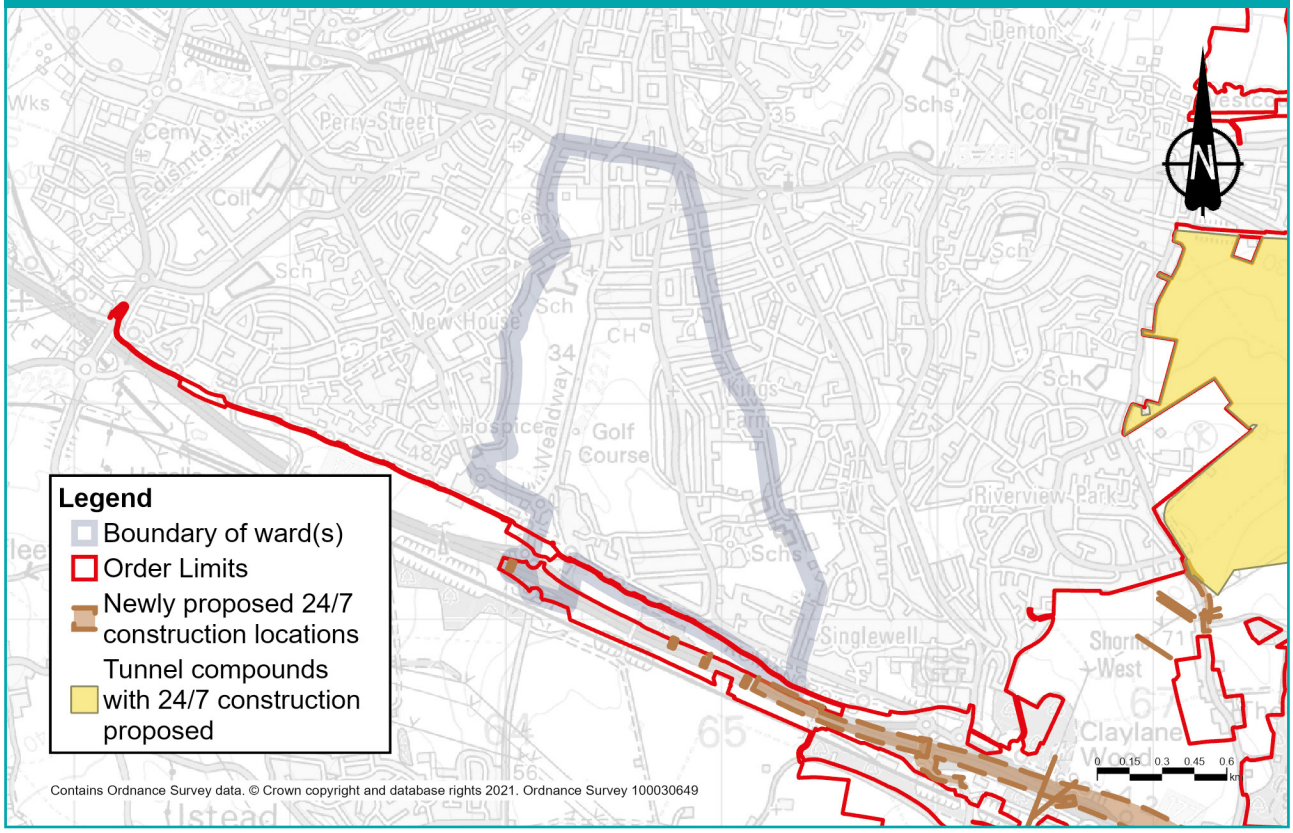


Figure 9.17: Newly proposed and tunnel 24/7 working locations in Woodlands ward



24/7 construction working

In addition to the changes to the daytime noise impacts presented in the section above, 24-hour, seven-day construction working is proposed at the locations shown in figure 9.17 above.

These locations are where works may need to be carried out at night to maintain safety and reduce disruption to road and utility networks. The works in this area are expected to be night-time or weekend highways works. These works could have an impact on local communities, and we would work with the local authority to manage them.

Construction traffic noise impacts

Maps showing the predicted change in road traffic noise on roads within Woodlands 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 following roads where increases in noise levels been predicted. For more information about how we define noise impacts (negligible, minor, moderate and major), see chapter 1.

Table 9.2: Construction traffic noise in Woodlands ward

Affected road(s)	Predicted noise impact	Construction year(s)
Ridgeway Avenue	Minor increase in noise levels	1
Harman Avenue	Moderate increase in noise levels	1

Measures to reduce construction noise levels

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 onsite assessments 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 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 used where reasonably practical 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 selecting local suppliers along the project route, where possible, using local workforces, and by reducing the transport of material for earthworks construction

All control measures, including those above, fall under the principles of BAT and are outlined 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 necessary.

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

9.7.2 Operations

Operational noise impacts

Woodlands ward is located approximately 1.4km to the west of the main project route and, as such, there would be no direct noise impacts from the project in the ward. Noise impacts within this ward would be as a result of changes in traffic flow, the number of HGVs, and traffic speeds on the existing road network within the ward, and changes to the A2 in the south of the ward.

Figure 9.18 Noise impacts during operation in Woodlands ward

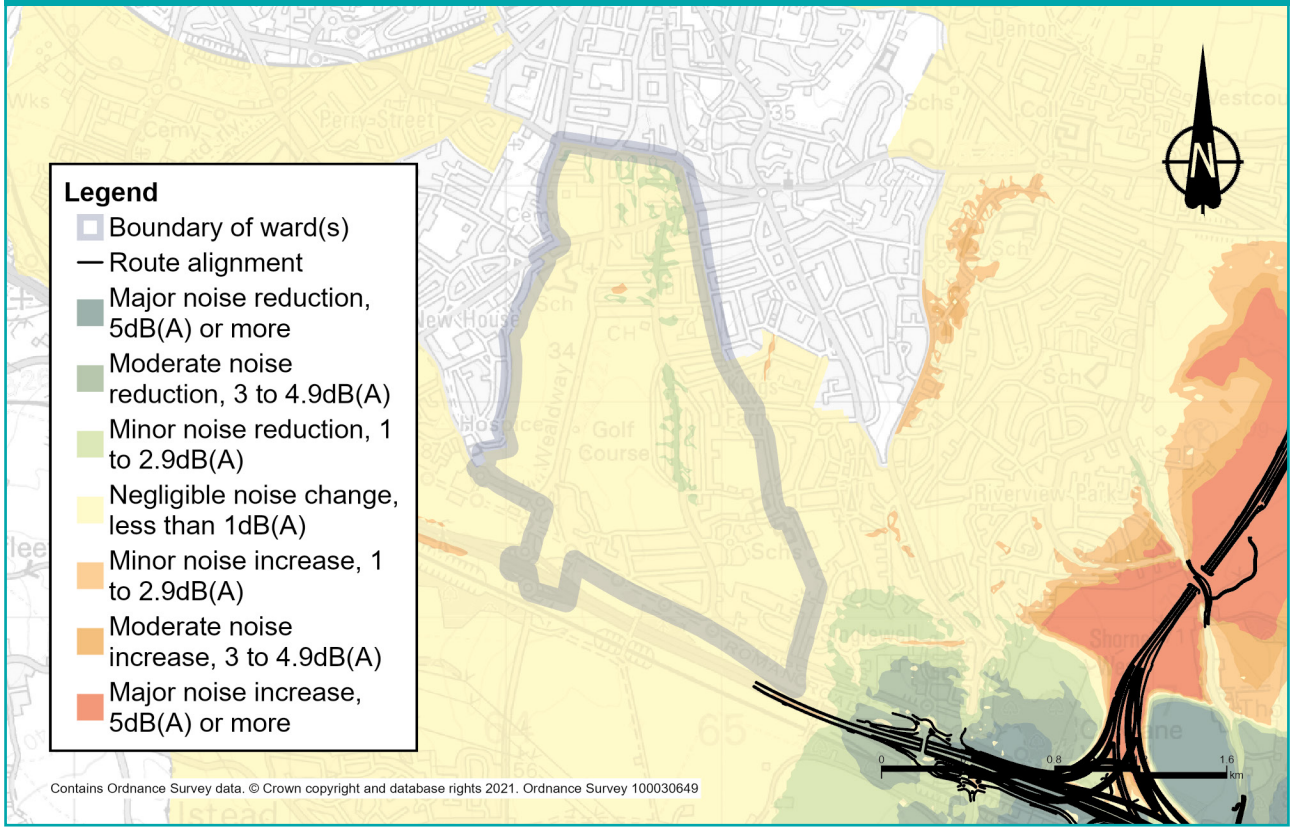


Figure 9.18 above shows the predicted changes in traffic noise in the opening year of the project. Within the ward, changes in road traffic noise at identified noise sensitive locations (such as nearby properties) are predicted to range from a minor decrease in noise levels of between 1.0 and 2.9dB, to a minor increase in noise levels of between 1.0 and 2.9dB. 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 across the project would be, where practicable, to design the road within landscaped features such as cuttings and bunds (walls of earth). The use of low-noise surfacing would also reduce the traffic noise once the road is in use. No essential mitigation is required in this ward.

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

9.8 Air quality

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

Existing situation

Within Woodlands ward, either side of the A2 and M2 have been declared an Air Quality Management Area (AQMA) due to yearly levels of airborne pollution being above accepted standards. AQMAs are areas that have been identified by local authorities as areas of poor air quality that require additional monitoring and controls. No other areas within the ward have been identified as AQMA.

9.8.1 Construction

Construction impacts

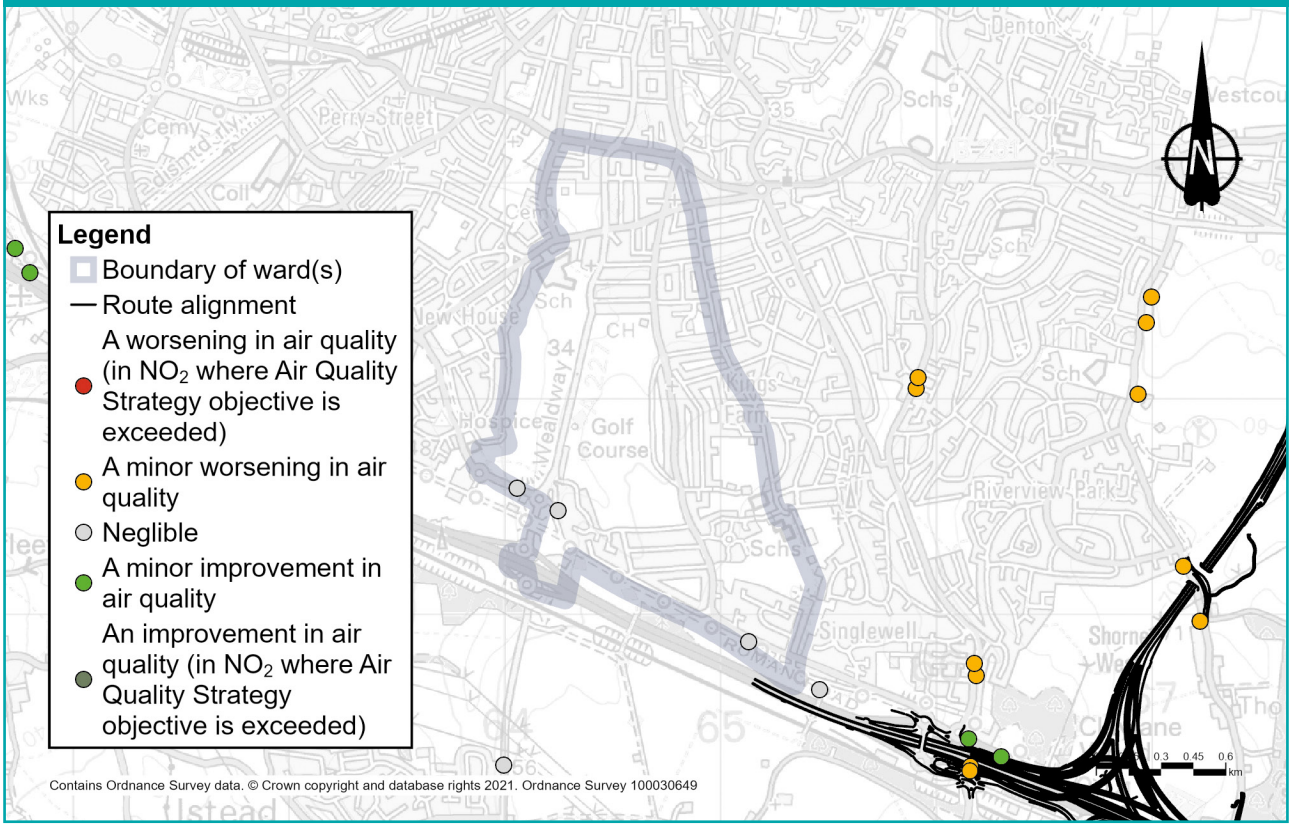
Construction activities have the potential to affect nearby air quality through the release of dust and emissions from construction equipment and traffic. The areas most likely to be affected are those close to haul roads, compounds and soil storage areas. Properties more than 200 metres from the worksite, 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 along the A2 corridor. 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 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 from 2024 to 2029, although there would be a minor worsening in air quality in the area along the Singlewell Road as a result of the traffic management in place during 2024. More information about construction traffic impacts on air quality can be found in chapter 7 of the Construction update.

Measures to reduce air quality impacts during construction

The impact of construction machinery and traffic on air quality would be controlled through the range of good practice measures set out in the CoCP and the REAC. For example, there would be measures to suppress dust, such as damping down dry haul roads and spoil heaps, as well as the use of low-emission machinery and vehicles. We would put in place an AQMP 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 Gravesham Borough Council for consultation (see REAC entry AQ006).

Figure 9.19: Predicted changes in NO_2 within Woodlands ward once the new road is open



9.8.2 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 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.

At all locations within the ward, there are no predicted exceedances of air quality thresholds. There are receptors (properties or habitats that are sensitive to changes in air quality) within the ward, close to the north of the A2 that are predicted to experience a negligible change in the air quality for nitrogen dioxide (NO_2), the main traffic-related pollutant[3]. The highest modelled yearly average NO_2 concentration within this ward is 25.2 µg/m³, which is well below the yearly average threshold of 40µg/m³. Our assessment is based on our opening year model, which represents a worst-case scenario, without accounting for the increase in less-polluting vehicles on our roads over time.

Measures to reduce air quality impacts during operation

The assessed air quality impacts in this area as a result of the project would be negligible therefore monitoring or other mitigation measures would not be necessary once the new road is open.

3 NO_2 levels are measured in 'micrograms per cubic metre', or µg/m³, where a microgram is one millionth of a gram.

9.9 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.

Woodlands has a similar proportion of people under the age of 16 and over 60+ as Gravesham as a whole, and a similar proportion of white and people from an Asian background.

According to the English Index of Multiple Deprivation, Woodlands has very low rates of deprivation and economic activity is high compared with Gravesham as a whole. Home ownership levels are also high (76.0%), with the remainder mostly in private rented and social rented property, 12.5% and 10.3% respectively.

Around 84% of residents report their health to be very good or good (slightly higher than Gravesham as a whole). A lower proportion report that their day-to-day activities are limited a lot or a little as a result of a long-term disability (14.9%). Life expectancy at birth for Woodlands residents is 82.7 for males and 82.6 for females. When compared with the UK average, life expectancy rates (2013–2017) are higher in Woodlands for males, but lower for females. For deaths from all causes (these are causes where all or most deaths could potentially be prevented by public health interventions in the broadest sense), respiratory diseases, coronary heart disease and cancer rates are lower in Woodlands than for Gravesham as a whole.

9.9.1 Construction

Construction health impacts

Construction activities in Kent include establishing and operating the Southern Tunnel Compound, as well as earthworks and landscaping to create Chalk Park. More information about the activities affecting Woodlands ward residents is provided in the Project description section above. Elements of each of these activities have the potential to impact human health (including mental health and wellbeing), whether this is through noise associated with construction activities or construction traffic, air quality (as a result of dust emissions), severance caused by construction traffic or road and footpath closures.

Woodland ward residents may experience effects on health as a result of:

- The main construction activities that are expected to give rise to noise and vibration in this ward are those associated with widening the A2. There are no main works compounds or Utility Logistics Hubs currently proposed to be located within the Woodlands ward, nor are there any haul roads proposed within this ward.
- There are no percussive or vibratory works proposed in Woodlands.
- 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 with additional buildings and other features screening the noise from more distant residential areas.
- 24-hour, seven-day construction working is proposed along Watling Street towards the east of the ward. These locations are where works may need to be carried out at night to maintain safety and reduce disruption to road and utility networks. The works in this area are expected to be night-time or weekend highways works and could have an impact on local communities.
- 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) during all construction years, except along Ridgeway Avenue and Harman Avenue.
- Views of construction activities would be limited to a small number of homes along Epsom Close, where adjacent utilities works along the Roman Road would be partially visible in filtered views. Beyond these works, construction activities along the A2 would be mostly screened by roadside vegetation, although taller elements such as new tunnel entrance gantries, may be visible.

- 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 along the A2 corridor. Air quality impacts on these properties during construction would be temporary and we would put in place measures to minimise the dust impacts.
- There are both positive and negative potential impacts on people's health and wellbeing as a result of the construction stage. Through good communications and engagement, providing people with information about when construction works would take place and its impacts, negative impacts on people's mental health and well-being would be reduced. Equally, some residents would see health and wellbeing benefits from improved access to work and training opportunities presented by construction activities (see the Traffic impacts section). Evidence from The Health Foundation has demonstrated a link between unemployment and poor mental health.

Measures to reduce construction health impacts

Other than measures relating to noise and visual impacts described above, no specific measures relating to health have been identified in this ward.

9.9.2 Operations

Operational health impacts

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

- There would be an increase in accessibility to open space for local people.
- By 2029, the opening year, the widening works to the A2 would be complete and the land affected by utilities works along Roman Road would have been restored. There would no long-lasting visual impacts from the project on the ward.
- The ward is located approximately 1.4km to the west of the main project and, as such, there would be no direct noise from the project in the ward. Noise impacts within this ward would be as a result of changes in traffic flow, the number of HGVs and traffic speeds on the existing road network within the ward, and changes to the A2 in the south of the ward.
- Within the ward, changes in road traffic noise at identified noise sensitive locations (such as nearby properties) are predicted to range from a minor decrease in noise levels of between 1.0 and 2.9dB, to a minor increase in noise levels of between 1.0 and 2.9dB.

Measures to reduce operational health impacts

Other than measures relating to noise and visual impacts described above, no other specific measures relating to health have been identified in this ward.

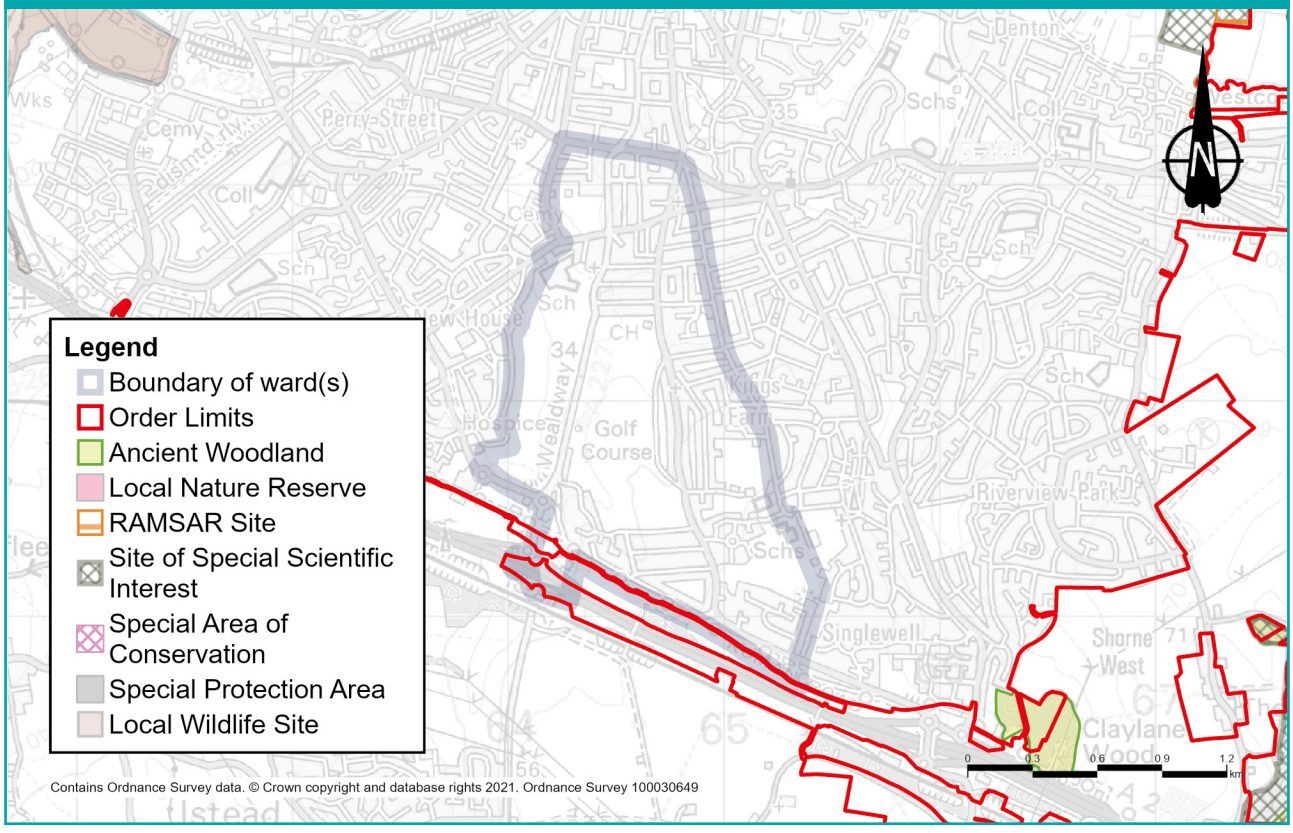
9.10 Biodiversity

Existing situation

Only a small part of Woodlands ward falls within the project Order Limits, forming an area around the A2/M2 and A226 junction and the cycle lane north of the A2/M2. This habitat is limited to some landscape planting and grassland. Woodlands ward contains no designated or non-designated sites.

We carried out surveys across the project to set a baseline for assessment, which identified reptiles in the landscape planting and grassland along the cycle route.

Figure 9.20: Designated and non-designated biodiversity sites in Woodlands ward



9.10.1 Construction

Construction impacts

To build the Lower Thames Crossing, areas of habitat would need to be removed both temporarily and permanently. This landscape planting and grassland habitat supports a range of protected and notable species that would be impacted by construction through direct habitat loss (reptile habitat), and disturbance to retained habitat.

Measures to reduce biodiversity impacts during construction

Vegetation clearance would take place during the winter to avoid any impact on breeding birds. Where this is not practical, clearance would be supervised by an ecological clerk of works to ensure no nests are disturbed or destroyed. Where protected species are present, they would be moved away from the site before any construction activities take place, either through habitat manipulation (for example, strimming to reduce the height of vegetation and displace reptiles), or translocation. Any habitat lost for temporary construction works would be reinstated after construction.

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

9.10.2 Operations

Operational impacts

The project's operation is unlikely to cause significant additional disturbance within the ward beyond the existing impacts from the operation of the A2/M2.

Measures to reduce biodiversity impacts during operation

Landscape planting has been designed to screen the new road from the surrounding habitats. Newly created habitats would be managed to ensure that they provide a high-quality environment to support a broad range of plant and animal species. The impact of operation on biodiversity would be controlled through good practice measures set out in the CoCP and REAC. See chapter 1 of the Construction update for more information about this and the project's other control documents.

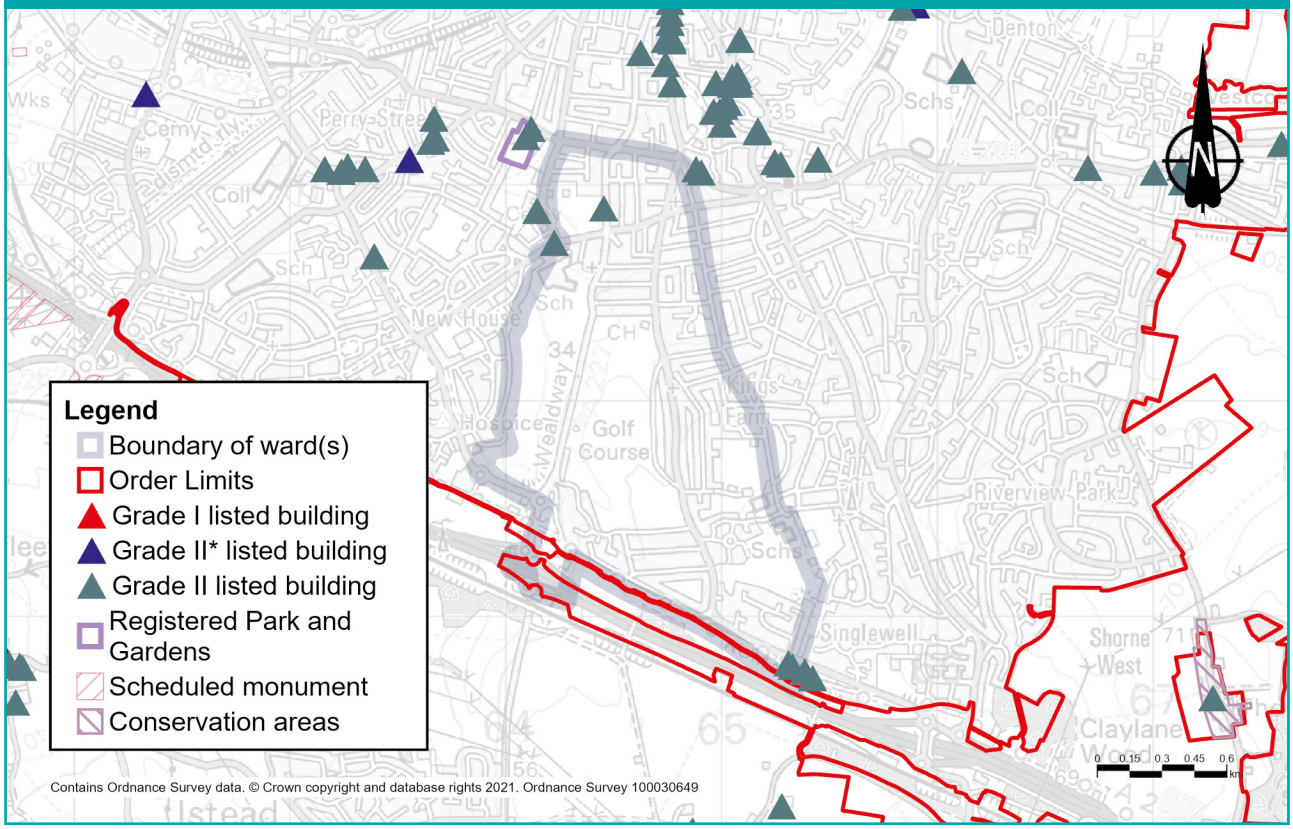
9.11 Built heritage

Existing situation

Two listed buildings have been identified in Woodlands ward in relation to the project:

- Orchard House is a Grade II listed building dating from the 18th century. It is L-shaped, timber-framed and has two storeys with attics. The ground floor is rebuilt in red brick with a weather-boarded first floor
- Corner Cottage is a Grade II listed building, dating from the 18th century or earlier and set endwise to the road. This building has two storeys with a ground floor in red brick and weather-boarded first floor. The half-hipped roof is tiled with a later (19th century) casement in the gable end. The weather porch is thought to be a 19th century addition. To the left is a two-storey wing of stock brick with two windows and a half-hipped tiled roof

Figure 9.21: Built heritage in Woodlands ward



9.11.1 Construction

Construction impacts

Construction activities affecting Woodlands relate to the A2 Watling Street works and no built heritage assets would be directly affected by the project. However, there would be an indirect effect through change to the surroundings of some built heritage assets as a result of the project's construction.

Construction works to the A2 Watling Street would introduce temporary additional noise, lighting and visible construction activity close to some built heritage assets. As Grade II listed Orchard House and Corner Cottage are located just north of the A2, they would experience temporary minor changes to their setting (the surroundings in which a heritage asset is 'located').

Measures to reduce impacts during construction

For more information about heritage mitigation measures, refer to the Design principles (section S326), the CoCP, and Air quality, Noise and vibration, and Cultural heritage sections of the REAC.

9.11.2 Operations

Operational impacts

Although the operational phase of the project would increase the size of the A2 and the existing route of the A2/M2 is close to built heritage assets, there would be no discernible effects on these and they would experience no change from the new road construction.

Measures to reduce the impacts during operation

Our engineering and landscape design for the project seeks to avoid or reduce negative impacts on heritage assets. To preserve the rural and historic character of the landscape, we would minimise road lighting where it is safe and practical to do so, in accordance with relevant standards. For more information, see the Design principles (sections LST.02 and LST.03).

9.12 Contamination

From a desk-based review of historical maps and environmental data, there are no known medium or high-risk sources of contamination that could be disturbed during construction or operation of the project in Woodlands ward.

9.12.1 Construction

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

9.12.2 Operations

When the road opens, 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.