

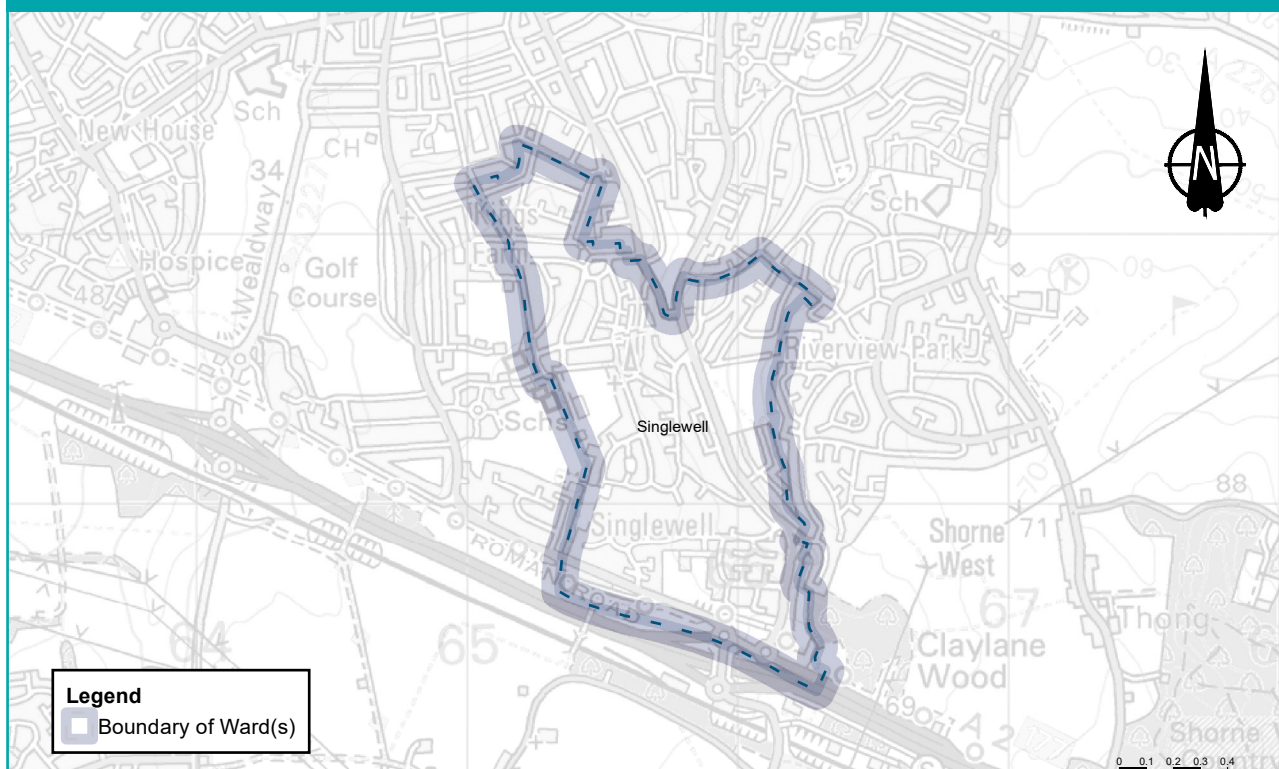
8

Chapter 8: Singlewell ward

This chapter summarises the activities in Singlewell ward relating to the project's construction and its operational phase (when the new road is open). It also explains the proposed measures to reduce the project's impact on the local area. For more information about the assessments and other consultation information, see chapter 1 of 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.

Figure 8.1: Ward boundary map for Singlewell ward



8.1 Overview

8.1.1 About this ward

Singlewell ward is located to the south of the River Thames in the borough of Gravesham. It lies to the west of Riverview ward and Shorne, Cobham and Luddesdown ward. It has an area of around 1.3km² and an estimated population of 8,350¹. The ward is predominantly residential, but also includes part of the Gravesend East junction, which connects to the A2. The ward includes Mackenzie Way Open Space to the south, Haver Farm Recreational Area to the west of the ward and the Warren Play Space in the east off Franklin Road.

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

8.1.2 Summary of impacts

Table 8.1: Summary of impacts during the project's construction and operation

Topic	Construction	Operations
<p>Traffic</p>	<p>Impacts</p> <p>There would be delays to vehicles using Gravesend East junction, due to traffic management measures and additional vehicles using the junction. Journey times along Valley Drive may increase slightly due to additional traffic.</p> <p>Mitigation</p> <p>While the works on Gravesend East junction would be disruptive, they would take place early in the programme to allow safe access to the main construction sites and reduce impacts through the rest of the programme.</p>	<p>Impacts</p> <p>There are no predicted changes to traffic flows in the morning throughout the ward. There are, however, changes predicted to the southbound end of Valley Drive during the evening peak. Further information about changes to traffic flows and their impacts can be found in the Traffic section of this chapter.</p> <p>Mitigation</p> <p>Following a refinement of the design, in response to consultation feedback, several mitigation measures were introduced to the design including a direct link between Gravesend and the M2 eastbound. Further information about design mitigations to reduce the impact of the project once operational can be found in the Traffic section of this chapter.</p>
<p>Public transport</p>	<p>Buses</p> <p>Bus routes using Valley Drive, may have slightly longer journey times.</p> <p>Rail</p> <p>There would be no substantial changes in journey times to Gravesend station resulting from construction activities.</p>	<p>Buses</p> <p>There are no route changes proposed following the opening of the project and there are no predicted discernible changes to bus journey times.</p> <p>Rail</p> <p>There are no predicted delays to services at Gravesend station following the opening of the project.</p>

Topic	Construction	Operations
<p>Footpaths, bridleways and cycle routes</p>	<p>Impacts</p> <p>There would be a number of short-term and permanent closures in this ward during the construction period.</p> <p>Mitigation</p> <p>Where practicable, diversions would be opened up where footpaths and cycle routes are affected before the existing ones close to allow construction works.</p>	<p>Impact</p> <p>Footpaths and cycle paths would be permanently rerouted into the existing local network and upgraded by the time the project is operational, while two would be returned to their original condition.</p> <p>Mitigation</p> <p>Realigned or rerouted paths would link up to the existing network of footpaths and cycle paths.</p>
<p>Visual</p>	<p>Impacts</p> <p>Views towards construction activities are limited to the residential area on the southern edge of the ward and from National Cycle Network Route (NCR) 177 on the south-east edge of the ward. The Marling Cross Construction Compound would be visible from some properties on Valley Drive. For some residents on Watling Street, the removal of existing vegetation would open up views of the A2/M2 corridor.</p> <p>Mitigation</p> <p>Taller facilities within the compound would be located as far away as possible from surrounding homes. Visual impacts would also be controlled through good practice measures, these can be found in the CoCP and REAC.</p>	<p>Impacts</p> <p>Once the project is complete and in operation, the visual impacts from most residential properties would be minimal. Residential properties adjoining Watling Street would have the most noticeable change in views due to the limited space available for planting mitigation.</p> <p>Mitigation</p> <p>New planting would provide screening in views which would improve over time as it established. The land used temporarily for construction would be reinstated to the reasonable satisfaction of the owner of that land.</p>

Topic	Construction	Operations
<p>Noise and vibration</p>	<p>Impacts</p> <p>The construction activity associated with A2 upgrade works and utilities works is expected to create noise. There would also be 24-hour, seven-day construction 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 along Christianfields Avenue, Miskin Way, Ifield Way and Kitchener Avenue, where increases in noise levels have been predicted.</p> <p>Mitigation</p> <p>Construction noise levels would be controlled through mitigation measures presented in the REAC. There are also measures set out in the CoCP.</p>	<p>Impacts</p> <p>A major reduction in noise would occur as a result of the new road, proposed A2/M2 junction and widening of the A2/M2 which would be experienced by residents at the southern extent of the ward. Noise levels would also increase on some existing roads due to changes in traffic flow, speed and vehicle type.</p> <p>Mitigation</p> <p>Low noise road surfaces would be installed on all new and affected roads.</p>

Topic	Construction	Operations
<p>Air quality</p>	<p>Impacts</p> <p>There is likely to be dust and emissions from construction equipment and traffic during the construction phase.</p> <p>Analysis of the construction phase traffic flows shows there is expected to be a temporary temporary minor improvement in air quality along the A2 corridor between 2026 and 2028.</p> <p>Mitigation</p> <p>The contractor would follow good practice construction measures which are set out in the CoCP and REAC to minimise the dust. Construction vehicles would need to comply with emission standards. An Air Quality Management Plan would be designed in consultation with the relevant local authorities. The plan would include details of monitoring which would ensure measures are effectively controlling dust and exhaust emissions.</p>	<p>Impacts</p> <p>There are no predicted exceedances of NO₂ or PM₁₀.</p> <p>Mitigation</p> <p>No essential mitigation is required.</p>

Topic	Construction	Operations
<p>Health</p>	<p>Impacts</p> <p>The construction phase of the project would provide opportunities to access work and training.</p> <p>There are likely to be changes in the area that may result in negative impacts on health, including mental health and wellbeing. These include changes in accessibility of local resources and amenities as a result of traffic management measures, footpath closures and changes in noise.</p> <p>Mitigation</p> <p>The negative impacts would be mitigated through the good practice construction measures set out in the CoCP and REAC relating to dust emissions, working hours, visual screening, traffic management measures and community engagement. This includes the establishment of Community Liaison Groups.</p>	<p>Impacts</p> <p>The project would improve access to work and training, and access to open space and accessibility of local resources and amenities. Chalk Park would provide a new recreational resource and encourage physical activity.</p> <p>There would be changes in noise levels which are both adverse, and beneficial, on the eastern side of Singlewell. Some residents may experience impacts on mental health and wellbeing as a result of the project (such as anxiety around perceived changes to air quality or as a result of changes to the noise environment).</p> <p>Mitigation</p> <p>No essential mitigation is required for health other than those measures described in the Noise mitigation section.</p>

Topic	Construction	Operations
<p>Biodiversity</p>	<p>Impacts</p> <p>The construction of the project would involve the removal of areas of habitat, both temporarily and permanently for the new road. This includes the loss of badger setts and removal of trees with potential for roosting bats.</p> <p>Mitigation</p> <p>Vegetation clearance would be undertaken in winter to avoid impacting breeding birds. Protected species would be relocated, carried out under a Natural England licence. Boxes to support bats, dormice and birds would be erected.</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>New habitat would be created to support animals moved away from the construction area. 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 visible construction activity with noise and lighting in the vicinity of built heritage assets. The Grade II listed George Inn and Chapel Farmhouse would experience temporary changes in their setting.</p> <p>Mitigation</p> <p>General measures used across the project to reduce impacts on built heritage can be found under Design principle S326, while dust and noise reduction measures would also be implemented in accordance with the REAC.</p>	<p>Impacts</p> <p>The A2/M2 widening would not impact on heritage assets in this ward.</p> <p>Mitigation</p> <p>To preserve the rural and historic character of the landscape, road lighting would be minimised where it is safe and practicable to do so, but remain in accordance with relevant standards (Design principles LST.02 and LST.03).</p>

Topic	Construction	Operations
<p>Contamination</p>	<p>Impacts</p> <p>There is a risk of accidental spillages of oils, cement and fuels from the movement of construction traffic and the storage of materials. There is also the possibility for existing contamination from mobilised ground.</p> <p>Mitigation</p> <p>To reduce risk, the contractor would follow good practice construction measures as detailed in the REAC. Where contamination is identified during ground investigation work, site-specific remediation would be carried out following consultation with the local authority.</p>	<p>Impacts</p> <p>None identified.</p> <p>Mitigation</p> <p>If during operation any incident were to occur which resulted in localised contamination, soils which had become significantly affected would be assessed and, if necessary, removed to reduce the risk of contamination migrating across a wider area or entering controlled waters.</p>

8.2 Project description

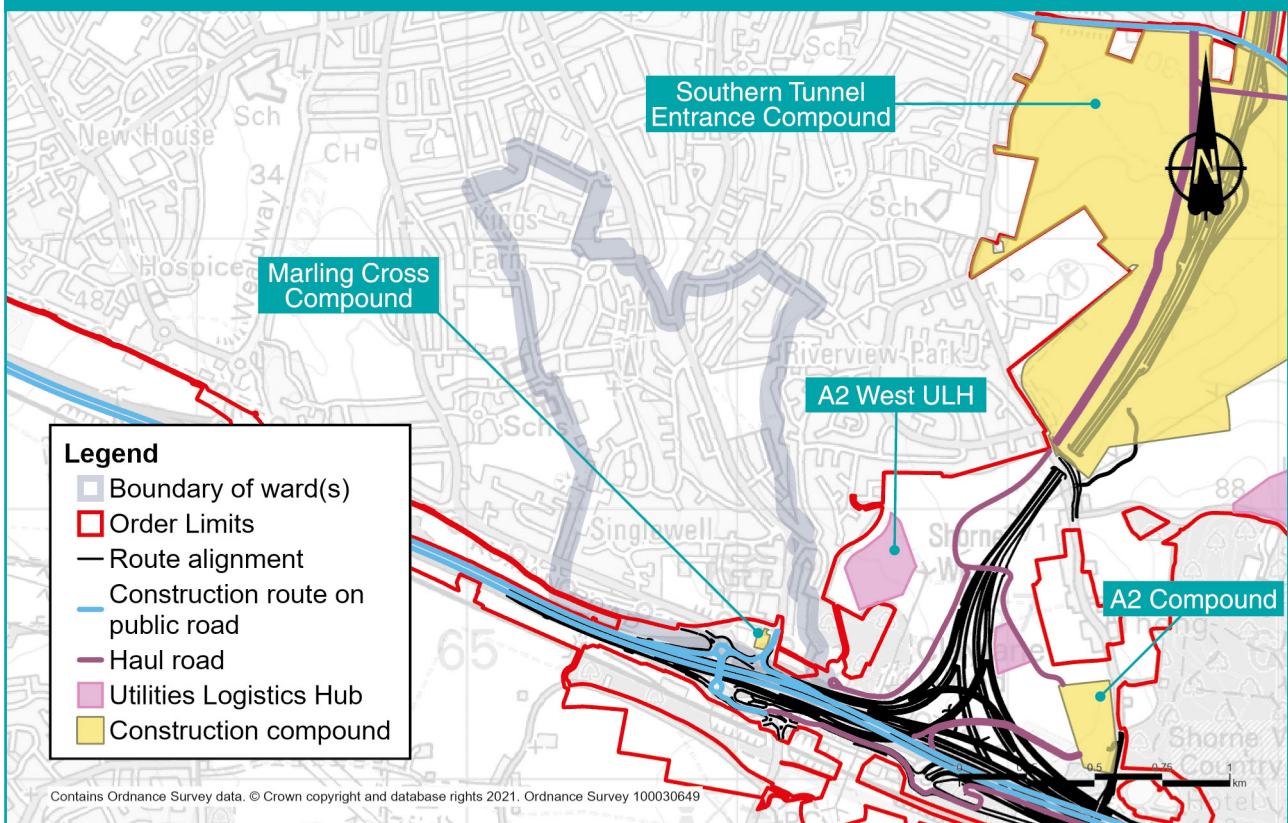
8.2.1 Construction

Construction activities

There would be only a small section of the project constructed within Singlewell ward, a part of the Gravesend East northern roundabout, which is being upgraded to increase capacity. This would be carried out early on in the construction programme to allow the benefits to be made available as soon as possible.

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

Figure 8.2: Main construction areas in Singlewell ward



Construction compounds

As shown in figure 8.2, construction of the project within Singlewell ward would be limited to the southern edge of the ward. A temporary construction compound (the Marling Cross Compound) would be used to deliver the Gravesend East junction works, which lie partially in this ward. The Marling Cross Compound already exists and has been used as a base for the workforce carrying out pre-construction investigations for the project, such as archaeological and environmental surveys. The compound's facilities would be upgraded during the initial works to allow for a larger workforce and to account for the compound being used for the Gravesend East junction works. The existing utility connections from Valley Drive, which include a small substation on the edge of the compound, would be sufficient for the upgraded compound. The main traffic route into the compound is via the Valley Drive to A2 eastbound onslip so all cars and many of the HGVs going to this compound would travel through the ward.

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.

This compound would have a tarmac surface throughout, used mainly for car parking, offices and welfare facilities, with a smaller area for storing equipment and materials. There would be no spoil or soil from excavations stored in this compound. This compound would be visually screened from nearby properties by existing vegetation. Noisy activities are not expected to take place at this compound so no additional noise-reduction features, such as bunds (walls of earth), are proposed.

The main access point to Marling Cross Compound, the A2 Compound and the A2 West Utility Logistics Hub would be via the Gravesend East junction. Access to the A2 Compound, and the A2 West Utility Logistics Hub would be via the Gravesend East junction, along the eastern section of Hever Court Road, then there would be a new haul road connecting off the onslip to the A2 eastbound. The exit from the compound would be via a new onslip off the A2 eastbound on slip. The traffic for Marling Cross Compound would use the entrance from the very southern section of Valley Drive. Most of the staff cars would arrive between 7am and 8am and leave between 6pm and 7pm.

The average daily weekday number of HGVs and cars expected to go to these compounds, during the 11 representative construction phases are shown in table 8.2 below. These are the number of vehicles going to each compound and there would be the same number of vehicles, on an average weekday, leaving each compound.

Table 8.2: Average daily vehicle numbers going to compounds in Singlewell ward

Time period	Marling Cross Compound		A2 Compound	
	HGVs	Cars	HGVs	Cars
January to August 2024	12	45	66	102
September 2024 to February 2025	5	50	75	198
March to May 2025	1	22	95	205
June to October 2025	0	0	102	215
November 2025 to March 2026	0	0	90	201
April to August 2026	3	0	105	186
September 2026 to March 2027	5	0	85	186
April to November 2027	0	0	56	142
December 2027 to March 2028	0	0	26	74
April to July 2028	0	0	19	70
August 2028 to December 2029	0	0	12	65

Utilities

There would be no Utility Logistics Hub within Singlewell ward. Upgrading Gravesend East junction would require utility diversions to be carried out along Valley Drive and Hever Court Road. Gas, water, electricity and communications services would be moved to accommodate the new road layout.

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 routes on public roads

The majority of construction traffic serving the works in this ward, particularly HGVs, would arrive directly on the A2. The Marling Cross Compound would be accessed via the eastern extremity of Hever Court Road and southern extremity of Valley Drive, which connects to the A2 via the Gravesend East junction.

Construction schedule

Construction of the whole project is scheduled to last for six years from 2024 to 2029. To deliver the construction programme efficiently, activities would be divided into packages of work and delivered in a coordinated way. Maps and assumed programmes for the work packages in Kent, including for the Gravesend East junction, can be found in chapter 3 of the Construction update.

Works to upgrade the Gravesend East junction would start and finish early in the overall construction programme. This would mean that the resulting traffic capacity benefits of the junction upgrade would be available to local people as soon as possible. The works to upgrade the northern section of the Gravesend East junction are expected to last for nine months.

Upgrade works would be carried out on footpath NG17, which links Singlewell to Claylane Woods and other footpaths to the east. For more information, see the section on Footpaths, bridleways and cycle routes below.

Construction working hours

The works would be mostly carried out during the core hours from 7am to 7pm weekdays and 7am to 4pm on Saturdays, with additional repair and maintenance periods (if required) 8am to 5pm on Sundays. However, out of core hours working may be needed for some utility works, such as the connection of gas pipelines or delivery of oversized loads. More information about working hours is set out in the Noise and vibration section and in the CoCP.

Traffic management

Within Singlewell ward there would be a lane closure on the southern section of Valley Drive close to Gravesend East junction for around six months at the start of the construction programme in 2024. This is needed for the work to move some of the utilities in the area. During the lane closures, a short section of road would be closed on one side, while the other side remains open. Access to the open side of the road from each direction would be controlled by temporary traffic signals.

On a few nights there would need to be an overnight lane closure on Valley Drive, again at the start of the construction period.

There would be lane restrictions on the section of the Gravesend East junction in Singlewell ward for nine months at the start of the construction period. There would also be some lane restrictions on the bridge over the A2 at this junction for four months during the start of the construction period for the project.

There would be an occasional closure of the A2 eastbound onslip at night or weekends.

On the right are the main traffic management measures proposed in Singlewell ward.

Table 8.3: Main traffic management in Singlewell ward

Road(s) affected	Proposed traffic management	Purpose	Duration
Gravesend East junction (north)	Lane closures	To facilitate improvement works to local utility networks	9 months between January and August 2024
Gravesend East junction (south)	Lane closures	To carry out nearby works	14 months between January 2024 and February 2025
Gravesend East junction (bridge)	Lane closures	To carry out bridge widening and utility works	4 months between January and August 2024
Gravesend East junction (north)	Closures and lane restrictions	Switch to permanent alignment	1 weekend between January and August 2024
Hever Court Road	Closures and lane restrictions	To carry out nearby works and modifications to local utilities	2 weeks between January and August 2024
Hever Court Road	Closure	To carry out nearby works and modifications to local utilities	Occasional closures at nights or weekends to carry out specific works
Valley Drive	Traffic lights and lane closures	To carry out nearby works and modifications to local utilities	6 months between January and August 2024
Valley Drive	Lane closure	To carry out nearby works and modifications to local utilities	Occasional closures at nights or weekends to carry out specific works
A2 Eastbound	Onslip permanently closed	To facilitate new alignment and modifications to local utilities	Occasional closures at nights or weekends to carry out specific works

There would be traffic management measures outside Singlewell ward that would impact on traffic on the road network within the ward. We have sought to minimise traffic management measures wherever practical, but these would be necessary in some locations to allow construction traffic and local communities to move around safely while providing construction workers with sufficient space to operate. An overview of the traffic management required across the project can be found in the Outline Traffic Management Plan for Construction. All traffic management measures are based on an indicative construction programme, which would be finalised by the appointed contractor. The contractor's final traffic management plans would be subject to final approval by the Secretary of State for Transport, following consultation with the local highways authority.

8.2.2 Operations

The completed project

For more information about the completed project, see the Operations update, as well as the figures in Map Book 1: General Arrangements. Once construction is complete, the following elements of the project would be in Singlewell ward:

- The Gravesend East junction northern roundabout, along with its slip roads and southern roundabout, would have its capacity increased, maintaining traffic flow for the predicted larger volumes of traffic. This would help increase accessibility to the new road for residents of Singlewell ward and reduce the time it takes to join or leave the A2 in either direction.
- Some footpaths and bridleways would be rerouted permanently as part of our proposals for 46km of upgraded, diverted, extended or entirely new routes for walking, cycling and horse riding that would benefit communities along the route. For more information, see the Footpaths, bridleways and cycle routes section in this document.

Changes to the project since our design refinement consultation

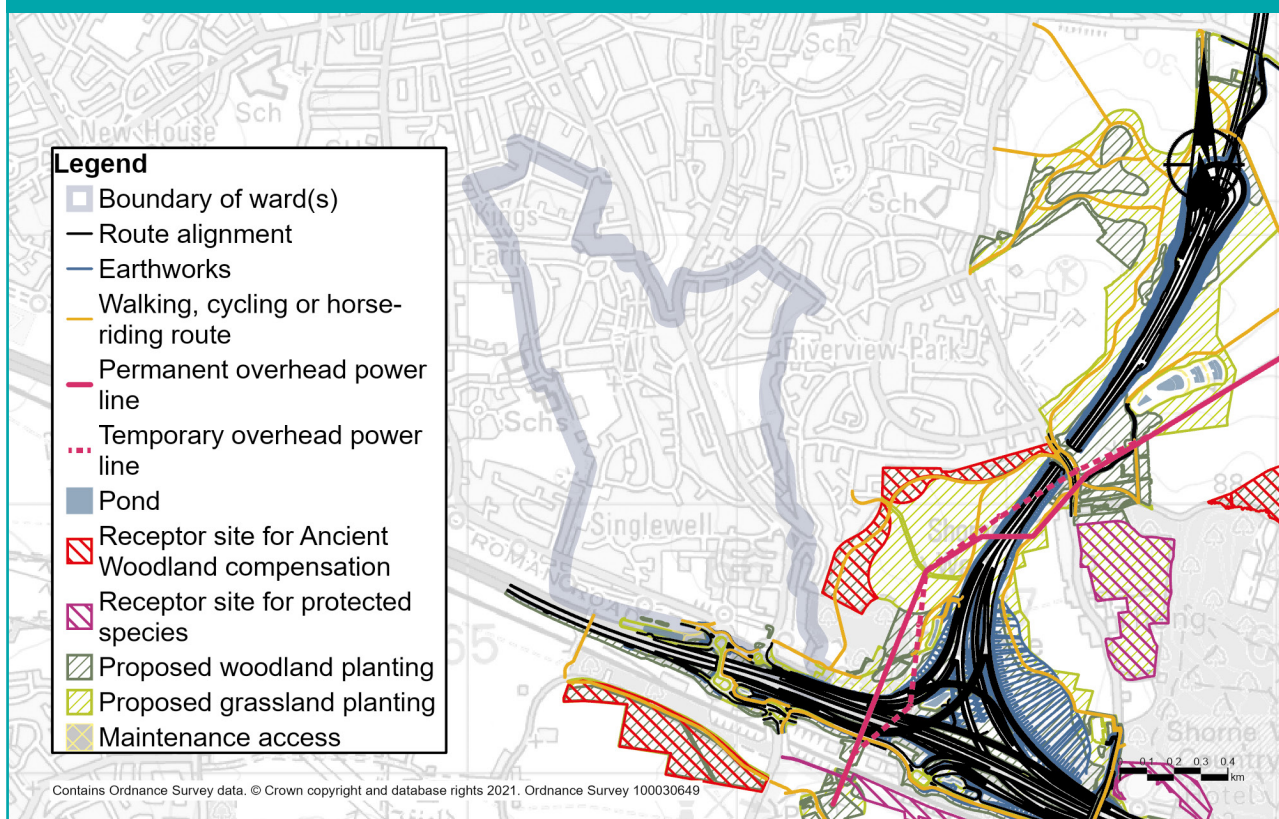
As part of our ongoing design development, including discussions with utility companies, we have made several changes to the project and its Order Limits (the area of land required to construct and operate the project, formerly known as the development boundary), since our design refinement consultation in July 2020. Within Singlewell ward, we have made a minor change to the Order Limits at the A2 Roman Road, where the permanent utility diversion is proposed.

More information about any proposed changes in other wards can be found in chapter 3 of the Operations update.

Impacts on open space land

Within Singlewell ward, there are no changes to our proposals to remove or replace open space land. More information about compensating the impacts on open space land (which includes special category and recreational land) can be found in chapter 3 of our Operations update.

Figure 8.3: Main features of the operational project in Singlewell ward



8.3 Traffic

We carried out traffic assessments to understand how roads in the vicinity of the project would be affected during the new road's construction and once it is operational. Information about how we carried out these assessments can be found in chapter 1.

8.3.1. Construction

There would be additional cars and HGVs using the Gravesend East junction and on the southern section of Valley Drive to access these two compounds. Some workers who live in the Gravesend area may drive along the length of Valley Drive or Hever Court Road to access the compound where they work.

This additional traffic along Valley Drive is likely to result in slightly longer journey times along the road and delays at some of the junctions along the road for turning traffic. There would also be some delays to vehicles using the Gravesend East junction due to the traffic management measures and the additional number of vehicles using the junction.

Traffic speeds on the A2 just south of Singlewell ward would be lower due to traffic slowing down as it approaches the A2 narrow lanes traffic management measures that are programmed to occur between June 2026 and April 2028. The speed limit through the narrow lanes would be 50mph.

There would be temporary disturbance to the users of the Cyclopark to the south of Singlewell, for one-month during construction, as a result of utility diversions.

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, we would only close the road overnight or at weekends when it is less busy in order to carry out required works on the A2/M2.

- No local roads, other than a small section of Valley Drive used to access the Marling Cross Compound, would be used as a construction route within Singlewell ward.
- 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 practicable through the construction of temporary offline haul routes that link the strategic road network directly to the construction areas, including directly from the A2 eastbound.

8.3.2. Operations

Traffic impacts

Figures 8.4, 8.6 and 8.8 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 8.5, 8.7 and 8.9 below show the predicted percentage changes in traffic flow during the morning, interpeak and evening peak. For information about how we assessed operational traffic impacts, see chapter 1. For more information about how we carried out our traffic modelling, see chapter 4 of the Operations update.

The northern end of the new Gravesend East junction lies within the Singlewell ward. There would be no changes of traffic flows on the roads in Singlewell above 50 PCUs an hour in the morning peak hour, but there would be an increase in traffic on the southern end of Valley Drive of between 50 and 250 PCUs southbound in the evening peak hour. This represents between a 10% and 20% increase in predicted traffic levels, which would have an impact on the performance of the junction with Marling Way.

Figure 8.4: Predicted change in traffic flows (PCUs) with the project during the morning peak in 2029

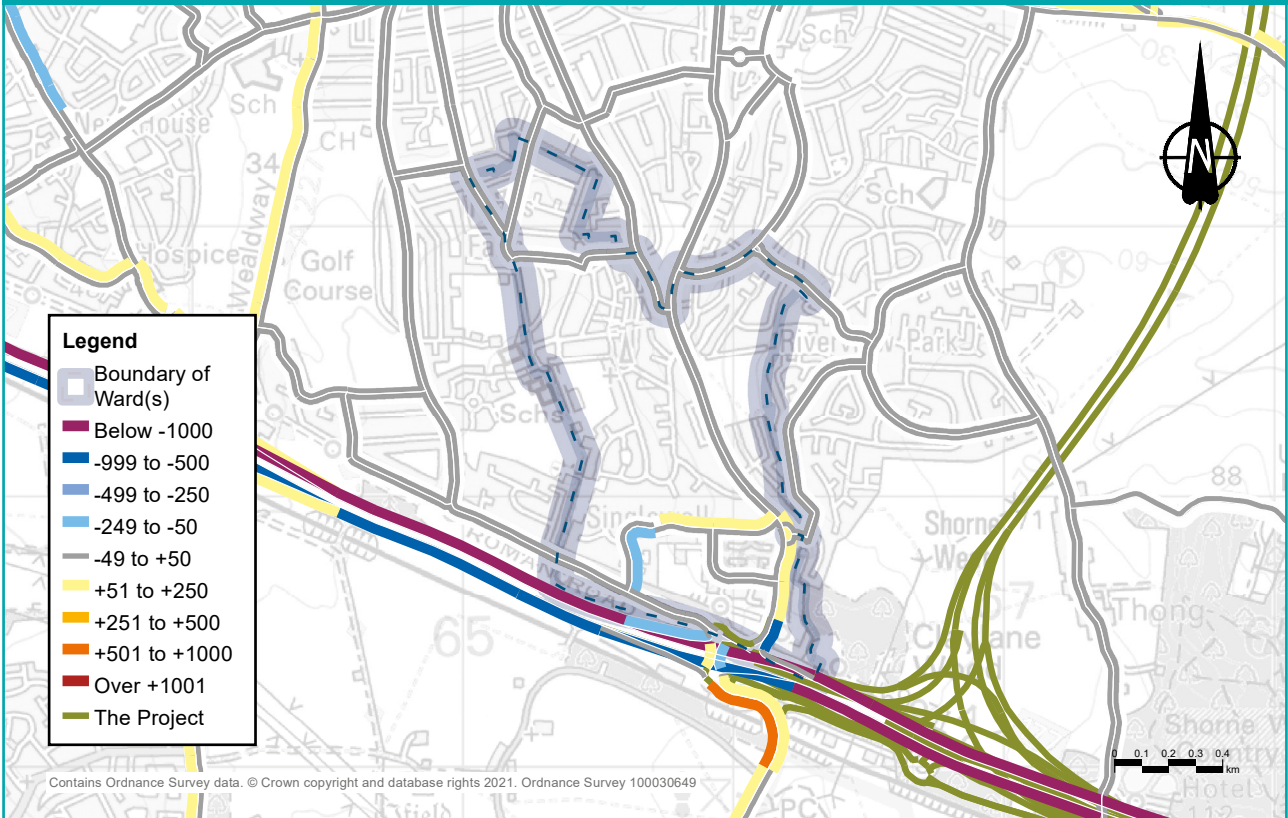


Figure 8.5: Predicted percentage change in traffic flows with the project during the morning peak in 2029

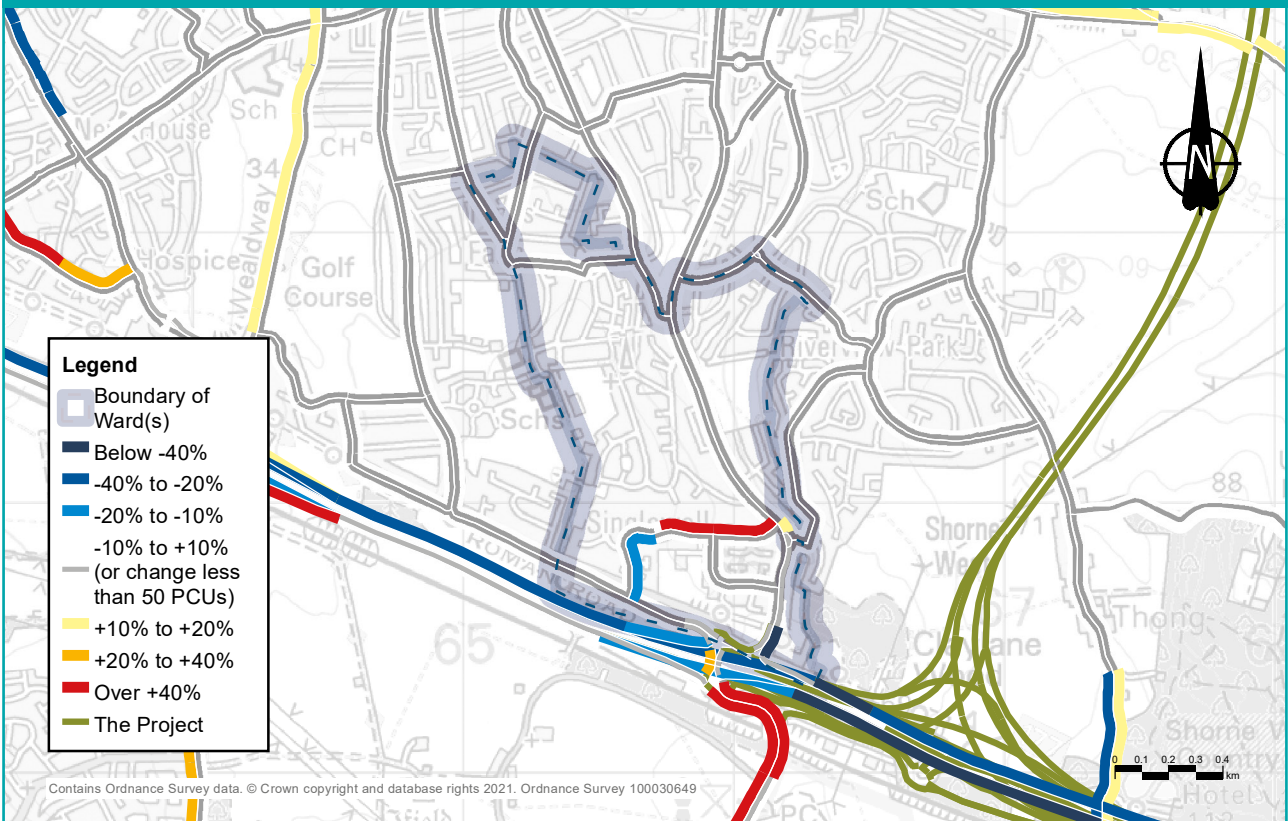


Figure 8.6: Predicted change in traffic flows (PCUs) with the project during the interpeak in 2029

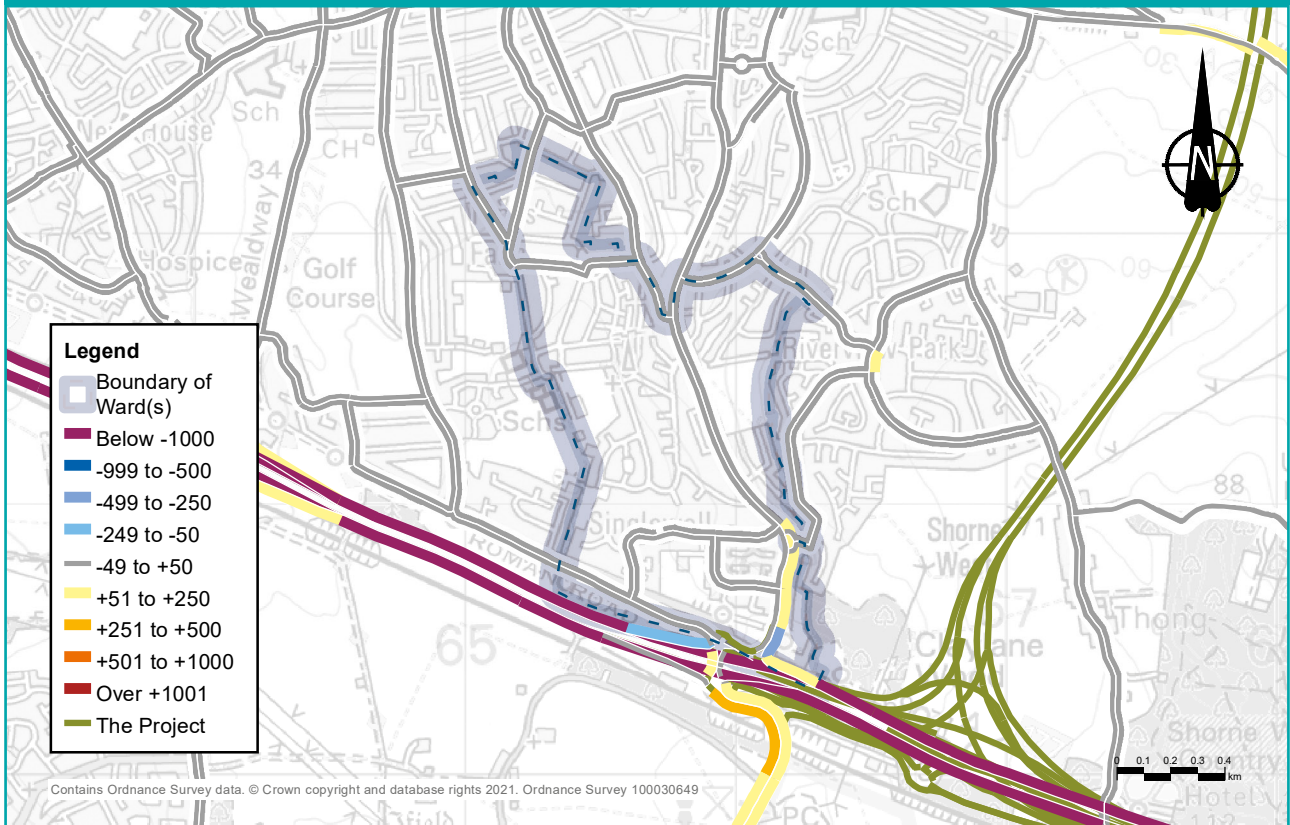


Figure 8.7: Predicted percentage change in traffic flows with the project during the interpeak in 2029

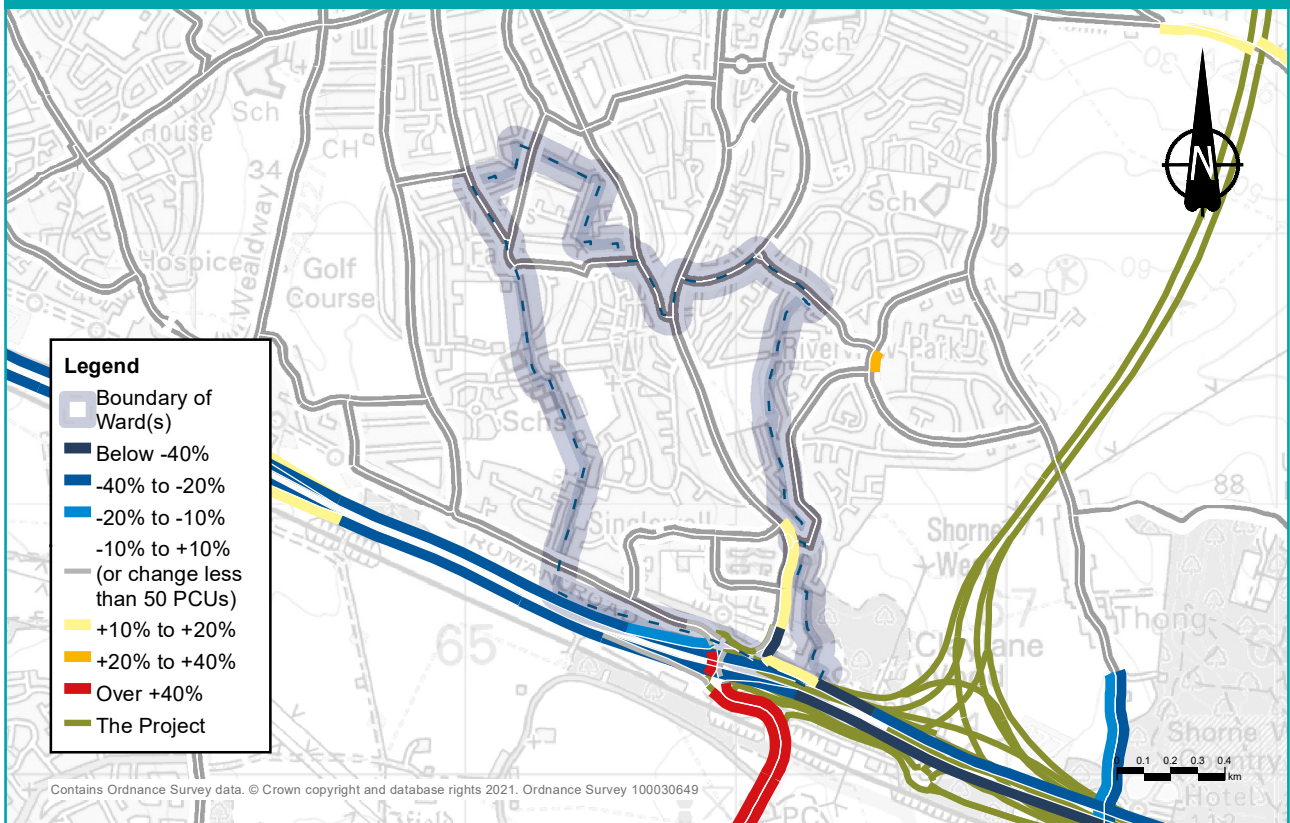


Figure 8.8: Predicted change in traffic flows (PCUs) with the project during the evening peak in 2029

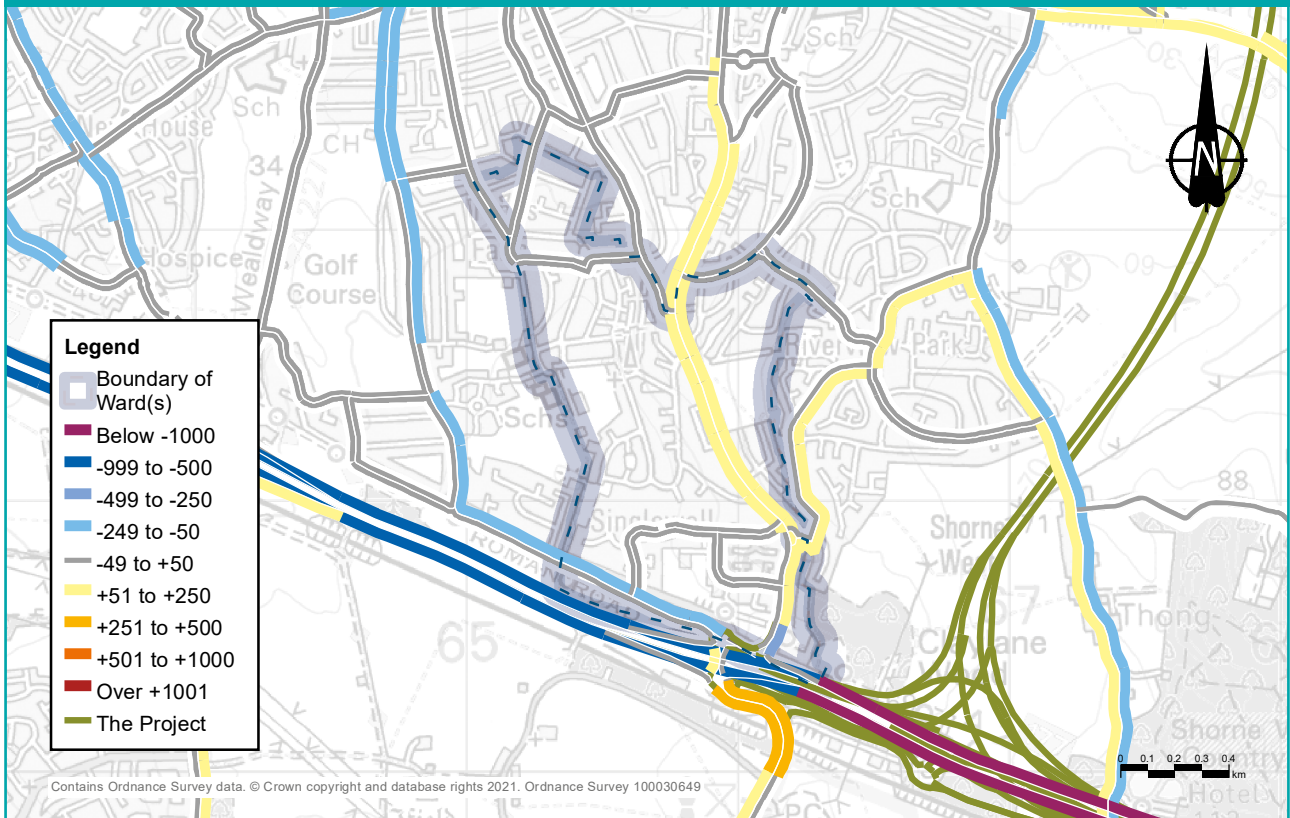
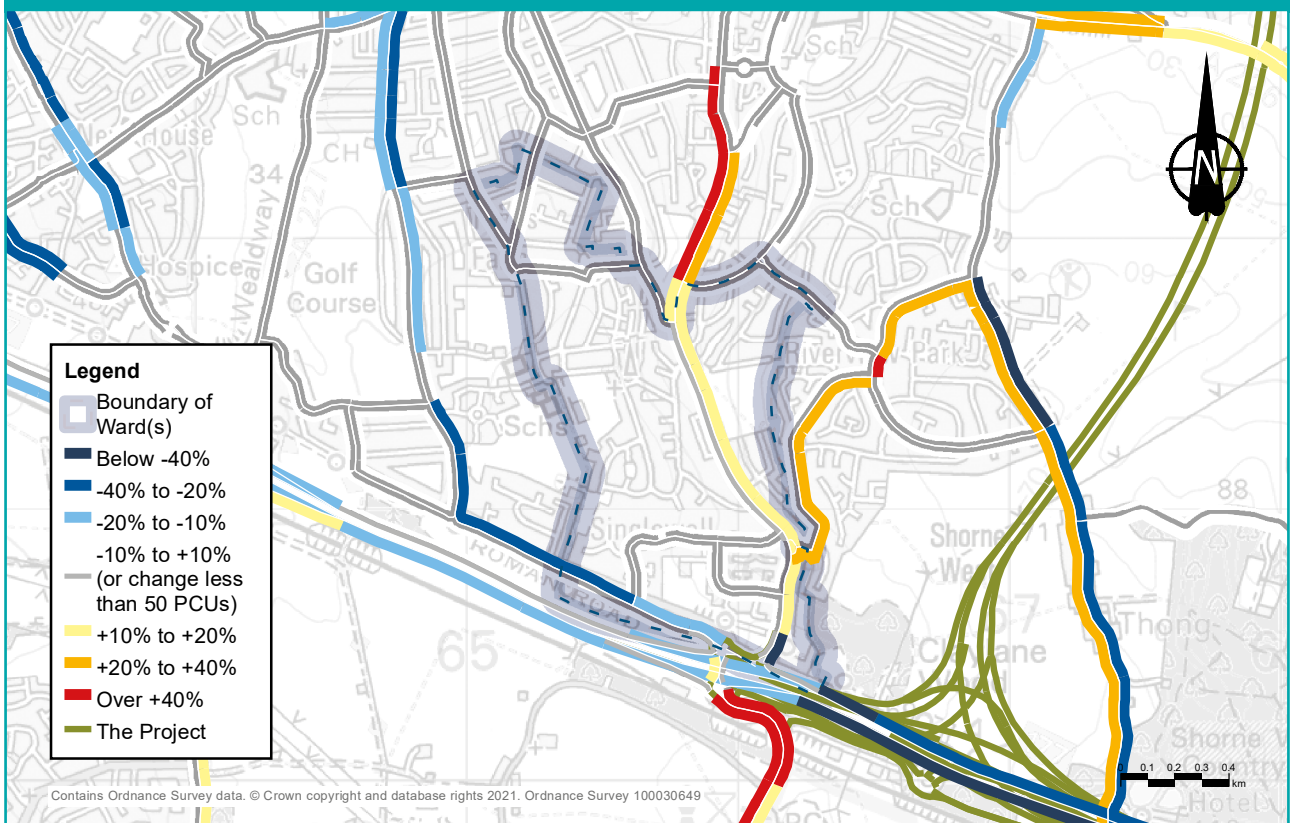


Figure 8.9: Predicted percentage change in traffic flows with the project during the evening peak in 2029



Changes to journey times

Figure 8.10 shows the change in the area that can be reached within a 30-minute drive from the centre of the ward both without the project and with. Figure 8.11 shows the change in areas that can be reached within a 60-minute drive. The areas have been calculated for the morning peak hour (7am to 8am). The number of jobs within a 30-minute drive increases by 54%, which provides access to an additional 200,700 jobs. The number within a 60-minute drive increases by 22%, which provides access to an additional 550,000 jobs.

Despite the project providing a substantial net gain in access for motorists within the wards, there are areas (shown in orange in the accompanying maps) that would no longer be accessible by car within 30 or 60 minutes because of changes to traffic flows on the wider road network.'

Figure 8.10: Change in area that motorists could drive to within 30 minutes from Singlewell ward

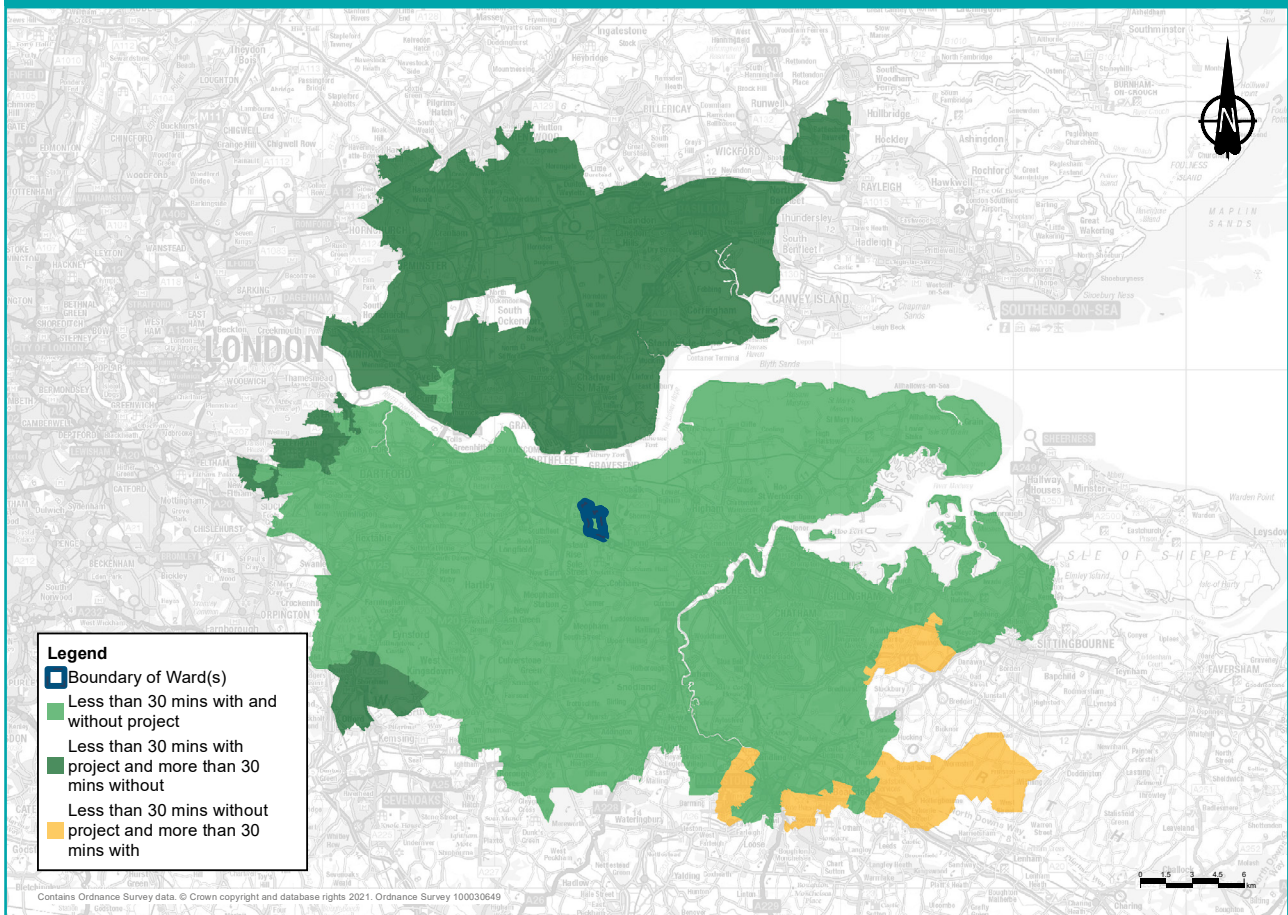
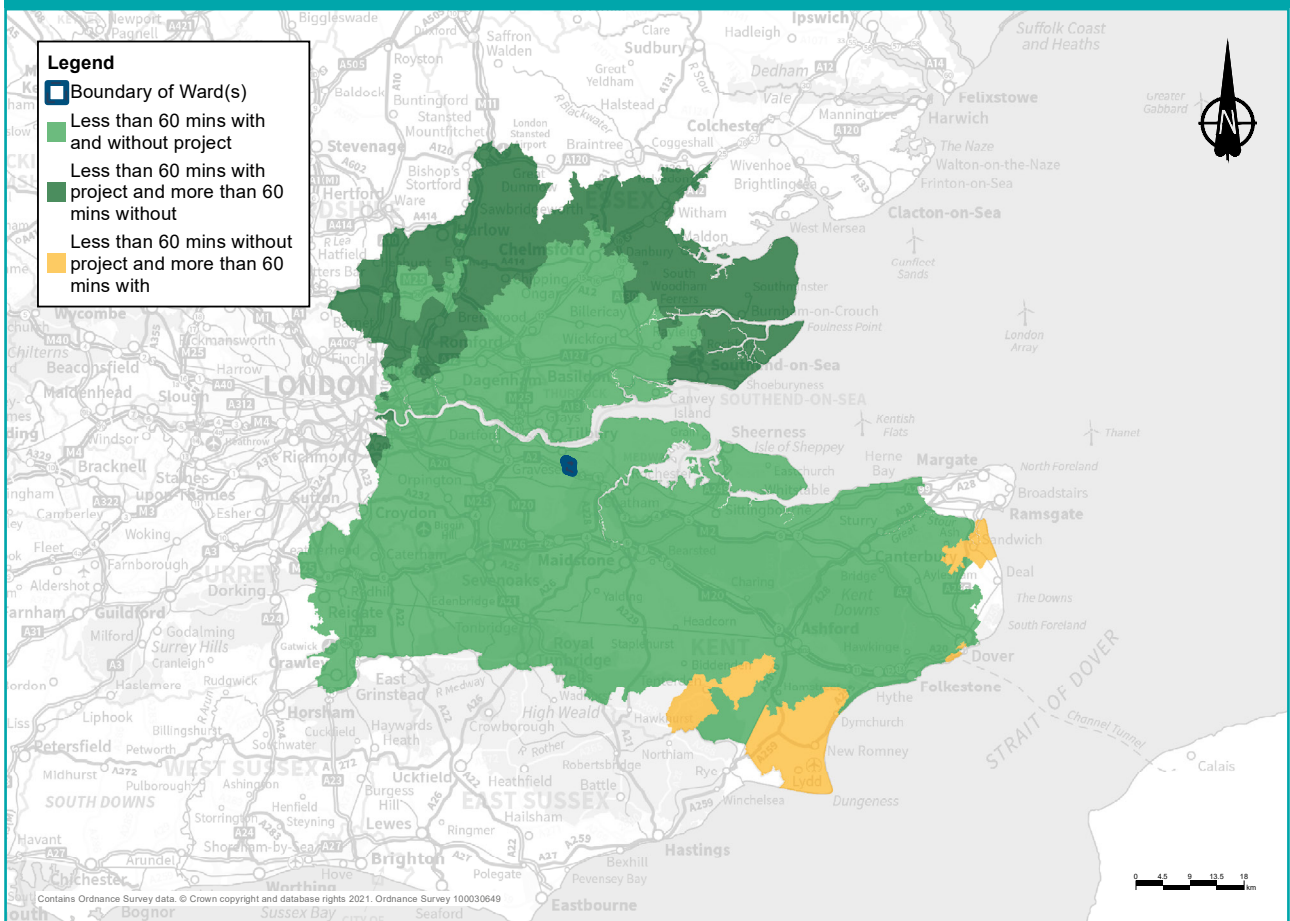


Figure 8.11: Change in area that motorists could drive to within 60 minutes from Singlewell ward



Operational traffic flows

In Singlewell ward, there are several ways in which the project has been designed to mitigate its impacts. For example, the main route has no traffic lights or roundabouts to ensure continuous traffic flow. The main junctions, including the project's proposed junction with the A2/M2 (just outside Singlewell ward), have been designed to be free-flowing, with links chosen to provide a balance between maintaining traffic flow, improving local connectivity and reducing environmental impacts. In response to feedback received during Statutory Consultation, we revised the design of the A2/M2 junction to allow traffic from Gravesend to connect directly with the M2 eastbound, which was not possible in the earlier design. More information about this and other changes we made following feedback from stakeholders and local communities can be found in the You said, we did consultation document.

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

8.4 Public transport

Existing situation

There are no railway lines or stations in Singlewell ward but Gravesend station is nearby. The station is serviced by Thameslink and Southeastern trains between Kent and London Charing Cross. A number of existing bus routes pass through Singlewell ward, including the 490, which passes along Valley Drive, and the 455, which terminates at Davy's Place, just off Valley Drive.

8.4.1 Construction

Rail

Access to Gravesend station for the residents of Singlewell ward would not be affected during construction.

Buses

Due to slightly extended journey times along Valley Drive, the 490 and 455 may have slightly longer journey times.

8.4.2 Operational

Rail

There would be no discernible change in local access times to Gravesend station and no change to the rail services at the station.

Buses

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

8.5 Footpaths, bridleways and cycle routes

Singlewell is a suburban ward bordered by the A2 to the south and has one cycle route and 10 footpaths within its boundaries. For other potential impacts, see other section areas in this chapter, such as Visual and Noise and vibration.

8.5.1 Construction

Due to construction activities associated with the proposed A2/M2 junction and utilities diversions, there would be direct impacts on four footpaths and one cycle route:

- Footpath NG13 would be affected by utility works where it crosses the Order Limits, requiring closure for six months.
- Footpath NG14 would be affected by utility works where it crosses the Order Limits, requiring closure for six months.
- The short eastern section of footpath NG17 would be permanently closed due to construction of the new slip road linking the A2/M2 eastbound to the project northbound. Early on in the construction period, the footpath would be permanently diverted north to the Thong Lane bridge over the project.
- Footpath NS175A, which runs from the bend of Church Road over HS1 and the A2/M2 to Hever Court Road, would be affected by works to upgrade the footpath and would be closed for up to one month.
- NCR177 would need to be closed permanently between Gravesend East junction and Park Pale bridge. This would be to accommodate the new road, including the proposed A2/M2 junction. Before closing this section of the existing NCR177, we would ensure an alternative east-west route is available during the construction period, which would run south of the A2/M2. This alternative route would include the upgraded NS175A bridge over the HS1 railway line, a new walking-cycling route running parallel to Church Road and an upgraded route through Jeskyns Community Woodland. For more information, see the Footpaths, bridleways and cycle routes section in chapter 3.

Figure 8.12: Footpaths, bridleways and cycle routes in the vicinity of the project in Singlewell ward

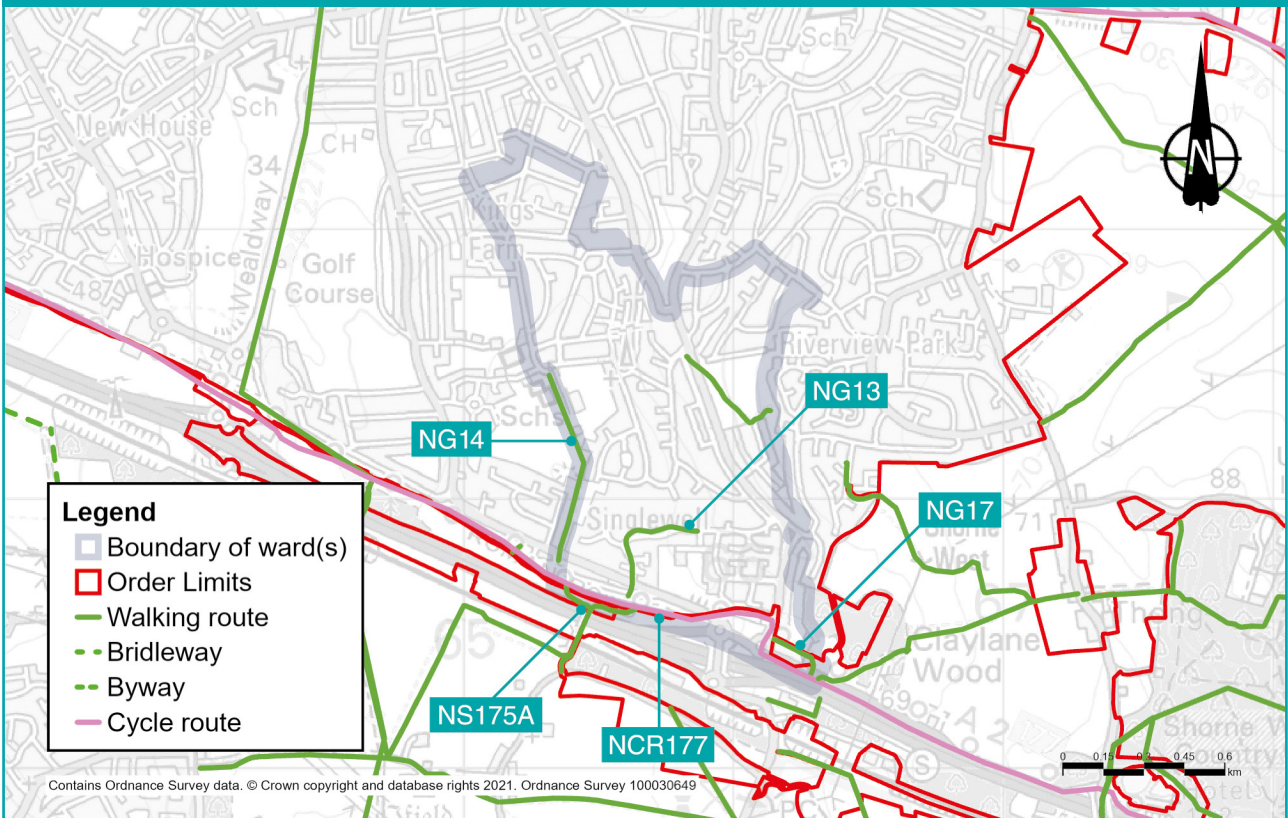
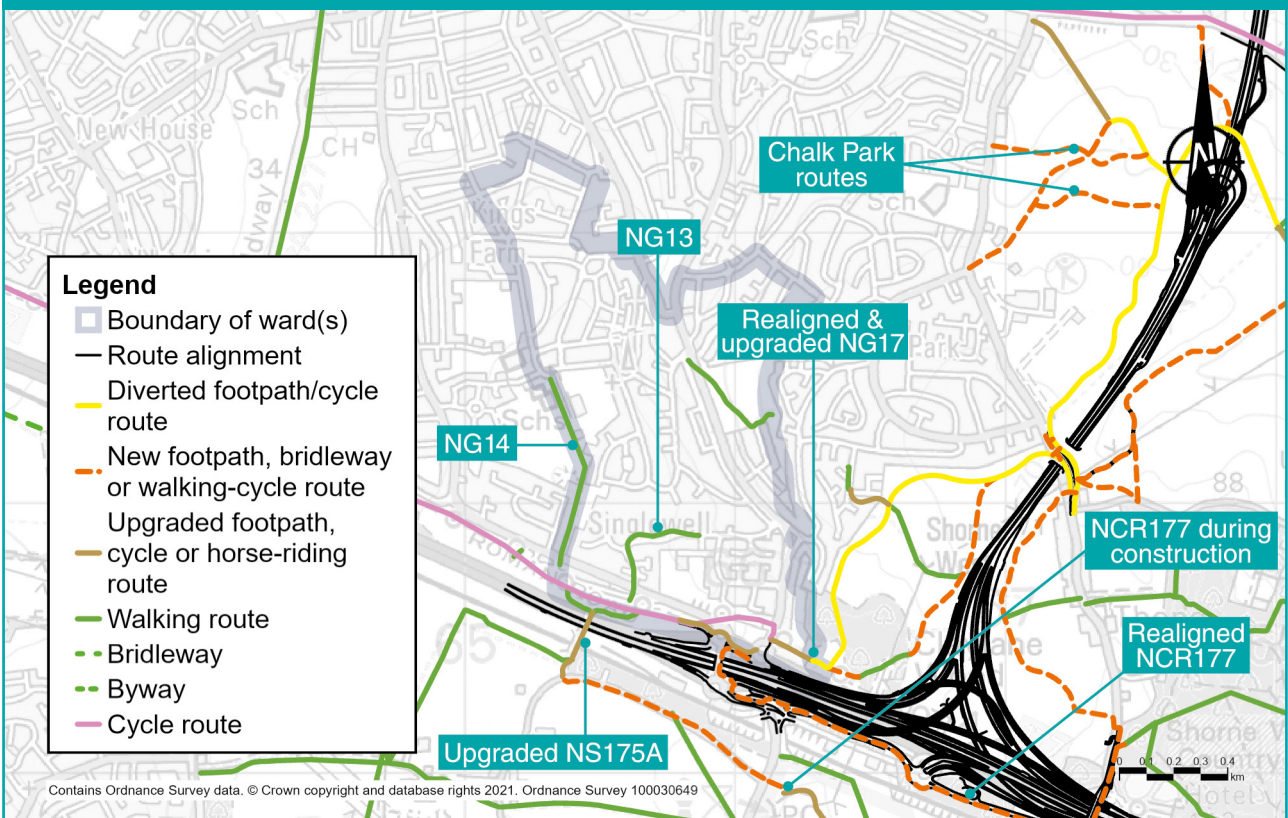


Figure 8.13: Proposed footpaths, bridleways and cycle routes in Singlewell ward



8.5.2 Operations

Overall, the project's proposals for walking, cycling and horse riding include more than 46km of upgraded, extended, diverted and entirely new footpaths, bridleways and cycle routes.

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

- Footpaths NG13 and NG14 would be unaffected once the road is open.
- Footpath NG17 would be upgraded to a bridleway and realigned to connect with routes through Claylane Wood.
- Footpath NS175A would be upgraded to become a shared walking-cycling route.
- NCR177 would be closed permanently between Gravesend East junction and Park Pale bridge. See the construction section above for information about an alternative route available during the construction period. The alternative route would remain open once the project is complete, and there would also be a more-direct realigned NCR177 running from Gravesend East junction alongside the new parallel connector road south of the A2. For more information, see the Footpaths, bridleways and cycle routes section of chapter 3.

8.6 Visual

Existing situation

Views towards the land on which the project would be built from the main populated area are largely constrained by the urban area of Gravesend and principally limited to the residential area on the southern edge of the ward. Other views include those from National Cycle Network (NCN) Route 177 on the south-east edge of the ward.

Current views from properties in Singlewell towards the land on which the project would be built are largely screened by a combination of garden and roadside vegetation, or by commercial buildings along Hever Court Road. The existing A2/M2 corridor dominates views from NCN Route 177 on the edge of Singlewell.

8.6.1 Construction

Construction impacts

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

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

- The operation of the Marling Cross Compound adjoining Valley Drive.
- Utilities diversions.
- Construction of slip roads for the proposed A2/M2 junction and associated works to the existing A2/M2 corridor.

How construction activities may affect views in Singlewell ward can also be found in the Land use section above, and in chapter 3 of the Construction update.

Views of construction activities would be limited to the southern edge of Singlewell, where construction activity is likely to be partially visible from residential properties and potentially from Singlewell Primary School. The Marling Cross Compound would be visible from some adjacent residential properties on Valley Drive, and to a lesser extent from Mackenzie Way. For some residents adjoining Watling Street, removal of existing vegetation for construction would open up views of the A2/M2 corridor and associated construction activities.

NCR177 would be permanently realigned as a result of the project, and routed outside of this ward.

Measures to reduce visual impacts of construction

Measures would include locating the taller facilities in the Marling Cross Compound to maximise the distance from homes, as far as reasonably practical. The visual impacts of the project would be controlled through the range of good practice measures set out in the CoCP and the REAC.

8.6.2 Operations

Operational impacts

When the road opens, the A2 slip roads to the new Gravesend East junction would be completed, together with associated landscape restoration and planting mitigation. The site of the Marling Cross Compound would be restored to its current condition. Further information about the completed project is provided in the Project description section above.

The visual impacts from most residential properties would be minimal, given the restricted nature of existing views and relatively limited nature of the proposed works in the area. The most noticeable change would be seen from homes adjoining the A2 due to the limited space available for planting mitigation. There would be no perceptible change to views from NCR Route 177.

Measures to reduce visual impacts of the operational project

The main measures to reduce visual impacts during the project's operation in the Singlewell ward are landscape restoration and screen planting.

8.7 Noise and vibration

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

Existing situation

The existing noise environment within Singlewell ward mainly comes from traffic noise from the A2 and Valley Drive, along with other local roads in the area. As part of our environmental assessment process, we carried out surveys of existing background noise at five locations in the ward, which were agreed with the local authority. The levels monitored at these locations recorded average existing noise level of 64 dB(A)² during the day and 60 dB(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 road was not built. We modelled this because we cannot assume that noise levels when the road opens would be the same as they are now. For example, our assessment of the opening year noise levels accounts for predicted changes in traffic levels.

We also modelled the predicted noise levels for the opening year with the new road in place. This provides a useful comparison with how the road would change the noise levels in its opening year if it were built.

In the opening year, noise levels without the project are predicted to range, on average, from 40 to 82dB(A) during the day and from 29 to 67dB(A) during the night at identified locations within the ward. As such, our noise assessments predict that by opening year, noise levels will increase compared with the existing situation even if the road is not built. Information about noise levels with the project, during its construction and operation, are below.

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

8.7.1 Construction

Daytime construction noise impacts

The main construction activities that are expected to cause noise and vibration impacts in this ward are those associated with A2 widening and utilities diversions. Marling Cross Compound would be located within the Singlewell ward. There would be no Utility Logistics Hubs located within the ward. Although not within the ward, the A2 West Utilities Logistics Hub may contribute to the noise impacts experienced within this ward due to how close it is to the ward boundary. There would be no haul roads in this ward during the construction period.

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

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

Noise levels are shown using standard units for road projects, dB LAeq (12-hour), which represents 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.

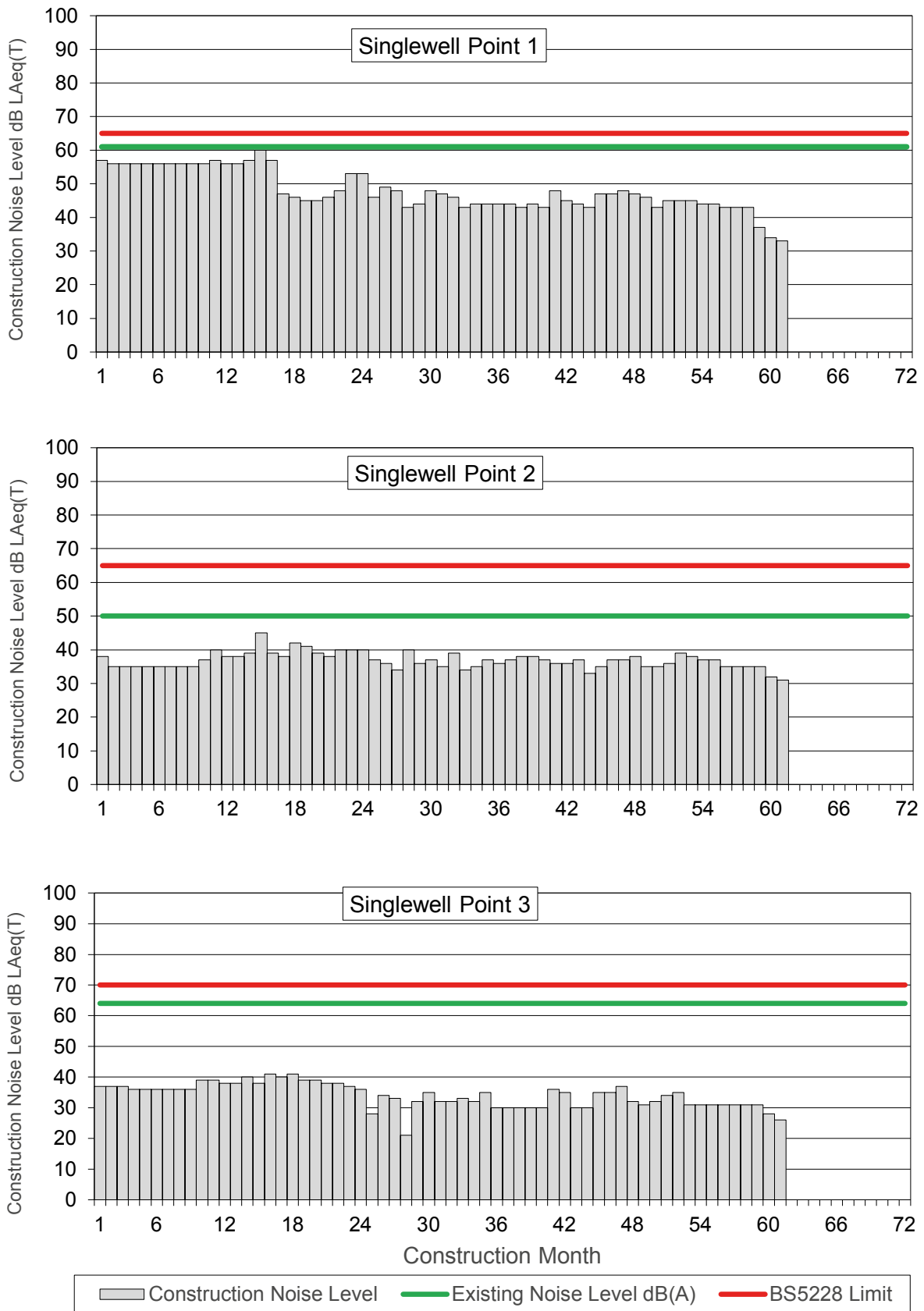
Figure 8.14: Construction noise assessment locations in Singlewell ward



Each vertical bar in figure 8.15 shows the predicted noise levels for that month of the construction period (from month 1 to month 72). The horizontal green line in each chart represents the existing background noise level at each assessment point without the project. The horizontal red line shows the level at which construction noise would exceed acceptable thresholds (see chapter 1 for more information about these thresholds). If noise is predicted to exceed acceptable levels, then specific mitigation measures would be implemented to reduce the noise.

The predicted noise levels show that higher construction 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.

Figure 8.15: Construction noise by month for points 1, 2 and 3 in Singlwell ward



With reference to figure 8.15, 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 33 to 60dB LAeq (12-hour) during the six-year construction programme. Construction noise levels are not predicted to exceed the existing background noise levels at this location.
- At point 2, construction noise levels are predicted to range from 33 to 45dB LAeq (12-hour) during the six-year construction programme. Construction noise levels are not predicted to exceed the existing background noise levels at this location.
- At point 3, construction noise levels are predicted to range from 21 to 41dB LAeq (12-hour) during the six-year construction programme. Construction noise levels are not predicted to exceed the existing background noise levels at this location.

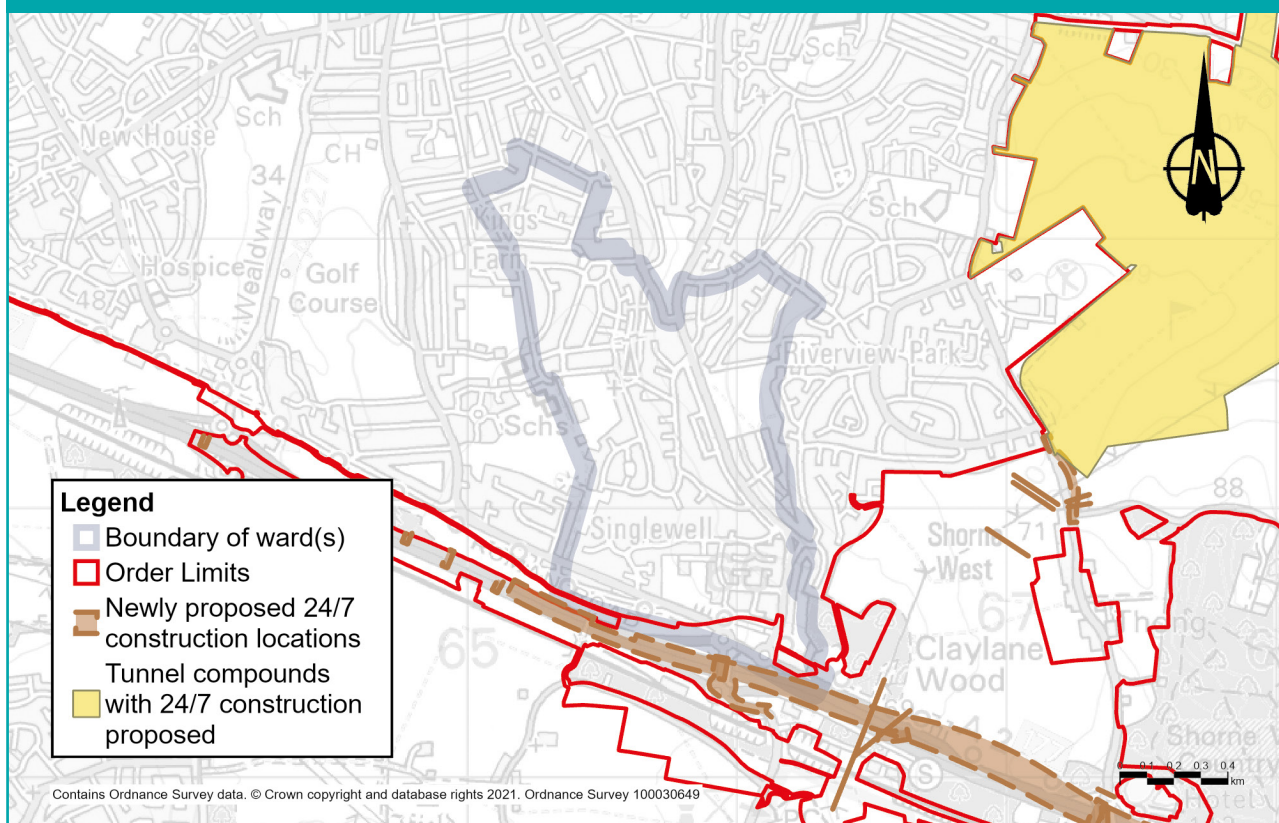
24/7 Construction working

In addition to the changes to the daytime noise impacts reported in the section above, 24-hour, seven-day construction working is proposed at the locations shown in figure 8.16. The previously proposed 24/7 construction locations referred to in the figure are those 24-hour tunnelling activities that we have outlined during previous consultations and remain part of our current proposals.

These works have been identified as they may need to be carried out at night to maintain safety and reduce disruption to road and utility networks. The duration for the works within this area is anticipated to be night-time or weekend closures for highways works.

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

Figure 8.16: Newly proposed and tunnel 24/7 working locations in Singlewell ward



Construction traffic noise impacts

Maps showing the predicted change in road traffic noise within the ward during each year of construction can be found in chapter 7 of the Construction update. Based on the currently available traffic data (which offers a representative picture of what receptors within the ward likely to experience) during the construction period, there would be negligible changes in road traffic noise (less than 1 dB change in noise levels) during all construction years, except along the following roads where increases have been predicted.

Table 8.4: Construction traffic noise in Singlewell ward

Road	Predicted noise impact	Construction year
Christianfields Avenue, Miskin Way, Ifield Way	Minor increase in noise levels	1
Kitchener Avenue	Moderate increase in noise levels	1

Measures to reduce construction noise levels

Construction noise levels would be controlled primarily through the implementation of 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 assessments on-site to inspect for defects such as potholes.
- Turning off plant and machinery when not in use.
- Maintaining all vehicles and mobile plant so that loose body fittings or exhausts do not rattle or vibrate.
- Using silenced equipment where available, in particular power generators and pumps
- No music or radios would be played for entertainment purposes outdoors onsite
- Site layout would be planned to ensure that reversing is kept to a practicable minimum. Required reversing manoeuvres would be managed by a trained banksman/vehicle marshal to ensure they are conducted safely and concluded quickly to reduce the noise from vehicle reversing warnings.
- Non-percussive demolition techniques would be adopted where reasonably possible to reduce noise and vibration impact.

- Careful consideration of the location and layout of compounds to separate noise-generating equipment from sensitive receptors, and the use of mains electricity rather than generators, where possible.
- Minimising construction vehicle traffic by, where practical, selection of local suppliers along the project route, using local workforces and by minimising material transportation for earthworks construction along the project route.

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 phase.

8.7.2 Operations

Operational noise impacts

Within Singlewell, the main project route runs approximately 450 metres to the east of the ward.

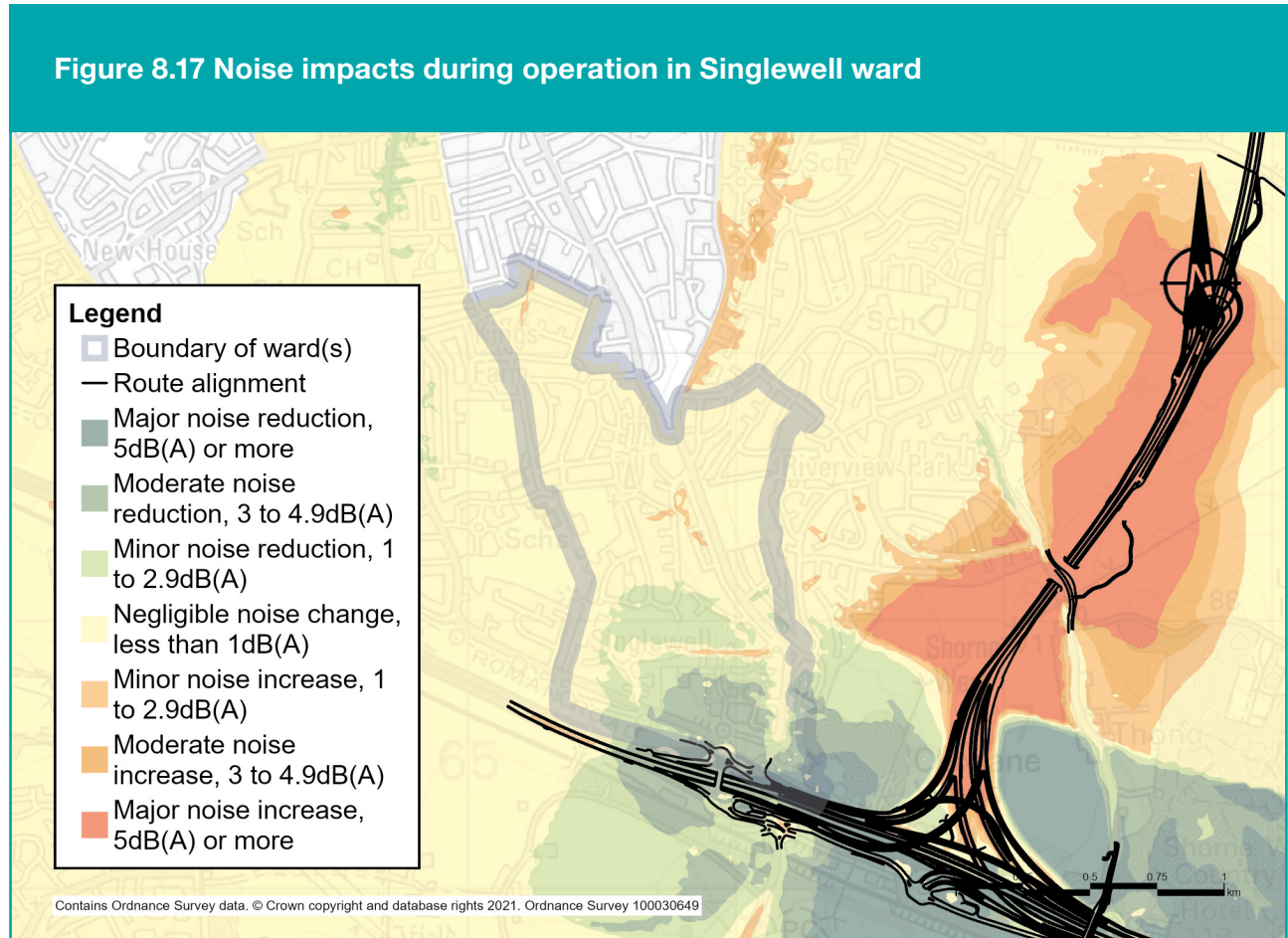
Direct noise impacts from the route, the proposed A2/M2 junction and widening of the A2/M2 would be experienced in the southern extents of the ward along with indirect noise impacts due to changes in traffic flow, the number of HGVs, and traffic speed on the existing road network in the ward.

Figure 8.17 below shows the predicted changes in road traffic noise in the opening year of the project. Within the ward, changes in road traffic noise at identified noise-sensitive receptors (such as nearby properties) are predicted to range from major reductions in noise levels of greater than 5 dB to minor increases in noise levels of between 1.0 and 2.9 dB. For more information about how we define noise impacts (negligible, minor, moderate and major), see chapter 1.

Measures to reduce noise and vibration when the road is open

The main methods of controlling noise would be, where practical, 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.

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



8.8 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 Singlewell ward, the A2/M2 has 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.

8.8.1 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 southern edge of Singlewell, close to the A2. Air quality impacts on these properties during construction would be temporary and we would put measures in place 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 the construction traffic predicts that the impact on most roads in this ward would be negligible, although there would be a minor improvement in air quality in the area around the A2 corridor as a result of the traffic management in place from 2026 to 2028. 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 and changes in traffic on local air quality would be controlled and minimised through the range of good practice measures set out in the project's CoCP and the REAC. For example, measures to suppress dust and the use of low emission vehicles.

In addition, we would develop an air quality management plan to make sure the measures set out in the CoCP and REAC would effectively monitor and control dust and exhaust emissions. In this case, the location and type of monitoring would be submitted in advance to Gravesham Borough Council for consultation (see REAC entry AQ006).

8.8.2 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.

There are receptors (properties or habitats that are sensitive to changes in air quality) within the ward, close to the existing A2 that are predicted to experience a minor increase in nitrogen dioxide (NO₂) in the air quality, the main traffic-related pollutant³. The highest modelled yearly average NO₂ concentration within this ward is 28.3 µg/m³ (close to the A2), 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.

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

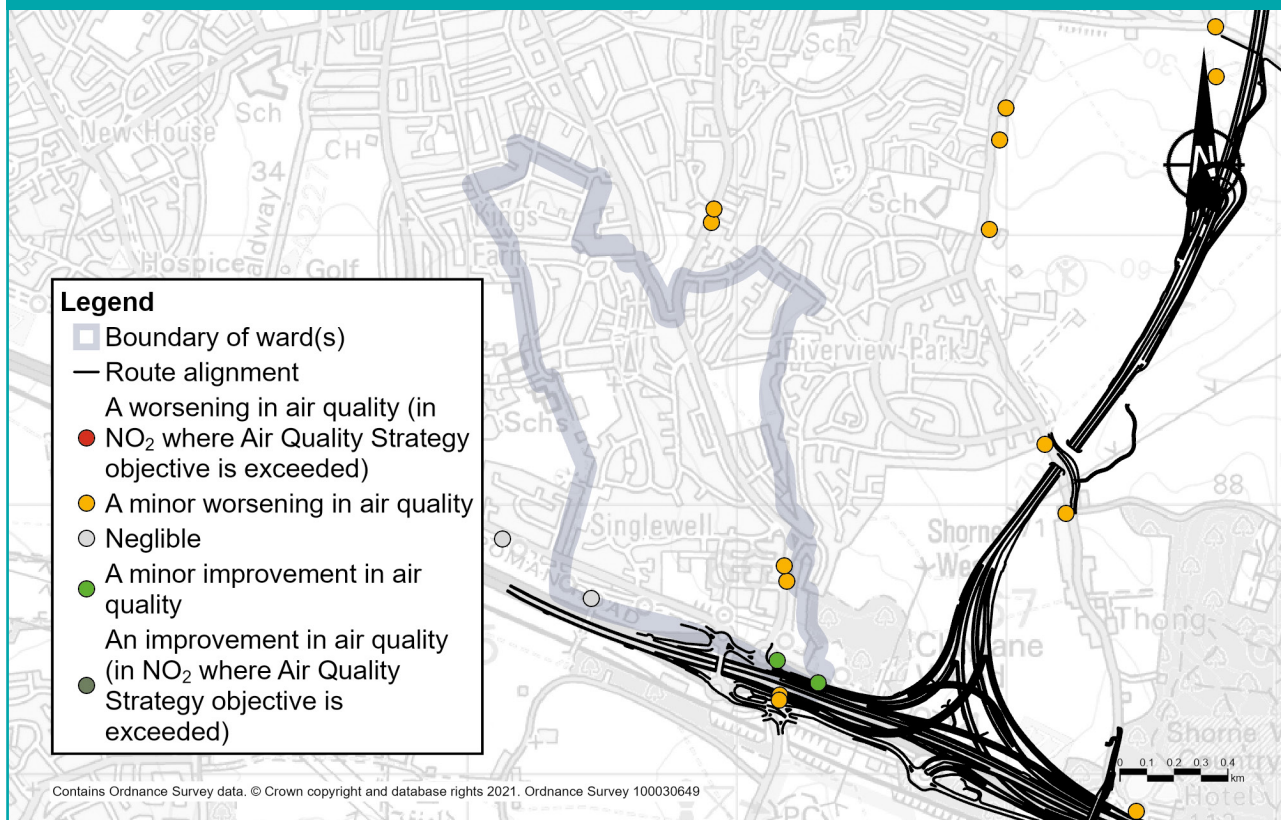
Furthermore, local air quality data shows an overall downward trend in NO₂ over recent years, which means that future air quality improvements at this location are likely (for example, through increased adoption of electric vehicles meaning a reduction in exhaust emissions).

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

Measures to reduce operational impacts on air quality

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

Figure 8.18: Predicted changes in NO₂ levels within Singlewell ward once the new road is open



8.9 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.

Singlewell ward is characterised by a younger population than that of Gravesham overall, with a higher proportion of residents in both the under 16s and 17-25 categories. The proportion of older people living alone is higher within Singlewell than is the case nationally.

Self-reported health status of residents is slightly worse than overall in Gravesham, with around a fifth of residents reporting fair, bad or very bad health compared with 18.5% for Gravesham. The number of residents who report their day-to-day activities to be limited a lot as a result of a long-term health condition or disability is also slightly higher than for Gravesham as a whole (8.6% compared with 7.7%). Life expectancy at birth for residents of Singlewell ward is 76.9 years for males and 85.3 years for females (male life expectancy recorded as significantly below the UK average life expectancy recorded for 2017-19 of 78.4 years for males and female life expectancy significantly better than the 83.1 years for females).

8.9.1 Construction

Construction impacts

Construction activities affecting the Singlewell ward are presented in the Project description section and relate primarily to construction works to the A2/M2 and the proposed A2/M2 junction. The Marling Cross Compound is located off Valley Drive. Elements of each of these activities have the potential to impact on human health, whether this be through noise associated with construction activities, changes to air quality (as a result of dust emissions), changes to accessibility caused by road or footpath closures, impacts on access to open space, or through impacts on mental health and wellbeing.

There are both positive and negative potential impacts on people's health and wellbeing as a result of the construction stage. With good communication and engagement, mental health and wellbeing impacts associated with stress and anxiety related to the construction of the project 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).

Different groups of people within the population may be more sensitive to factors that potentially affect their health than others. Some of the changes identified as a result of construction activities would therefore only affect a small proportion of the population.

For example:

- Changes in accessibility as a result of traffic management measures. This may be the case for people who are more dependent on public transport and have less choice about method and route travelled. Relevant traffic management for residents of Singlewell ward include:
 - Gravesend East Junction (north) – Lane closures to carry out improvement works to local utility networks
 - Gravesend East Junction (south) – Lane closures to carry out nearby works
 - Gravesend East Junction (bridge) – Lane closures to carry out bridge widening and utility works

Further information about impacts on journey times can be found in the Traffic section above.

- Access to open space. Access to the rural area immediately to the east of Singlewell, including Claylane Woods, would be disrupted as a result of construction activities. The current NCN Route 177 would be closed as a result of the project and there would be no views of construction activity from the current alignment. Footpath NS367/1 (found immediately to the south of the Singlewell ward) would be temporarily closed for a period of up to 48 months. There would be temporary disturbance to users of the Cyclopark to the south of Singlewell, for one-month during construction. People without access to private cars may not be able to access alternatives within a reasonable travel time.
- To the south of the ward, there would be disruption to access to Shorne Woods Country Park, with access to open spaces such as Shorne Woods and Great Crabbles Wood reduced due to temporary footpath closures.
- The Michael Gardens Play Area, to the south-east of the ward would be affected by works to upgrade the footpath for a very short time during construction.

The above changes may particularly affect people without access to private transport for whom there may be less choice in finding alternative destinations, and may therefore affect the ability of people to undertake physical activity.

- Noise and vibration. Temporary worsening of noise from construction traffic has been identified at receptors on the eastern side of Singlewell. A negative health outcome has been identified for those who may be affected differentially by changes to the noise environment (for example older people, or people with pre-existing hearing conditions). Mitigation measures described below would be employed to minimise the risk of negative health outcomes on sensitive populations.

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 in this chapter in the Visual, Noise and vibration, and Air quality sections. Further information relating to mitigation measures for these areas is in the CoCP, the REAC and the traffic management plans set out in the Outline Traffic Management Plan for Construction. The commitments in the CoCP and the REAC include items such as adhering to Best Practicable Means (BPM) to reduce noise impacts (see NV007 in the REAC) and dust-management good practice (see AQ005 in the REAC).

Engagement and effective two-way communication with communities both prior to and during construction is important to help reduce mental health and wellbeing impacts associated with uncertainty, stress and anxiety. The CoCP sets out proposals for community engagement, including how we would make sure communities, stakeholders and any affected parties are kept informed of the construction works, their progress and associated programme. This includes setting up Community Liaison Groups.

8.9.2 Operations

Operational impacts

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

Both positive and negative health outcomes may be experienced by residents within Singlewell ward. These include:

- Access to open space. Beneficial health outcomes are associated with improvements to accessing open space – for example, through the provision of open space north of Claylane Woods, at the new recreational area Chalk Park in Riverview and Westcourt wards (see chapters 6 and 7), and east of the southern tunnel entrance. These areas would be made accessible via green bridges and improved routes for walking, cycling and horse riding.
- Changes to the noise environment. Both adverse and beneficial changes in road traffic noise levels have been identified towards the eastern side of Singlewell. As noted earlier, a negative health outcome has been identified for sensitive populations who may be affected differentially by changes to the noise environment (for example older people, or people with pre-existing hearing conditions).
- Properties that are within 200 metres (along the southern edge of Singlewell) may experience minor air quality worsening as a result of changes in traffic flows. These changes are small and represent a worst-case scenario which will improve with an increase in electric vehicles.
- Some residents within Singlewell ward may experience negative health outcomes in relation to mental health and wellbeing as a result of the project (for example, relating to anxiety around perceived changes to air quality or changes to the noise environment).

Measures to reduce operational health impacts

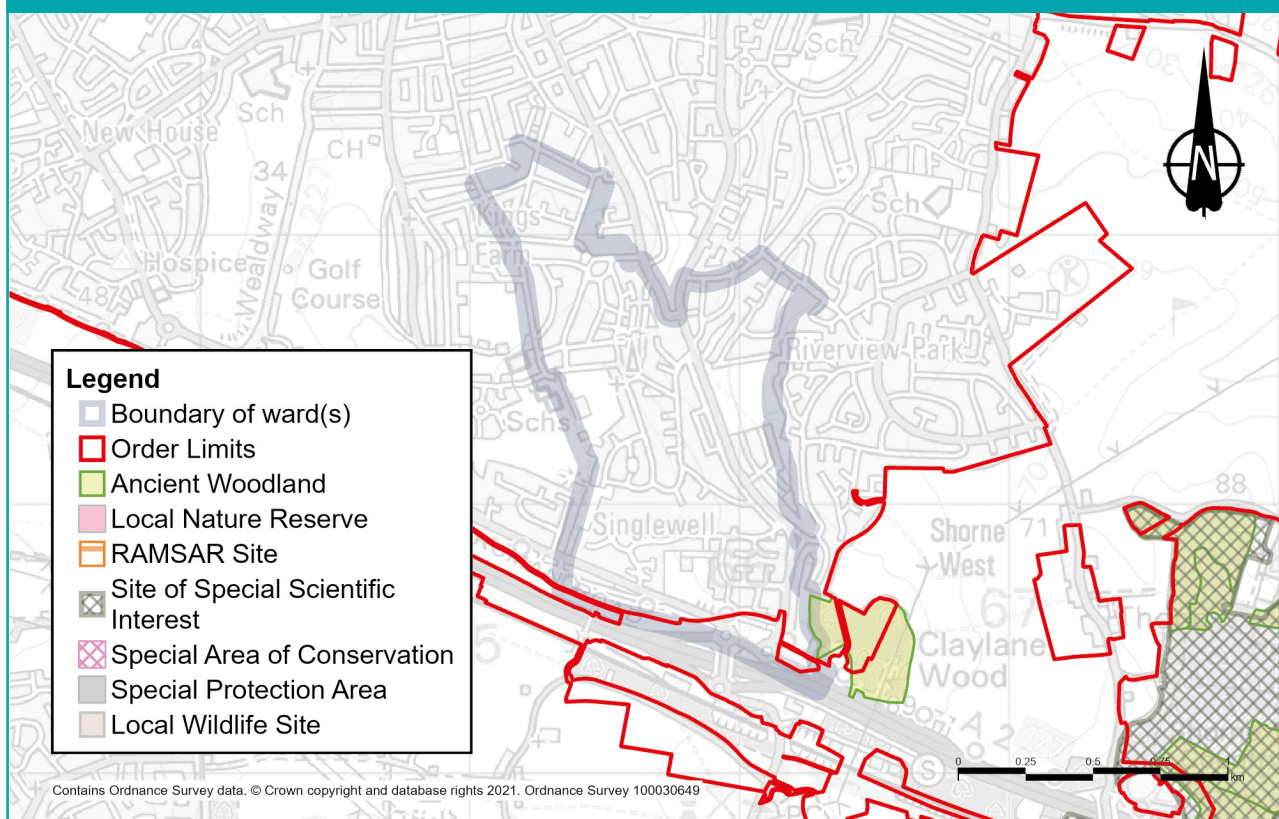
No significant noise or air quality impacts have been identified for Singlewell ward and as such, no essential mitigation measures have been proposed.

8.10 Biodiversity

Only a small area of Singlewell ward falls within the Order Limits and where it does, the Order Limits are restricted to a small area of landscape and woodland planting north of Hever Court Road. Singlewell ward contains no designated or non-designated sites, although Claylane Wood ancient woodland is adjacent to the south-east boundary of the ward.

We carried out surveys across the project to set a baseline for assessment, and these identified the presence of a range of protected and notable species. Only badger outlier setts were identified within the woodland area. No other protected species were identified, although some trees were assessed as having potential for roosting bats.

Figure 8.19 Designated and non-designated biodiversity sites in Singlewell ward



8.10.1 Construction

Construction impacts

Construction of the project would require the removal of areas of habitat, some temporarily and some permanently, as a result of construction of the new road including utility diversions. The removal of woodland would cause the loss of badger setts, disturbance to roosting bats, and disturbance to retained habitats. For more information about the impacts on Claylane Wood, see the Shorne, Cobham and Luddesdown ward chapter.

Measures to reduce biodiversity impacts of construction

Vegetation clearance would be carried out during the winter where possible to avoid the impact on breeding birds. Where this is not practical, clearance would be supervised by an Ecological Clerk of Works to ensure that no nests are disturbed or destroyed.

Any protected species would be moved away from the site prior to any construction activities, either through habitat manipulation (for example strimming to reduce the height of vegetation and displace reptiles), or translocation. Where required, works affecting protected species would be carried out under a Natural England licence. Boxes to support bats, dormice and birds would be erected within retained habitat. Habitat lost for temporary construction works would be reinstated following construction.

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

8.10.2 Operations

Operational impacts

Once open, the new road could affect species through habitat fragmentation, noise disturbance from traffic and encountering road traffic. The operational impacts on terrestrial biodiversity from the project are expected to be similar to those of the operation of the existing A2/M2.

Measures to reduce biodiversity impacts of the project during operation

Newly created habitat, including those created to support animals moved from the construction area, would be managed to ensure that they provide high quality environments to support a broad range of different plant and animal species. The General Arrangement plans, which accompany this consultation, show where areas of new habitat would be created.

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

8.11 Built heritage

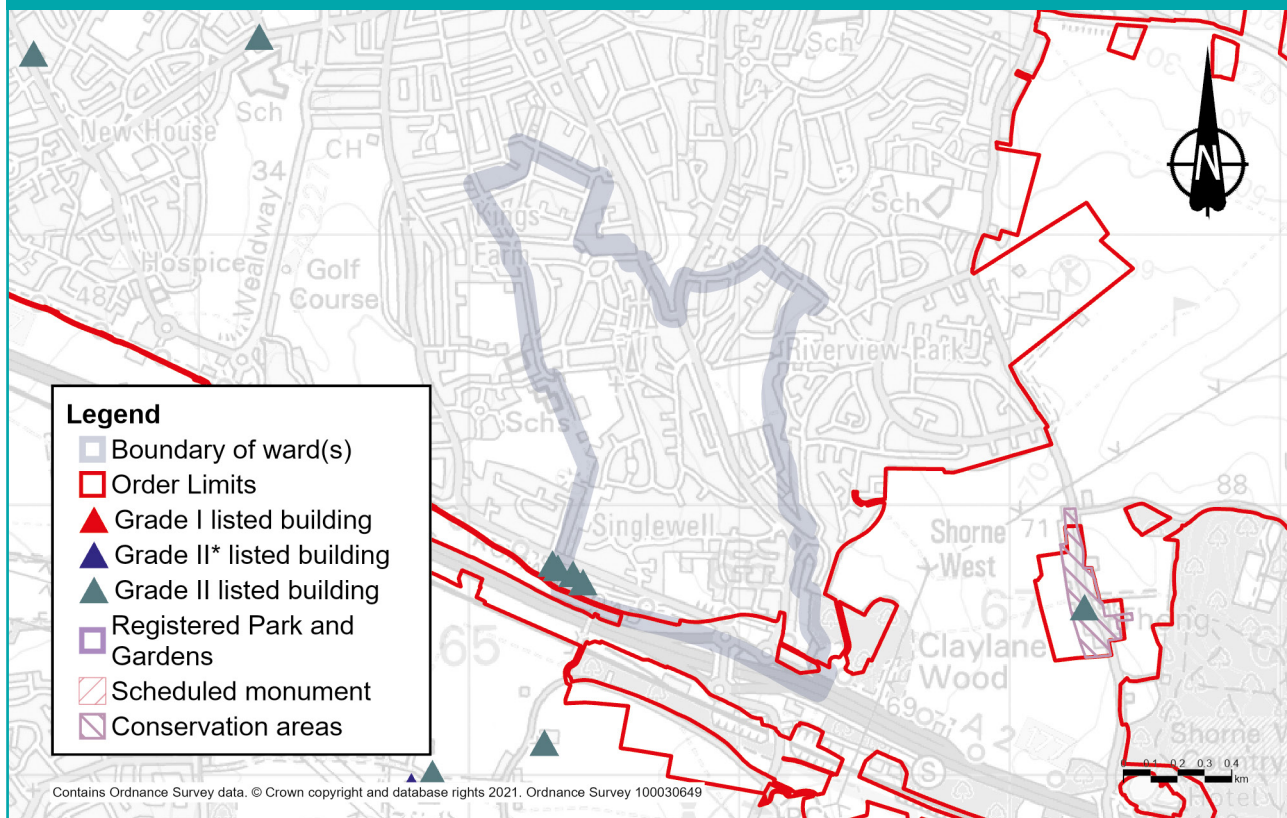
Existing situation

There are two listed buildings and two structures of local historical relevance located in Singlewell ward.

The listed buildings are:

- The George Inn. This is a Grade II listed building of high heritage value. It is located 415 metres east of the project. The inn has a front section that appears to be 18th century and there is a timber-framed portion to the rear that may be older. It is a good example of an old Kentish building constructed in a local style using traditional materials.
- Chapel Farmhouse. This is a Grade II listed building of high heritage value. It is located 70 metres north of the project. The building dates to the 18th century and is the main farmhouse of a historic farmstead, the rest of the farm buildings are poorly preserved.

Figure 8.20 Built heritage in Singlewell ward



Structures of historical relevance:

- Hever Farm was a post-medieval farmstead. It has now been demolished and replaced by modern housing. The site is of low heritage value. As the site has been redeveloped, its historical relevance would not be affected by the project.
- Chapel Farm is a post-medieval farmstead which contains the Grade II listed Chapel Farmhouse (see above). However, apart from the listed farmhouse, the farmstead is poorly preserved and would therefore not be impacted by construction and operation of the Lower Thames Crossing.

8.11.1 Construction

Construction impacts

Activities relate to construction works to the A2 Watling Street and the junction between the A2 and the project. Marling Cross Compound is located off Valley Drive. Known built heritage assets, as shown in the ward map above, would not be directly affected by the project because these buildings would not be physically impacted. However, there would be an indirect effect through the change to the surroundings of some built heritage assets as a result of construction and operation of the project.

Works along the A2 and construction of the proposed A2/M2 junction would temporarily introduce additional noise, lighting and visible activity and machinery in the vicinity of built heritage assets. Being sited just north of the current alignment of A2, the Grade II listed George Inn and Chapel Farmhouse would experience temporary minor changes to their settings (the surroundings in which a heritage asset is located).

Measures to reduce construction impacts on built heritage

No specific measures to reduce construction impacts are required for impacted built heritage assets in this ward because the impacts are non-physical. General measures used across the project to reduce impacts on built heritage can be found under Design principle S326, while dust and noise reduction measures would also be implemented in accordance with the REAC. Please refer to Air quality, Noise and vibration and Heritage asset section of the REAC measures.

8.11.2 Operations

Information about the operational project in this ward can be found in the Project description section above.

Operational impacts

The operational phase would increase the width of the A2/M2. However, this would not be discernible from these assets and consequently they would experience no change.

Measures to reduce operational impacts on built heritage

Tree planting is proposed for the operational phase of the project as screening for heritage assets, which can be seen in the figures in the Project description's Operations section above. The engineering and landscape design for the project seeks to avoid or reduce negative impacts on heritage assets as a result of change to their surroundings that would negatively affect their significance. To preserve the rural and historic character of the landscape, road lighting would be minimised where it is safe and practical to do so but remain in accordance with relevant standards (Design principles LST.02 and LST.03).

8.12 Contamination

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

- Singlewell service station has been a vehicle maintenance garage since 1961.
- The former Gravesend Airport is located to the east of Valley Drive and is a former civilian and military airfield. Former land uses are known or suspected to include aviation fuel storage and dispensing, firefighting, blast pens, aircraft service/ manufacture/ breaking, and an aluminium smelter.

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

8.12.1 Construction

Construction impacts

The overall impact from these identified sources is considered to be low, given the mitigation proposed. Construction activities such as excavation and earth movements in Singlewell ward would be minimal and given their location, it is unlikely that the potential sources of contamination identified above would be affected.

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

Measures to reduce the risk of contamination

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

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

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

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

8.12.2 Operations

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