

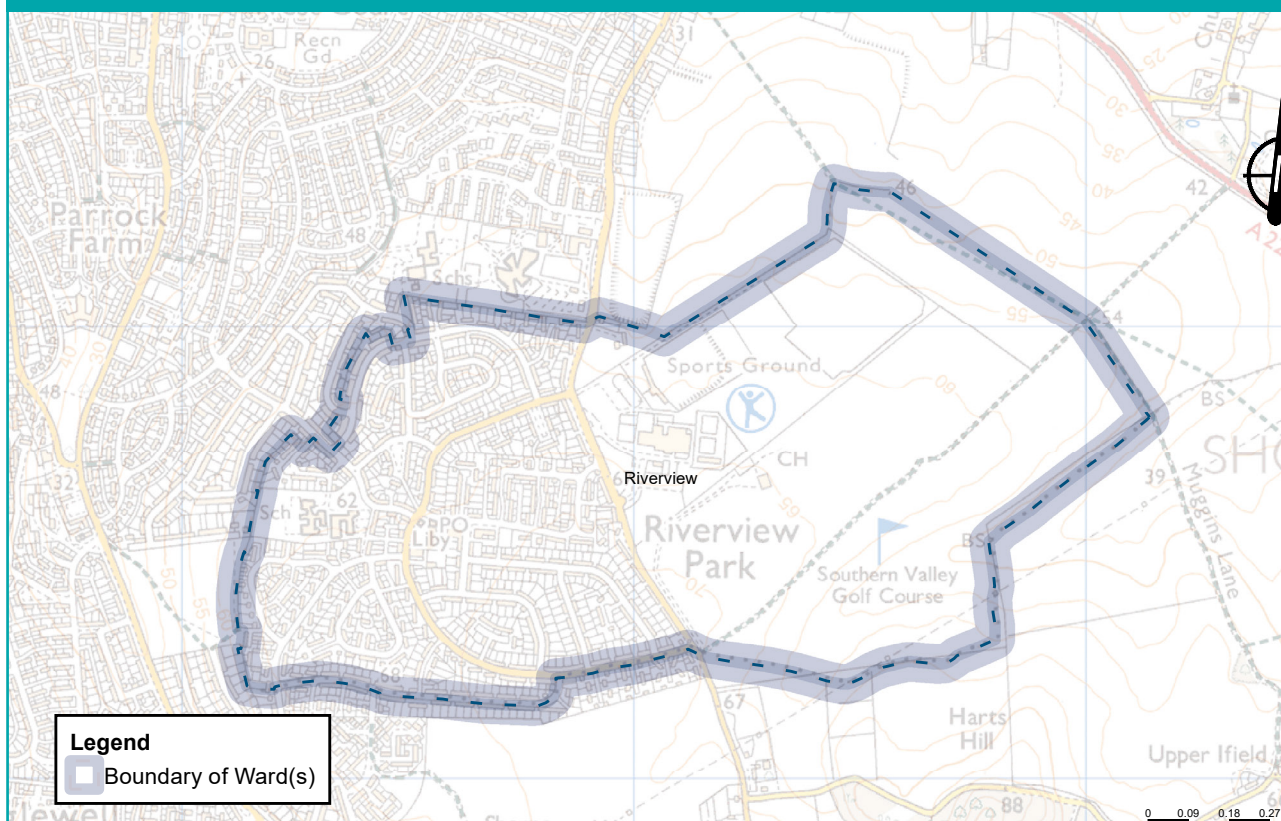
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Chapter 7: Riverview ward

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

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

Figure 7.1: Ward boundary map for Riverview ward



7.1 Overview

7.1.1. About this ward

Riverview ward is located south of the River Thames in the borough of Gravesham. It lies to the south of Westcourt ward, east of Singlewell ward, and west of Shorne, Cobham and Luddesdown ward. This ward is approximately 1.5km² in size with an estimated population of 4,322¹. It is predominantly residential and includes Cascades Leisure Centre to the east, and Southern Valley Golf Club, Gravesend Golf Centre and Thames Valley Golf Centre driving range immediately adjacent.

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

7.1.2 Summary of impacts

Table 7.1: Summary of impacts during the project's construction and operation

| Topic | Construction | Operations |
|--|---|--|
| <p>Traffic</p> | <p>Impacts</p> <p>There may be some short-term rerouting of traffic through Riverview Park to Valley Drive while temporary traffic-management measures are in place on Thong Lane.</p> | <p>Impacts</p> <p>There would be only very slight changes predicted in traffic levels on roads within the Riverview ward following the opening of the project. To see maps showing the changes in traffic flows within the ward, see section 7.3 Traffic in this chapter.</p> |
| <p>Public transport</p> | <p>Buses</p> <p>There would be no changes to journey times predicted resulting from construction activities.</p> <p>Rail</p> <p>There would be no changes in journey times to Gravesend station resulting from construction activities.</p> | <p>Buses</p> <p>There would be no required changes to bus routes once the project is operational and no changes to journey times are predicted.</p> <p>Rail</p> <p>There would be no operational impacts on rail services in the ward once the project is open and no changes in journey times to Gravesend station.</p> |
| <p>Footpaths, bridleways and cycle routes</p> | <p>Impacts</p> <p>Five footpaths would be impacted during the construction of the southern tunnel entrance, the Southern Tunnel Entrance Compound and the new road, with each footpath needing to close for five and a half years.</p> <p>Mitigation</p> <p>Due to the proximity of these footpaths to the works, diversions would not be possible during construction.</p> | <p>Impacts</p> <p>Works on the southern tunnel entrance and the road in this ward would mean footpaths and bridleways would be diverted during construction, with some being permanently realigned.</p> <p>Mitigation</p> <p>Realigned footpaths and cycle routes would link up to the existing local network, including new routes through the proposed Chalk Park recreation area.</p> |

| Topic | Construction | Operations |
|-----------------------------------|--|---|
| <p>Visual</p> | <p>Impacts</p> <p>Construction activities would be visible from the eastern edge of the Riverview Park residential area adjoining Thong Lane, the playing fields and golf course north-east of Cascades Leisure Centre and local footpaths.</p> <p>Due to local footpath closures during most of the construction period, the view of the Southern Tunnel Entrance Compound would be limited.</p> <p>Mitigation</p> <p>Taller structures within the Southern Tunnel Entrance Compound would be located as far away as possible from residential properties.</p> | <p>Impacts</p> <p>Once the project is complete and in operation, the views from most residential properties would be limited, as the new road would be located low in the landscape, in a cutting, beyond the new Chalk Park.</p> <p>Views from the diverted footpath, new flood compensation ponds, the new green bridge on Thong Lane and new Chalk Park would be visible. The diverted overhead lines would be visible but be similar to the existing.</p> <p>Mitigation</p> <p>The creation of Chalk Park and associated landscaping would soften the views in this ward.</p> |
| <p>Noise and vibration</p> | <p>Impacts</p> <p>The construction activity associated with the proposed A2/M2 junction, southern tunnel entrance, main alignment and utility works is expected to create noise. There would also be 24-hour, 7-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 Vigilant Way where minor increases in noise levels have been predicted.</p> <p>Mitigation</p> <p>Construction noise levels would be controlled by mitigation measures set out in the REAC. There are also measures presented in the CoCP.</p> | <p>Impacts</p> <p>There would be increased levels of noise in the eastern part of Riverview where the new road would be located. Noise levels would also increase from existing roads due to the changes in traffic flow, speed and vehicle type.</p> <p>Mitigation</p> <p>Low noise road surfaces would be installed on all new and resurfaced roads, plus noise barriers would be installed. The design of the new road and tunnel entrance /exit has been kept low in the environment (this controls the noise).</p> |

| Topic | Construction | Operations |
|---------------------------|--|---|
| <p>Air quality</p> | <p>Impacts</p> <p>There is likely to be dust and emissions from construction equipment and traffic during the construction phase.</p> <p>Our analysis of construction traffic predicts that there are no anticipated changes in traffic between 2024 and 2029 in this ward, there would be a negligible change in air quality as a result of construction traffic.</p> <p>Mitigation</p> <p>The contractor would follow good practice construction measures which are presented in the CoCP and REAC to minimise the dust. Construction vehicles would need to comply with emission standards. An Air Quality Management Plan would be designed in consultation with the relevant Local Authorities. The plan would include details of monitoring to 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>As there are no predicted exceedances, no mitigation has been proposed.</p> |

| Topic | Construction | Operations |
|----------------------|---|--|
| <p>Health</p> | <p>Impacts</p> <p>The construction phase of the project would present opportunities to access work and training.</p> <p>There are likely to be changes in the area that may result in negative impacts on health, including mental health and wellbeing. These include changes in accessibility of local resources and amenities as a result of road closures. Thong Lane would be especially affected. Noise would increase as a result of construction traffic and from construction traffic locations. Access to open spaces, like Claylane Woods, Michael Gardens Play Area and various footpaths could be impeded during construction.</p> <p>Mitigation</p> <p>The negative impacts would be mitigated through the good practice construction measures presented in the CoCP and REAC relating to dust emissions, working hours, visual screening, traffic management measures and community engagement. This includes the establishment of Community Liaison Groups.</p> | <p>Impacts</p> <p>There would be less road traffic noise at Riverview Park in proximity of the A2.</p> <p>There would be improved accessibility to open spaces, such as the new Chalk Park, green bridges and a network of improved routes for walkers, cyclists and horse riders. There would be increases in road traffic noise at Riverview Park and Thong Lane to the north of the A2. Some residents within the ward may be concerned about perceived changes to air quality and noise.</p> <p>Mitigation</p> <p>Low noise road surfaces would be installed on all new and affected roads. Acoustic screening (noise barriers) has been incorporated into the design where necessary.</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. These habitats are home to protected and notable species including dormice and reptiles. Habitats would also be fragmented.</p> <p>Mitigation</p> <p>Vegetation clearance would be carried out during the winter where possible. Protected species would be moved away outside of the construction working area under a Natural England licence. Boxes to support dormice and birds would be put up within the retained habitats.</p> | <p>Impacts</p> <p>The operation of the new road could cause mortality of species by encountering road traffic, habitat fragmentation, and disturbance from traffic.</p> <p>Mitigation</p> <p>The land used to accommodate the Southern Tunnel Entrance Compound would be landscaped to create Chalk Park. This new habitat would be suitable for a number of species. Landscape planting would provide strong links for animals to move and forage along. A green bridge (provided immediately south of the Riverview ward) would also be installed.</p> |
| <p>Built heritage</p> | <p>There are no buildings of historic relevance identified within Riverview ward in relation to the project.</p> | |
| <p>Contamination</p> | <p>Impacts</p> <p>There are potential sources of contamination in this ward, based on land uses. Construction activities could mobilise these contaminations. Part of a construction compound falls within this ward where stockpiling may occur as well as storage of materials and chemicals, meaning there is a potential risk of accidental spills.</p> <p>Mitigation</p> <p>To reduce this risk, the contractor would follow good practice construction measures. Work near to the former Esso petrol station would be discussed with the Environment Agency.</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 (REAC Ref. GS019).</p> |

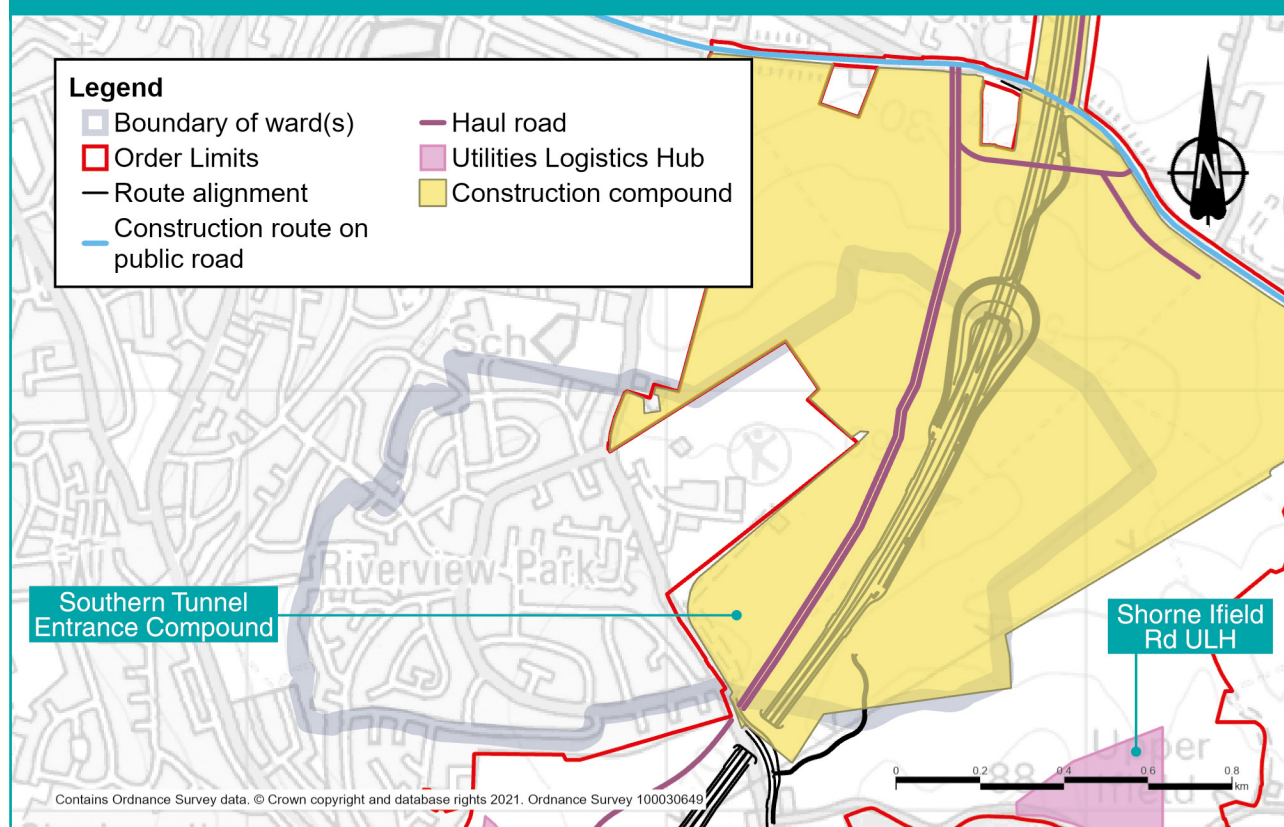
7.2 Project description

7.2.1 Construction

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

Nearly half of Riverview ward would be within the Order Limits (the area of land required to construct and operate the project, formerly known as the development boundary), and this land would be needed for the duration of the construction period. The land that is currently used for recreational purposes would be used for part of construction of the Southern Tunnel Entrance Compound and a haul road, which would be used to construct the southern tunnel entrance and its approach. The haul road would allow the movement of machinery and materials to the compound and around the worksite, reducing the construction traffic using public roads.

Figure 7.2: Key construction areas within Riverview ward



Construction compounds

The Southern Tunnel Entrance Compound is needed for the construction of the main tunnels and the southern tunnel approaches. It would remain in place throughout the construction period to provide facilities including accommodation, vehicle parking accommodation, vehicle parking, and an area for equipment and materials. This would involve ground works, tarmacking, and the installation of perimeter fencing.

Running along the north of the Southern Tunnel Entrance Compound's boundary (but outside Riverview ward), the A226 Gravesend Road would be used by construction traffic to access the compound. The compound could also be accessed from the A2 to the south via other haul roads. However, for much of the construction duration there would not be access across Thong Lane and therefore the A226 would be the primary access route. The reasons we have located in this location are set out in chapter 2 of the Construction update. Both the compound and the haul roads would be decommissioned once construction is complete.

The vehicles going to the Southern Tunnel Entrance Compound are shown in table 7.2. These vehicles would enter the compound from the A226 and would not travel on public roads through Riverview ward. 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 7.2: Average daily vehicle numbers going to compounds in Riverview ward

| Time period | Southern Tunnel Entrance Compound | |
|---------------------------------|-----------------------------------|------|
| | HGVs | Cars |
| January to August 2024 | 30 | 77 |
| September 2024 to February 2025 | 36 | 201 |
| March to May 2025 | 39 | 201 |
| June to October 2025 | 39 | 281 |
| November 2025 to March 2026 | 39 | 335 |
| April to August 2026 | 39 | 317 |
| September 2026 to March 2027 | 39 | 358 |
| April to November 2027 | 39 | 378 |
| December 2027 to March 2028 | 39 | 310 |
| April to July 2028 | 30 | 209 |
| August 2028 to December 2029 | 8 | 25 |

Utilities

Chapters 3 and 4 of the Construction update provide an overview of how existing utilities would be affected by our plans to build the new road.

Construction schedule

Construction of the whole project is scheduled to last for six years from 2024 to 2029. To help deliver the construction programme as efficiently as possible, construction activities would be divided into packages of work delivered in a coordinated way. Indicative maps and programmes for the tunnels can be found in chapter 4 of the Construction update.

Starting in early 2024, the main tunnelling works would last until 2029. Construction of the tunnels would use two tunnel boring machines (TBMs) operating from north of the river to the south, as well as tunnel fit-out, earthworks and landscaping. The main road alignment works would be carried out between early 2024 and early 2028 and would involve the construction of the project's main highway within a deep cutting. The deep cutting would require substantial excavation and earthmoving activity. The busiest period of construction is expected to be between late 2025 and early 2028 when many of the tunnel and road-building activities would take place at the same time.

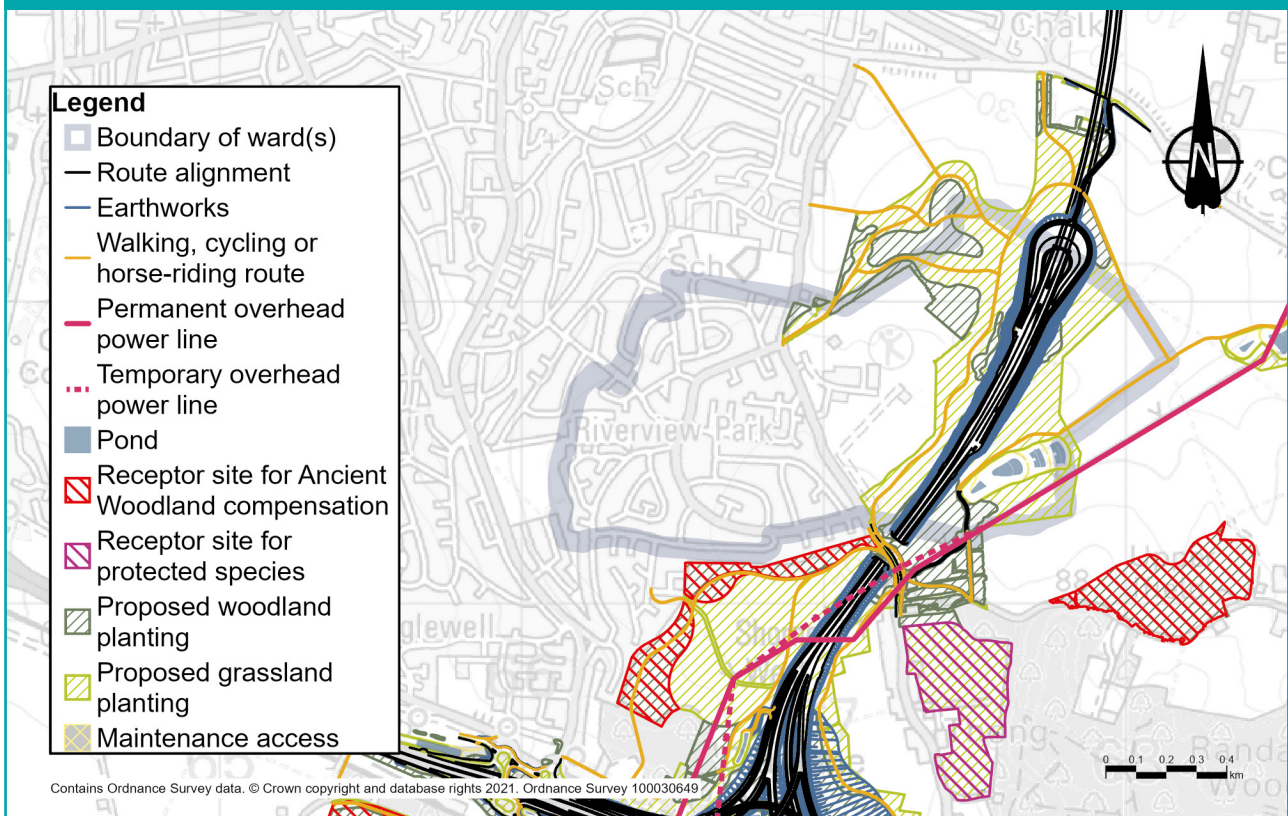
Construction working hours

Tunnelling activities would be carried out 24/7 to improve safety and speed up the project's completion overall. Within the ward, above-ground tunnelling activities taking place 24/7 would include the breakthrough of the TBM into the Southern tunnel entrance and the removal of the TBM. Most of the remaining works at the Southern Tunnel Entrance Compound would be during core hours from 7am to 7pm weekdays and 7am to 4pm on Saturdays, with additional repair and maintenance periods (if needed) from 8am to 5pm on Sundays. There are some circumstances, such as concrete-pouring work, where core construction hours may be extended. More information about working hours is set out in the Noise and vibration section below and in the CoCP.

Traffic management

There are no traffic management measures planned within the Riverview ward. However, there would be traffic management measures outside Riverview ward that would impact 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.

Figure 7.3: Main features of the completed project in Riverview ward



7.2.2 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. The following elements of the project would lie permanently within Riverview ward once the project is complete.

- The southern tunnel entrance would be situated to the north-east of where the Southern Valley Golf Club is currently, on land permanently acquired for the project. It would be linked to the A2/M2 by a major highway in a deep cutting. The southern entrance of the tunnel has been moved further south in line with community feedback. The tunnel was extended by 600 metres after our Options Consultation and by an additional 350 metres after Statutory Consultation, lengthening it by 950 metres. This would reduce the visual and noise impacts in Riverview ward.
- A new area of recreational land would be created partially within Riverview ward, and be accessible to local communities once the new road is complete. Covering 37 hectares, Chalk Park would feature woodland planting with views to nearby Areas of Outstanding Natural Beauty (AONB) and the River Thames. A map showing Chalk Park and other areas of open space land can be found in chapter 3 of the Operations update. Information about new footpaths and bridleways in this area can be found in the Footpaths, bridleways and cycle routes section below.
- Some footpaths and bridleways would be rerouted permanently as part of our proposals for 46km of upgraded, diverted, extended or entirely new walking paths, cycle paths and bridleways to benefit communities along the route. These footpaths and bridleways would link up with the existing network, with some passing through or linking to the proposed Chalk Park area. For more information, please see the Impacts on footpaths and bridleways section below.
- A series of four flood mitigation ponds would be built to the north-east of the Thong Lane green bridge. These would help reduce the risk of flooding as a result of the project, which would reduce the likelihood of flooding causing congestion in the local area.

Impact on open space land

Within Riverview ward, there are no proposals to remove or replace open space land.

Impacts on private recreational facilities

Within Riverview ward we are proposing to permanently acquire the Southern Valley Golf Club for the new road and for landscaping. We are not proposing to replace the golf club. Instead, we propose to create a new public parkland area on part of the site that would be open to the public after construction.

Additionally, we propose to permanently acquire part of the Gravesend Golf Centre facility for the landscaped parkland around the southern tunnel entrances. At the previous consultation we said we were proposing to provide a replacement golf facility to the south-east of the Cascades Leisure Centre, which would enable the Gravesend Golf Centre business to continue. We are, however, engaging with Gravesham Borough Council and the current operator regarding a potential proposal to replace the golf facility on land within the site of the Cascades Leisure Centre, which is currently used as football pitches. That proposal, if agreed, would be delivered separately to the project. If a golf facility is provided on that site instead, we would seek to provide football pitches on the land to the south-east of the Cascades Leisure Centre, rather than provide a golf facility on that land as proposed at the design refinement consultation. If the potential proposal being discussed with Gravesham Borough Council is not implemented, and a golf facility is not provided on that site, we would provide a replacement golf facility as previously proposed.

More information about our proposals for impacts on private recreational facilities, including proposals we have consulted on previously, can be found in chapter 3 of our Operations update.

7.3 Traffic

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

7.3.1 Construction

Construction impacts

There would be occasional night or weekend closures on the southern section of Thong Lane between Vigilant Way and the A2, which may cause traffic to reroute through Riverview Park to Valley Drive that would have otherwise used Thong Lane. Similarly, lane closures on the southern section of Thong Lane between Vigilant Way and the A2 are planned for around a month and this may cause traffic to reroute through Riverview Park to Valley Drive.

Measures to reduce construction traffic impacts

Our approach to construction has been refined after further investigations and feedback. A summary of the measures introduced to reduce the volume of construction materials transported in and out by road can be found in chapter 2 of the Construction update. Within Riverview ward, our proposals allow for re-use of excavated materials, and would substantially reduce the need to dispose of excavated material via the road network, thereby reducing the number of HGV movements on the A226 Gravesend Road. For more information about HGV movements, see the Construction update.

7.3.2 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 Riverview ward for the first year of operation, 2029.

Figures 7.4, 7.6 and 7.8 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 7.5, 7.7 and 7.9 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 project runs through the east of the ward, through the area currently used by the Southern Valley Golf Course. Within the rest of the ward in the morning and interpeak periods most roads would have a predicted change in traffic levels of more or less than 50 PCUs an hour, with the exception of a very short section of Leander Drive (between St Francis Avenue and Marling Way) which would see an increase of between 51 and 250 PCUs southbound. This would be under a 10% increase in flows in the morning peak and up to a 40% increase in the interpeak period. In the evening peak, Thong Lane (south of Leander Drive) would see a predicted increase in traffic northbound of between 51 and 250 PCUs (between a 20% and 40% increase) and a decrease southbound of between 249 and 50 PCUs (more than a 40% decrease). Southbound on Leander Drive as far as Marling Way, and then on Marling Way itself, predicted flows would increase by between 51 and 250 PCUs, which would be between a 20% and 40% increase, other than a very short section of Leander Drive, which would see an increase of over 40%.

Figure 7.4: Predicted change in traffic flows (PCUs) with the project during the morning peak in 2029

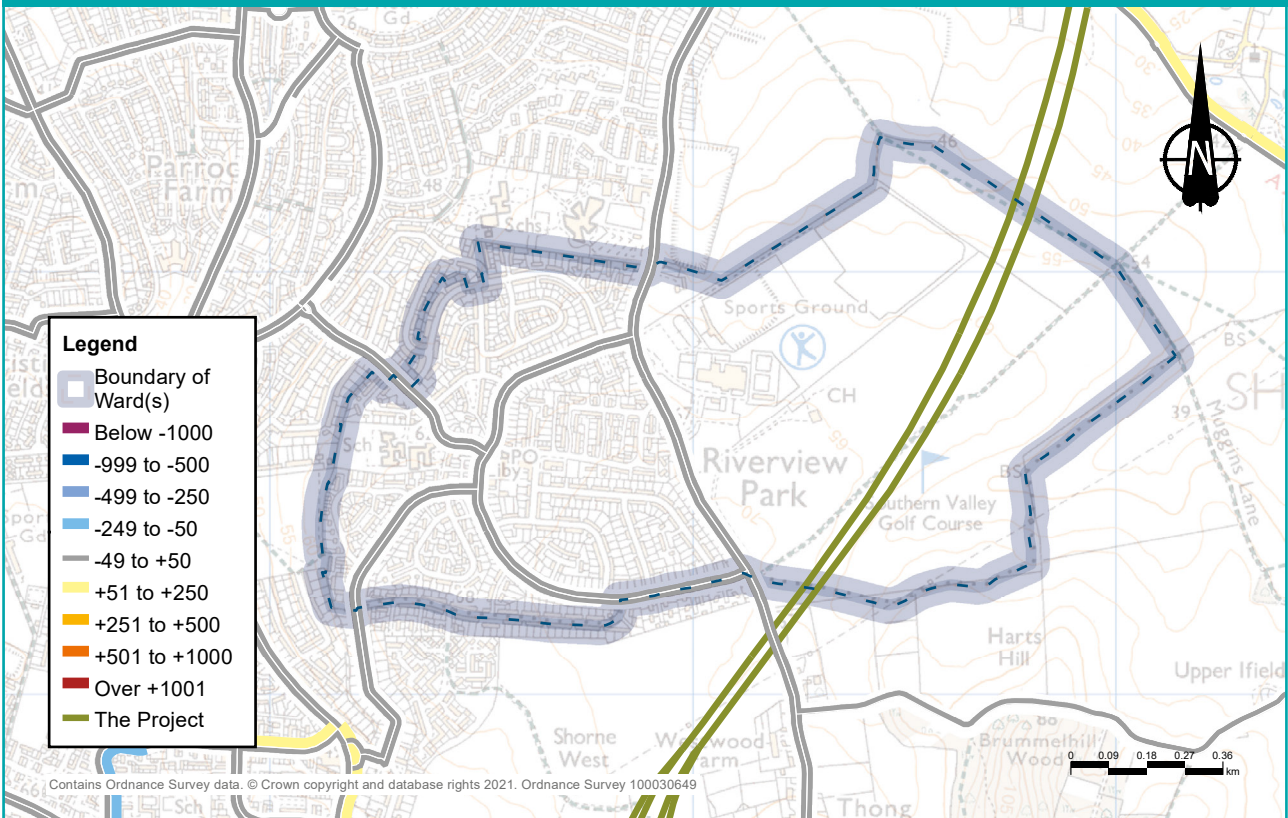


Figure 7.5: Predicted percentage change in traffic flows with the project during the morning peak in 2029

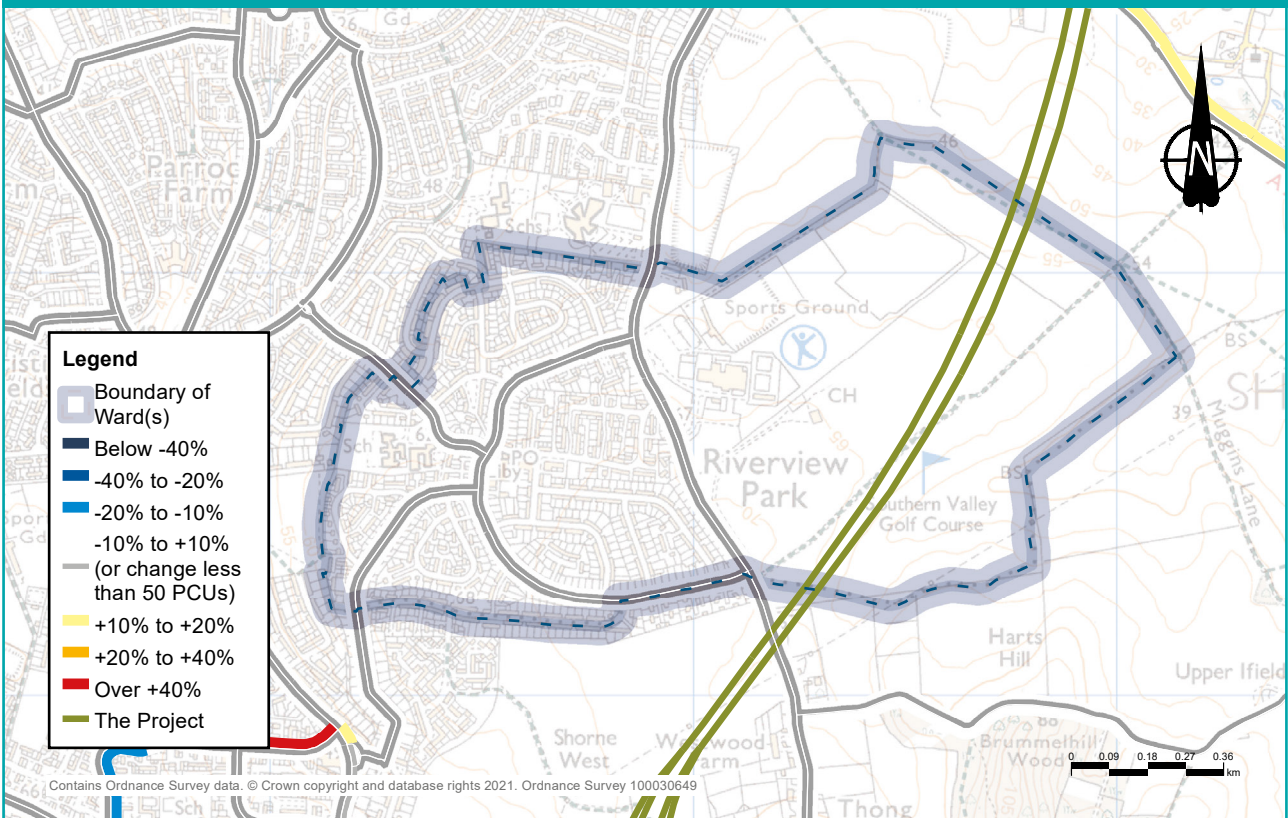


Figure 7.6: Predicted change in traffic flows (PCUs) with the project during the interpeak in 2029

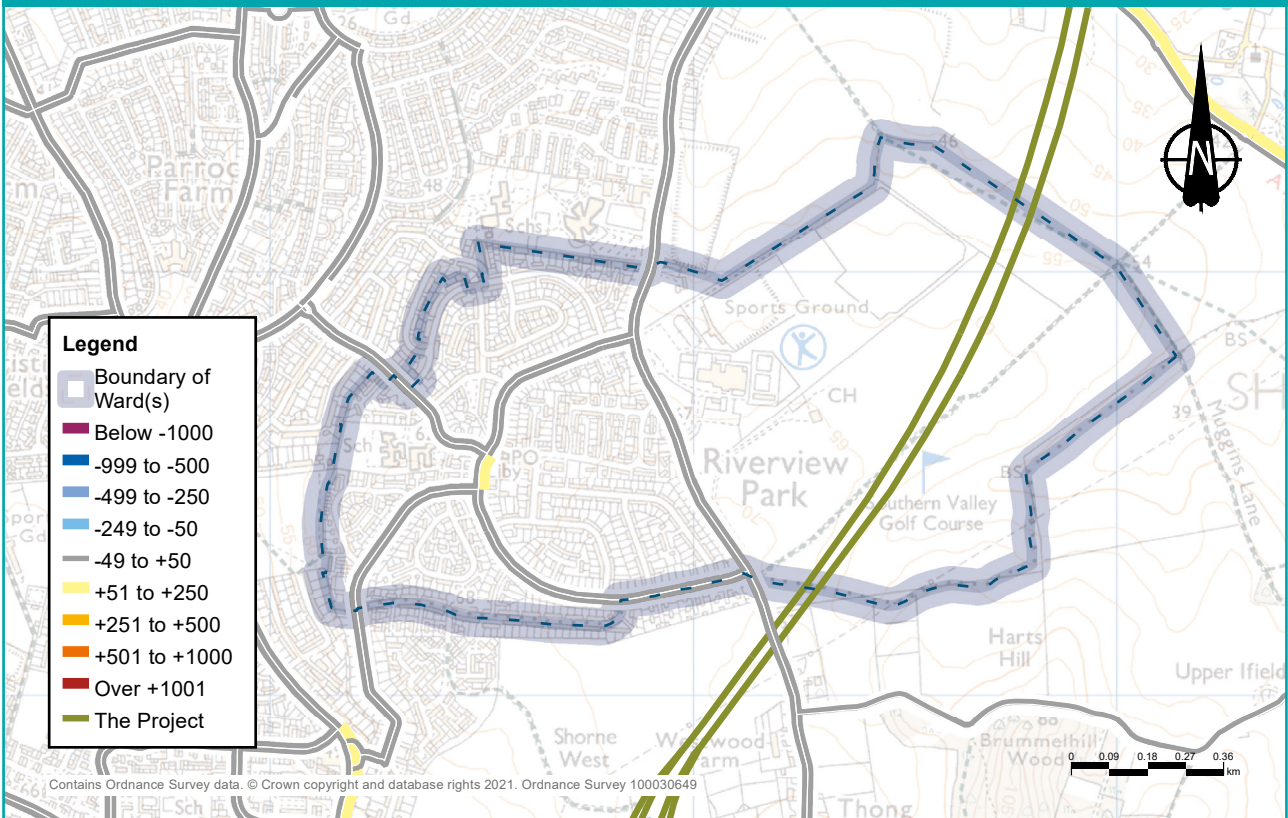


Figure 7.7: Predicted percentage change in traffic flows with the project during the interpeak in 2029

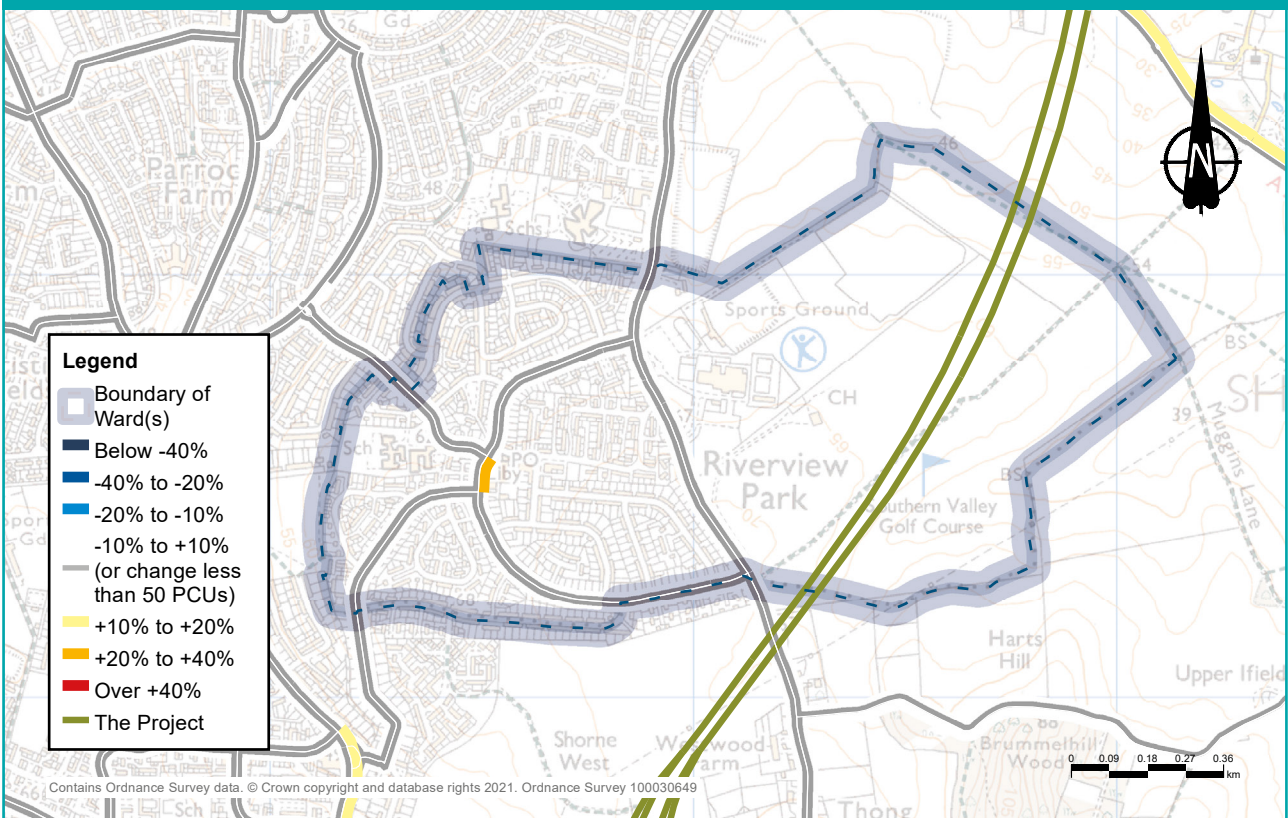


Figure 7.8: Predicted change in traffic flows (PCUs) with the project during the evening peak in 2029

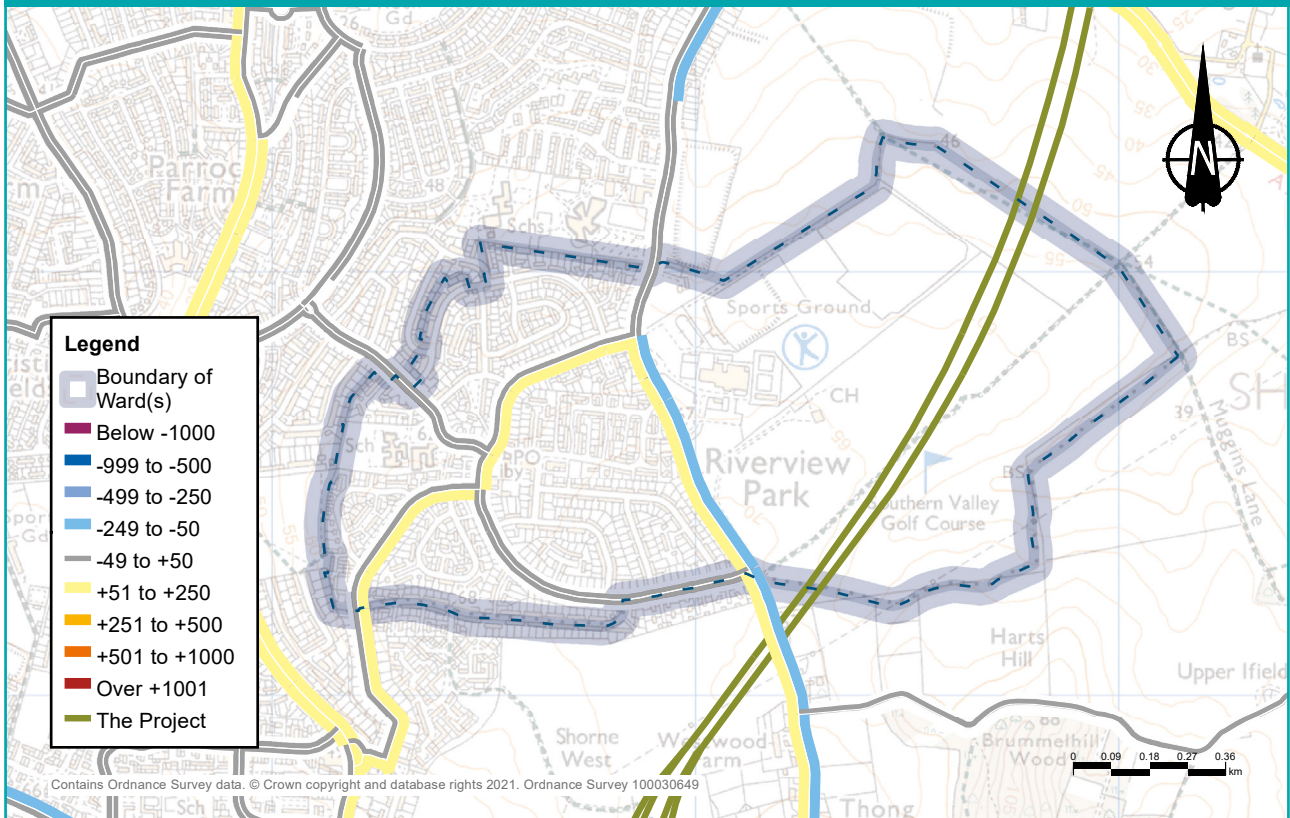
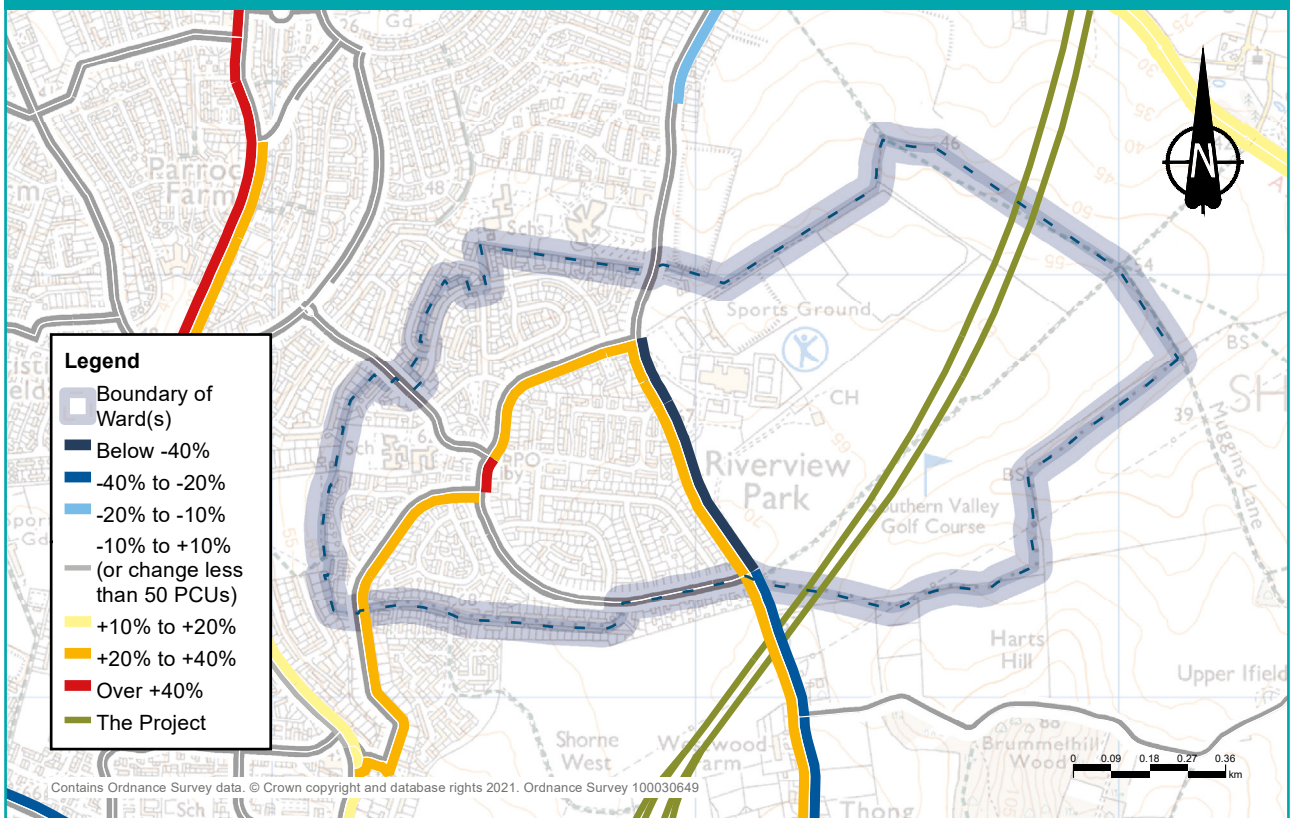


Figure 7.9: Predicted percentage change in traffic flows with the project during the evening peak in 2029



Changes to journey times

Figure 7.10 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 the project. Figure 7.11 shows the change in areas that could be reached within a 60-minute drive. The areas have been calculated for the morning peak hour (7am-8am). The number of jobs within a 30-minute drive with the project in place increases by 28%, which would mean access to an additional 94,400 jobs with the project. Within a 60-minute drive, the number increases by 35%, which would mean access to an additional 730,000 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 7.10: Change in area that motorists could drive to within 30 minutes from Riverview ward

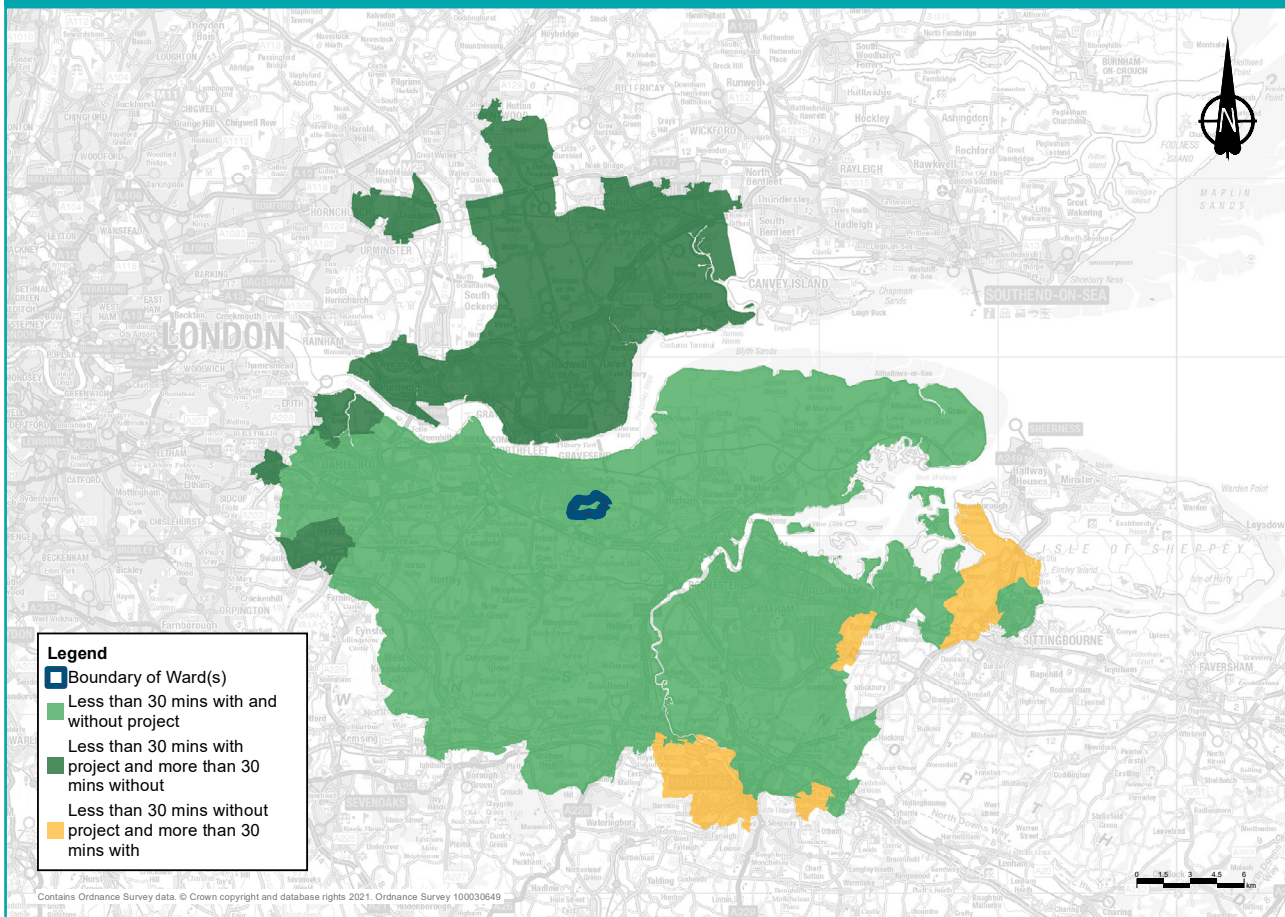
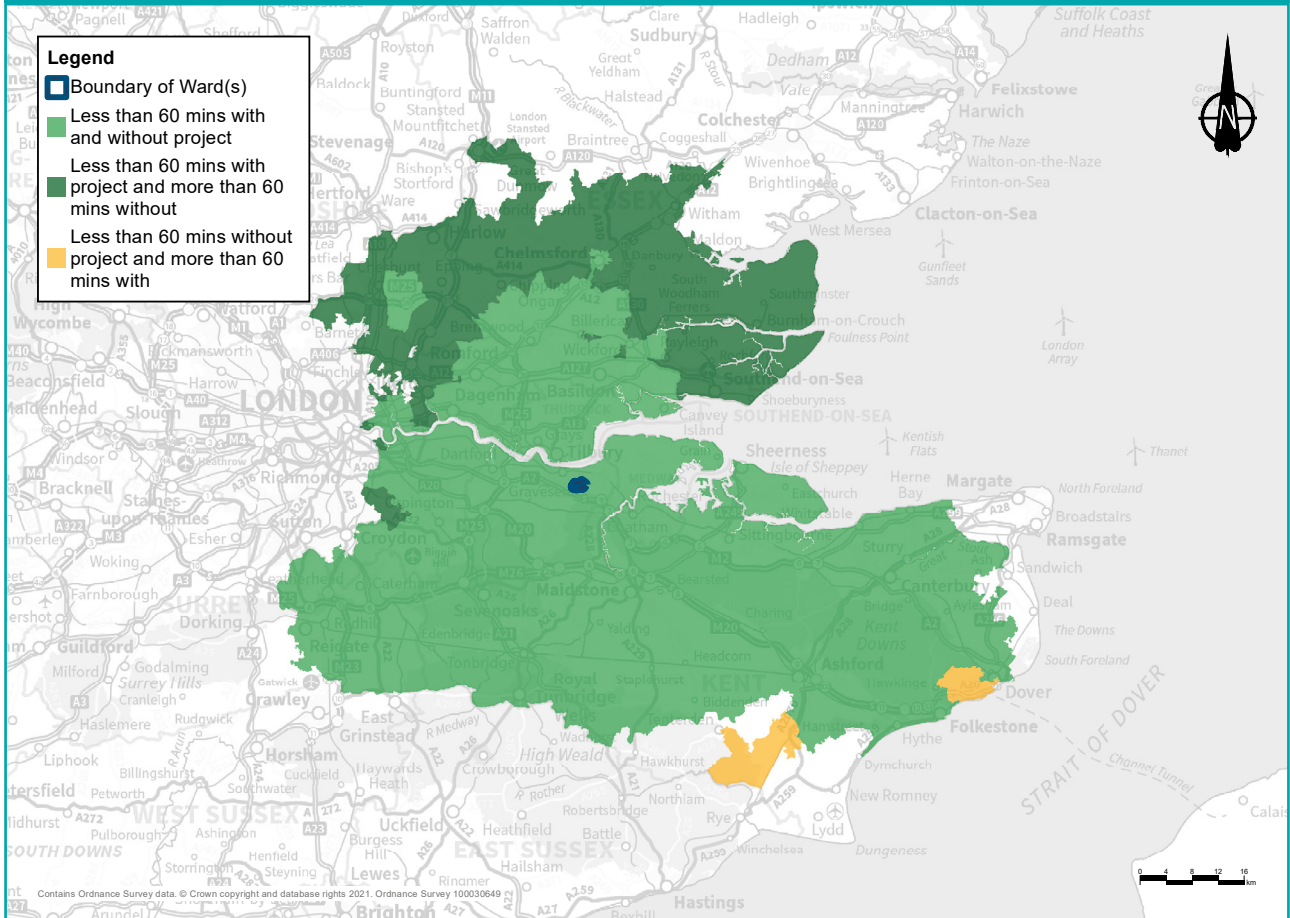


Figure 7.11: Change in area that motorists could drive to within 60 minutes from Riverview ward



Operational traffic flows

There are several ways that the project has been designed that seek to reduce traffic impacts in this ward, including free-flowing connections with the M2/A2 and increased capacity at the Gravesend East junction.

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.

7.4 Public transport

Existing situation

There are no railway lines or stations in Riverview ward. A number of existing bus routes pass through the ward.

7.4.1 Construction

Rail

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

Buses

Bus routes within Riverview ward would not be affected during construction.

7.4.2 Operations

Rail

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

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.

7.5 Footpaths, bridleways and cycle routes

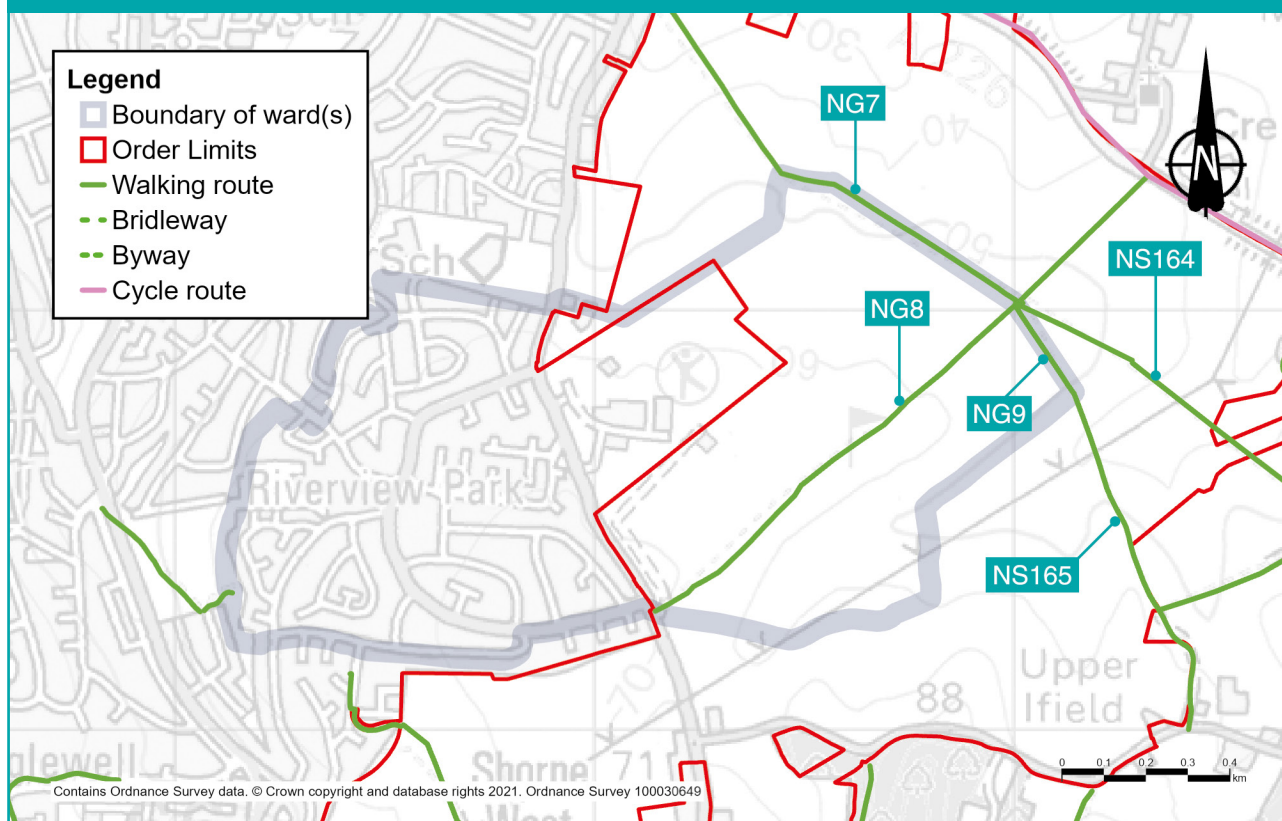
Existing situation

Riverview ward is part-suburban, part-countryside ward with one main footpath that connects the two areas. The following footpaths would be diverted or closed during construction of the project. For other potential impacts, see the other topic areas in this chapter, such as Visual and Noise and vibration.

7.5.1 Construction

Due to the extensive construction activities in this ward, there would be significant changes to the network of footpaths and bridleways during this period. For more information about the proposed network of footpaths and bridleways once the project is complete (including a map), see the Operations section below. For potential additional impacts, see the other topic areas in this chapter, such as Visual and Noise and vibration.

Figure 7.12: Footpaths, bridleways and cycle routes in the vicinity of the project in Riverview ward



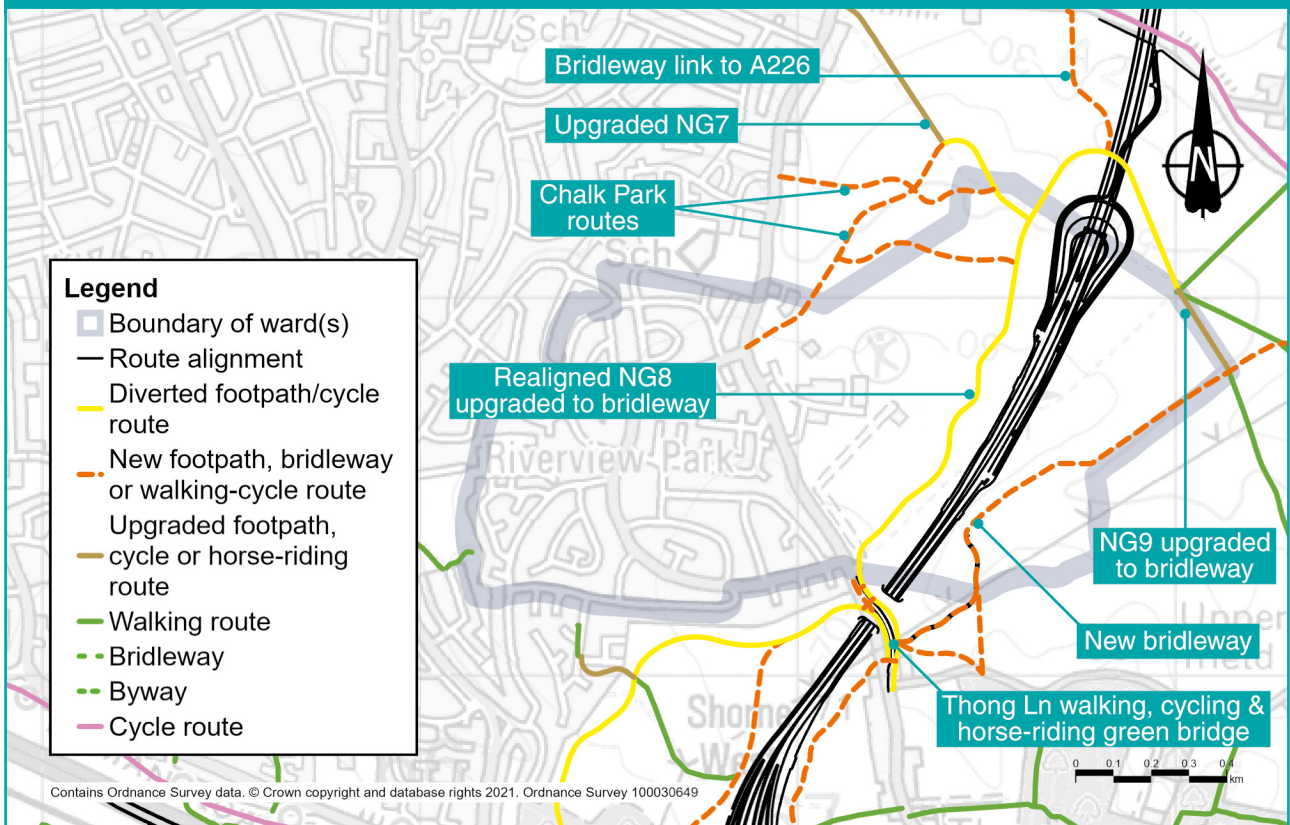
- Footpath NG7 would be closed for five and a half years due to construction of the southern tunnel entrance and approach, until the diversions through the new Chalk Park recreational area are opened.
- Footpath NG8 would be affected by the construction of the southern tunnel entrance and the road linking it to the proposed A2/M2 junction. This footpath would be closed for five and a half years until it is realigned as a bridleway running from the Thong Lane green bridge to the southern tunnel entrance.
- Footpath NG9 would be closed for five and a half years while tunnel and utility works take place.
- The sections of footpaths NS164 and NS165 within the Order Limits would be affected by the Southern Tunnel Entrance Compound, requiring a closure of five and a half years.

7.5.2 Operations

Overall, the project's proposals for walking, cycling and horse-riding include more than 46km of diverted, extended, upgraded or new footpaths and bridleways. The proposals were developed after consultation with local communities and stakeholders. An overview of the proposed improvements to footpaths and bridleways across the project can be found in our Operations update.

- Footpath NG7 would be realigned through the new Chalk Park recreational area, linking to new routes there. It would also link to the realigned and upgraded bridleway NG8 that passes around the north of the southern tunnel entrance. A map showing Chalk Park can be found in chapter 3 of the Operations update.
- Footpath NG8 would be upgraded to a bridleway and realigned from the Thong Lane green bridge around the north of the south tunnel entrance, providing connections to new and existing footpaths, including routes through Chalk Park, a new bridleway to the A226, and the upgraded NG9 bridleway.
- New Public Rights of Way connections would be made from the realigned NG8 through Chalk Park to Thong Lane.
- Footpath NG9 would be upgraded to a bridleway when it reopens. Its western end would link to the realigned NG8, which routes around the southern tunnel entrance. Its eastern end would link to new bridleways heading south to Thong Lane and Shorne Ifield Road and north to the A226, as well as existing footpaths NS164 and NS165.

Figure 7.13: Proposed footpaths, bridleways and cycle routes in Riverview ward



7.6 Visual

Existing situation

Views towards the land on which the project would be built from the main populated area are principally seen from the eastern edge of the Riverview Park residential area adjoining Thong Lane. Other views of the project include those from the playing fields and golf course north-east of Cascades Leisure Centre and the local footpath and bridleway network.

Some views from Riverview ward include open views from some homes across the Southern Valley Golf Club. Other views are limited by vegetation in the grounds of Cascades Leisure Centre. Views towards the Order Limits from the playing fields and golf course north-east of the leisure centre are partially screened by existing vegetation.

Views from the local footpath and bridleway network include arable land on sloping ground backed by surrounding trees and the urban area of Gravesend, as well as extensive distant views northwards towards the Thames Estuary and beyond.

7.6.1 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:

- Formation and operation of the Southern Tunnel Entrance Compound.
- Utilities diversions, including the removal of an existing overhead line.
- Construction of the Thong Lane green bridge over the project.
- Excavation of the deep cutting for the southern tunnel entrance and main alignment of the new highway project leading to the tunnel.
- Construction of flood compensation ponds.
- Construction of Chalk Park recreational area and other open space east of the southern tunnel entrance.

Views of construction activities from residential areas would be limited to the eastern edge of Riverview Park. This is where much of the open land, east of the urban area would be used for the Southern Tunnel Entrance Compound and deep excavation for the tunnel entrance. There are likely to be limited views of the Southern Tunnel Entrance Compound from the local footpath and bridleway network due to closures for most of the construction period.

Measures to reduce visual impacts during construction

Proposed measures include locating taller structures within the Southern Tunnel Entrance Compound as far as reasonably practical from homes adjoining Thong Lane and Thamesview School. We would use temporary earth bunding on the compound's boundary to reduce its visibility from properties along Thong Lane.

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

7.6.2 Operations

Operational impacts

The completed project in this ward would mainly comprise the southern tunnel entrance, its approach road in a deep cutting, flood compensation ponds, and open space land east and west of the southern tunnel entrance. More information about the completed project can be found in the Project description above.

The visual impacts of the project from most homes would be limited, because the highway alignment would be in a deep cutting, beyond the newly created Chalk Park area.

There may be some views from the diverted public footpath network towards the upper sections of the chalk cutting slopes. New flood compensation ponds would feature in views from the diverted footpaths and bridleways east of the project. Thong Lane green bridge would be seen from the south (from the diverted footpaths and bridleways), as would the diverted overhead lines, which would be visible and look similar to the existing ones. The new Chalk Park landscaping would be a notable feature in views from diverted footpaths and bridleways.

Measures to reduce visual impacts during operation

The main mitigation in this ward would be the creation of the Chalk Park recreational area and additional open space east of the new southern tunnel entrance, along with landscaping of the flood mitigation ponds.

7.7 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 Riverview ward consists mainly of road traffic noise coupled with natural and human activity noise. The main sources of road traffic noise within Riverview ward are from the M2, A2, Thong Lane, and other local roads.

As part of our environmental assessment process, we carried out surveys of existing background noise at some locations which were agreed with the local authority. The nearest baseline monitoring has been carried out in the adjacent ward of Shorne, Cobham and Luddesdown. The background noise levels monitored in this ward recorded existing noise levels in the range of 50 to 65 dB(A)² during the daytime and 47 to 60 dB(A) during the night-time period.

To understand how noise levels would vary with and without the project, we use noise modelling to predict what noise levels would be like in the project's proposed opening year if the project was not built. We model 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 accounts for predicted changes in traffic levels.

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.

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

In the opening year, noise levels without the project are predicted to range, on average, from 41 to 68 dB(A) during the day and from 30 to 55 dB(A) during the night at the 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 presented below.

7.7.1 Construction

Daytime construction noise impacts

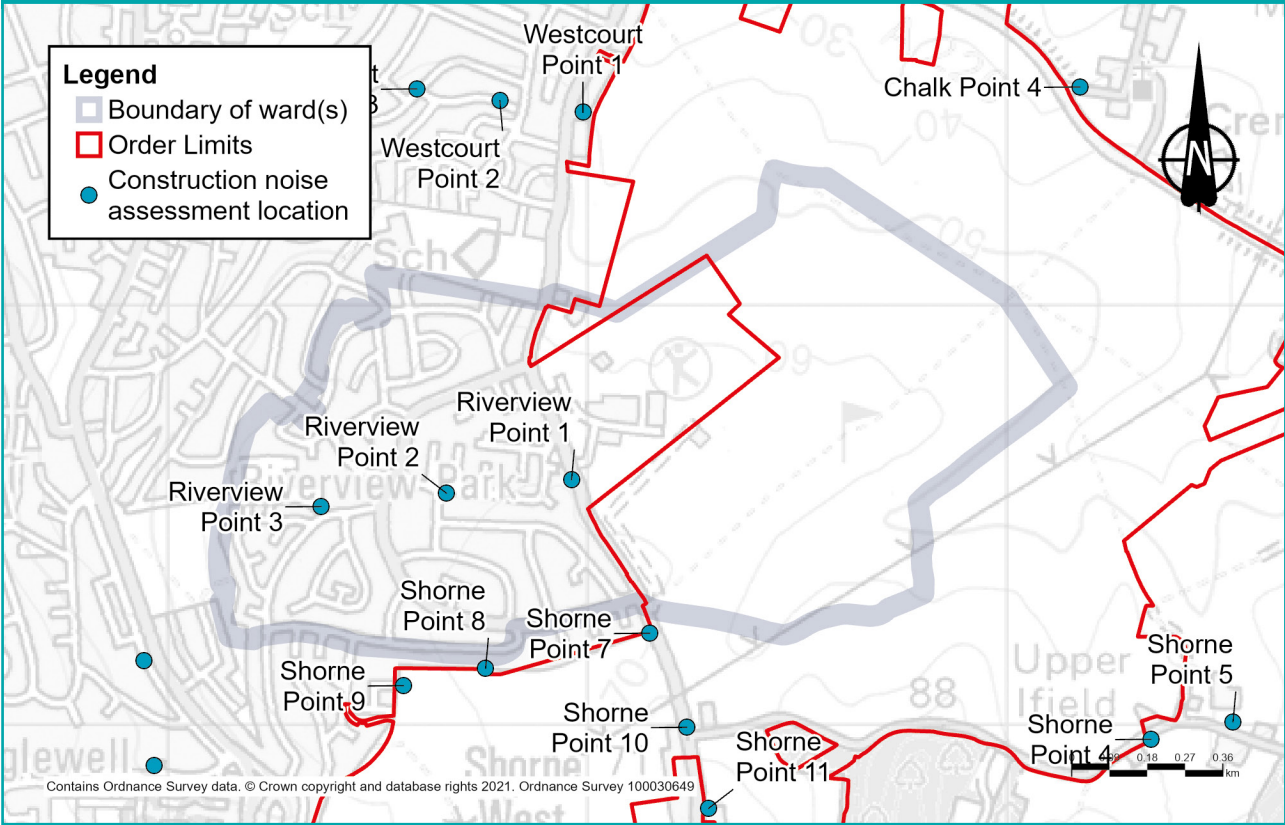
The main daytime construction activities that are expected to give rise to noise and vibration impacts in this ward are those associated with proposed A2/M2 junction, southern tunnel entrance construction and main alignment and utilities works.

Within the Riverview ward, the Southern Tunnel Entrance Compound would be located within the ward boundary. There are no Utility Logistics Hubs currently planned to be located within the ward. There would also be project haul roads built and used during the construction period. Construction activities are summarised in the project description section above.

Construction noise levels have been predicted at three locations across this ward, chosen to provide a representation of the level of noise that 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.

Figure 7.14: Construction noise assessment locations in Riverview ward



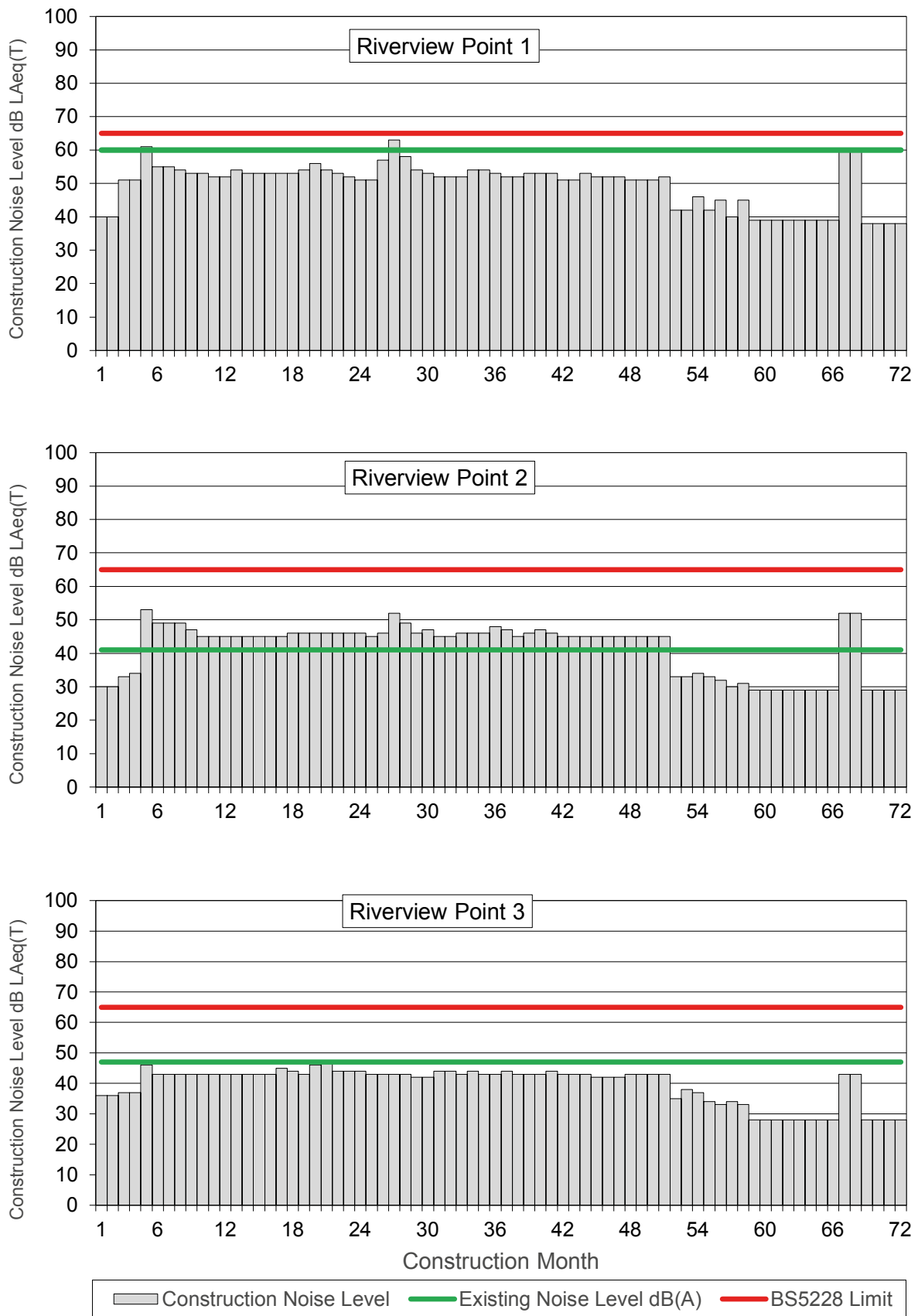
Each vertical bar in Figure 7.15 shows the predicted noise levels for that month of the construction period (from month 1 to month 72). The horizontal green line in each chart shows the existing background noise level at each assessment point without the project. The horizontal red line shows the level at which construction noise would exceed acceptable thresholds (see chapter 1 for more information about these thresholds). If noise is predicted to exceed acceptable levels, then specific measures would be implemented to reduce the noise.

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

With reference to Figure 7.15, 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 38 to 63dB LAeq (12-hour) during the six-year construction programme. Construction noise levels would exceed the existing background daytime noise level for approximately two months. However, they would not breach the defined threshold.
- At point 2, construction noise levels are predicted to range from 29 to 53dB LAeq (12-hour) during the six-year construction programme. Construction noise levels would exceed the existing background daytime noise level for approximately 49 months. However, they would not breach the defined threshold.
- At point 3, construction noise levels are predicted to range from 28 to 47dB 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.

Figure 7.15: Construction noise by month for points 1, 2 and 3 in Riverview ward



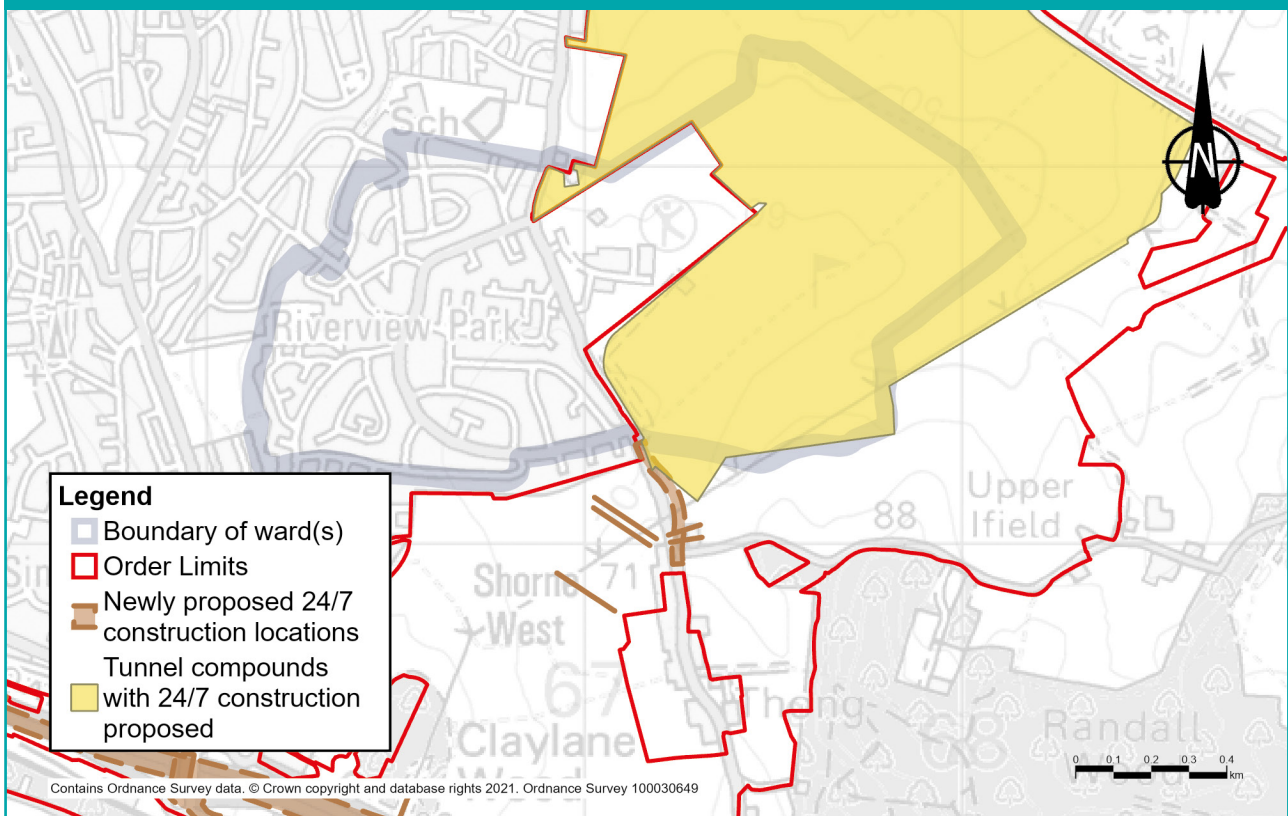
24/7 construction working

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 7.16. 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 works in this area are expected to be night-time or weekend highways and utilities works.

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

Figure 7.16: Newly proposed and tunnel 24/7 working locations in Riverview ward



Construction traffic noise impacts

Maps showing the predicted change in road traffic noise within Riverview ward during each year of construction can be found in chapter 7 of the Construction update. Based on the currently available traffic data (which offers a representative picture of what receptors within the ward are likely to experience) during the construction period there would be negligible changes in road traffic noise (less than 1dB change in noise levels) during all construction years, except along the Vigilant Way where minor increases have been predicted to occur of between 1.0 and 2.9dB, as shown in the table below. For more information about how we define noise impacts (negligible, minor, moderate and major) see chapter 1.

Table 7.3: Road where traffic noise impacts are predicted during the construction period

| Affected road | Predicted noise impact | Construction years |
|---------------|--------------------------------|--------------------|
| Vigilant Way | Minor increase in noise levels | 3 and 4 |

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 condition assessments onsite to inspect for defects such as potholes.
- Turning off plant and machinery when not in use.
- Maintaining all vehicles and mobile plant so that loose body fittings or exhausts do not rattle or vibrate.
- Using silenced equipment where available, in particular 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 practical 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 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 as opposed to generators, where possible.
- Minimisation of construction vehicle traffic by, where practical, selection of local suppliers along the project route, using local workforces, thereby minimising material transportation for earthworks construction along the project.

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

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

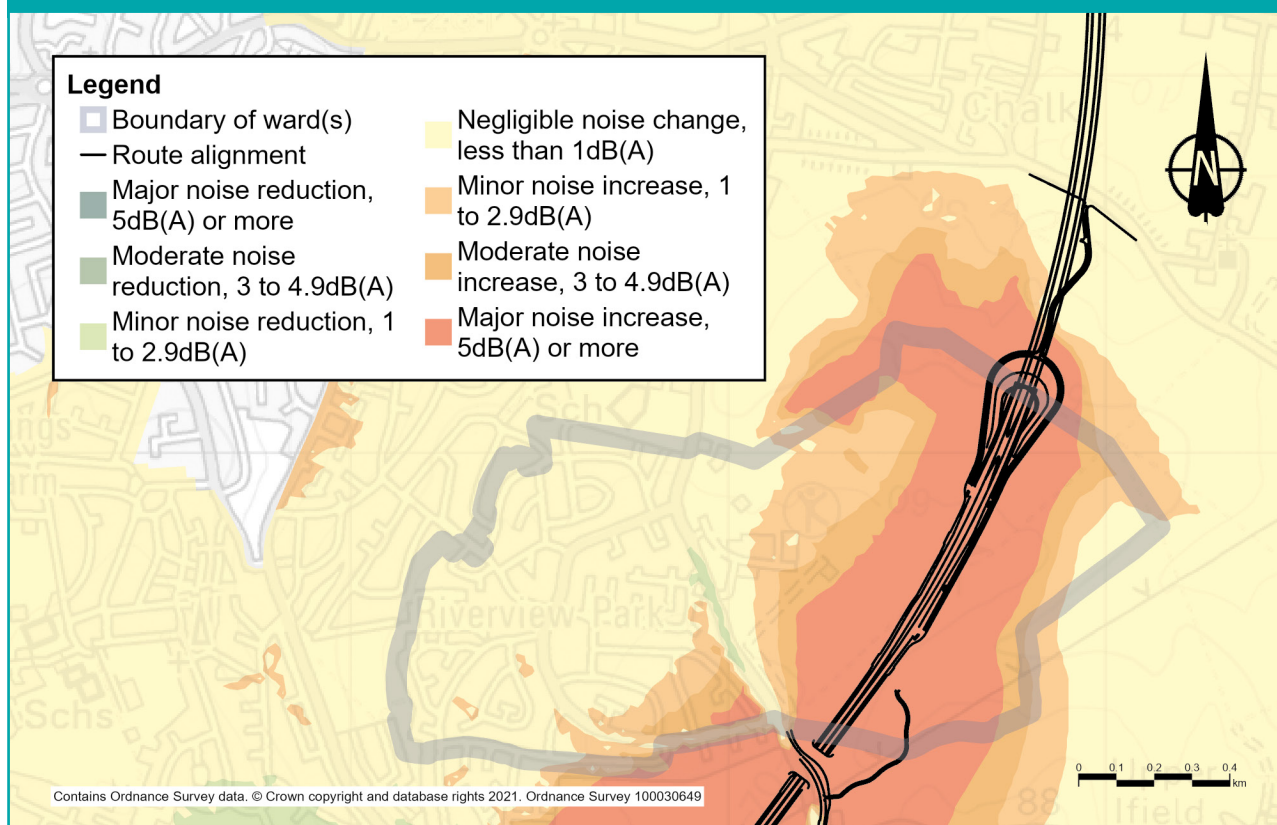
7.7.2 Operations

Operational impacts

Within this ward, the main route runs through the eastern part of the ward as traffic leaves the southern tunnel entrance in a 20-metre deep cutting to the tunnel entrance. There would be direct noise impacts from the new route within the ward. There would also be indirect noise impacts due to changes in traffic flow, number of HGVs, and traffic speed on the existing road network in the ward.

Figure 7.17 on the right shows the predicted changes in operational road traffic noise in the opening year of the project. Within the ward, changes in road traffic noise at identified noise sensitive receptors are predicted to range from minor reductions in noise levels of between 1.0 and 2.9dB (which is positive) to major increases in noise levels of greater than 5dB (these increases in noise levels would be close to the southern tunnel entrance and the new road).

Figure 7.17 Noise impacts during operation in Riverview ward



Measures to reduce noise and vibration impacts of operations

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). While no noise barriers are proposed within Riverview ward, there are noise barriers proposed that would mitigate impacts in the ward, which are shown in chapter 5 of the Operations update. The use of low-noise surfacing would also reduce the traffic noise once the road is in use.

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

7.8 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

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

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

Our analysis of construction traffic predicts that there are no anticipated changes in traffic between 2024 and 2029, and there would be negligible change in air quality. More information about construction traffic impacts on air quality can be found in chapter 7 of the Construction update.

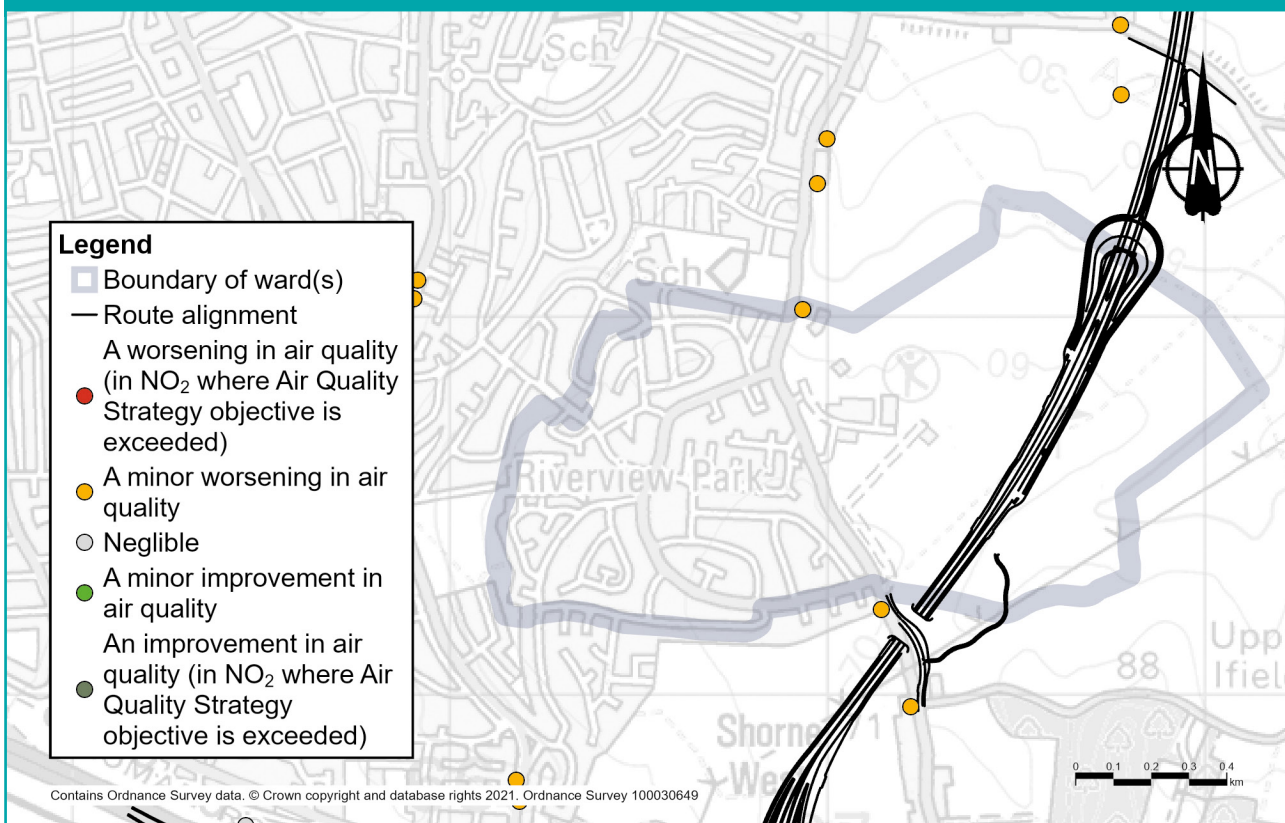
Measures to reduce air quality impacts during construction

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

7.8.2 Operation Operational impacts

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

Figure 7.18: Predicted changes in NO₂ levels within Riverview ward once the new road is open



There are no predicted exceedances of air quality thresholds within Riverview ward. There are receptors (properties or habitats that are sensitive to changes in air quality) within the ward, along the eastern edges of Riverview Park that are predicted to experience a minor worsening in the air quality for nitrogen dioxide (NO₂), the main traffic-related pollutant³. The highest modelled yearly average NO₂ concentration within this ward is 20.3µg/m³, which is below the yearly average threshold of 40µg/m³. Our assessment is based on our opening year model, which represents a worst-case scenario, without accounting for the increase in less-polluting vehicles on our roads over time.

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

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

Measures to reduce air quality impacts during operation

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

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

7.9 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.

Riverview ward is characterised by an older population (nearly a third of its residents are aged over 60 – a significantly higher proportion than for Gravesham as a whole, and nationally). Deprivation levels are low. More than 90% of residents own their own home.

A high proportion of residents (nearly 85%) report their health status as good or very good (compared with 81.5% of residents of Gravesham as a whole). Life expectancy at birth for residents of Riverview ward is 90.7 years for males and 86.0 years for females (significantly above the UK average life expectancy recorded for 2017-19 of 79.4 years for males and 83.1 years for females).

7.9.1 Construction

Construction impacts

Construction activities affecting Riverview ward residents are presented in the project description section and include the establishment and operation of the Southern Tunnel Entrance Compound; utilities diversions, including the removal of an existing overhead line; construction of Thong Lane green bridge; excavation of the deep cutting for the southern tunnel and approach; construction of infiltration basins; and construction of Chalk Park. Permanent land required during construction works would affect the Gravesend Golf Centre (pitch and putt facility) and the Southern Valley Golf Course. Proposals for the relocation of the Golf Centre are discussed in more detail above. Southern Valley Golf Course would be permanently acquired for the project and therefore no longer in operation as a golf facility.

Thong Lane may be temporarily closed for short periods or times during the construction phase, typically overnight and at weekends. Vehicle access would be maintained from the north off the A226, and vehicle and pedestrian access to Cascades Leisure Centre would be maintained throughout. Further information about construction activities affecting Riverview ward residents is provided in the project description section above. Elements of each of these activities have the potential to impact human health, whether this be through noise associated with construction activities or construction traffic, changes to air quality (as a result of dust emissions), changes to accessibility caused by road or footpath closures, potential severance caused by construction traffic, 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).

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

- Riverview ward residents may experience changes in accessibility as a result of road closures. Thong Lane would be affected by various construction activities, including the diversion of utility services and the construction of Thong Lane green bridge, which would mean traffic management measures might be needed. This may be the case for people who are more dependent on public transport and have less choice about method and route travelled. Impacts on journey times are described further in the Traffic management section.
- Severance. Thong Lane may be temporarily closed for short periods of times during the construction phase, typically overnight and at weekends. Pedestrian access to Cascades Leisure Centre would be maintained.

- Access to open space. Impacts may be experienced by people living on the eastern fringe of Gravesend, who may currently access fields adjacent to Claylane Woods, or the wider countryside via footpaths in the vicinity of Shorne Woods Country Park. The Michael Gardens Play Area is located immediately to the south of Riverview ward and access could be impeded for a short period of time during construction works to upgrade the footpath here. There are several footpaths within the ward (footpaths NG7, NG8 and NG9) which would either be closed or permanently diverted during the construction works. People without access to private vehicles (such as non-car-owning households, children, people with certain disabilities, or people in older age groups) may experience a greater impact, due to fewer alternatives being available to them within an appropriate journey time. People may experience less choice in finding alternative destinations and this may affect the ability of people to undertake physical activity.
- Noise and vibration. Temporary significant adverse effects in relation to noise caused by construction traffic have been identified at receptors in locations including those adjacent to Thong Lane (including Vigilant Way). A negative health outcome has been identified for those who may be affected by changes to the noise environment (for example older people, or people with pre-existing hearing conditions).
- Conversely, local residents may benefit from access to work and training opportunities associated with the project.

Measures to reduce health impacts of construction

Proposed measures relating to health and wellbeing (including good practice for dust emissions, hours of working and visual screening) are described in Riverview chapter in the Visual, Noise and vibration, and Air quality sections. Further information relating to mitigation measures for these areas is set out in the CoCP, the REAC and the package of traffic management plans. The commitments in the 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). More information about these documents can be found in the Consultation guide.

Engagement and effective two-way communication with communities both before and during construction is important in order to reduce mental health and wellbeing impacts associated with uncertainty, stress and anxiety. The CoCP sets out proposals for community engagement, 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.

7.9.2 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 Riverview ward. These include:

- Changes to the noise environment. Both adverse and beneficial changes in road traffic noise levels have been identified. Significant adverse noise effects may occur at Riverview Park and Thong Lane to the north of the A2. Significant beneficial effects are predicted at Riverview Park in proximity of the A2. As noted earlier, a negative health outcome has been identified for sensitive populations who may be affected by changes to the noise environment (for example older people, or people with pre-existing hearing conditions).
- Properties within 200 metres (those along the eastern edge of Riverview Park) may experience air quality impacts as a result of changes in traffic flows. Although no significant impacts have been identified in relation to air quality, those that would be more vulnerable to environmental change could include children, older people, and people with respiratory conditions.
- Some residents within Riverview 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 actual changes to the noise environment).
- Access to open space. Beneficial health outcomes are associated with improvements to accessing open space, for example through the creation of a publicly accessible country park (Chalk Park), green bridges and a network of improved routes for walkers, cyclists and horse-riders.

Measures to reduce health impacts of operations

No essential mitigation, specifically to address health outcomes, has been identified within Riverview other than mitigation relating to noise and visual impacts described elsewhere.

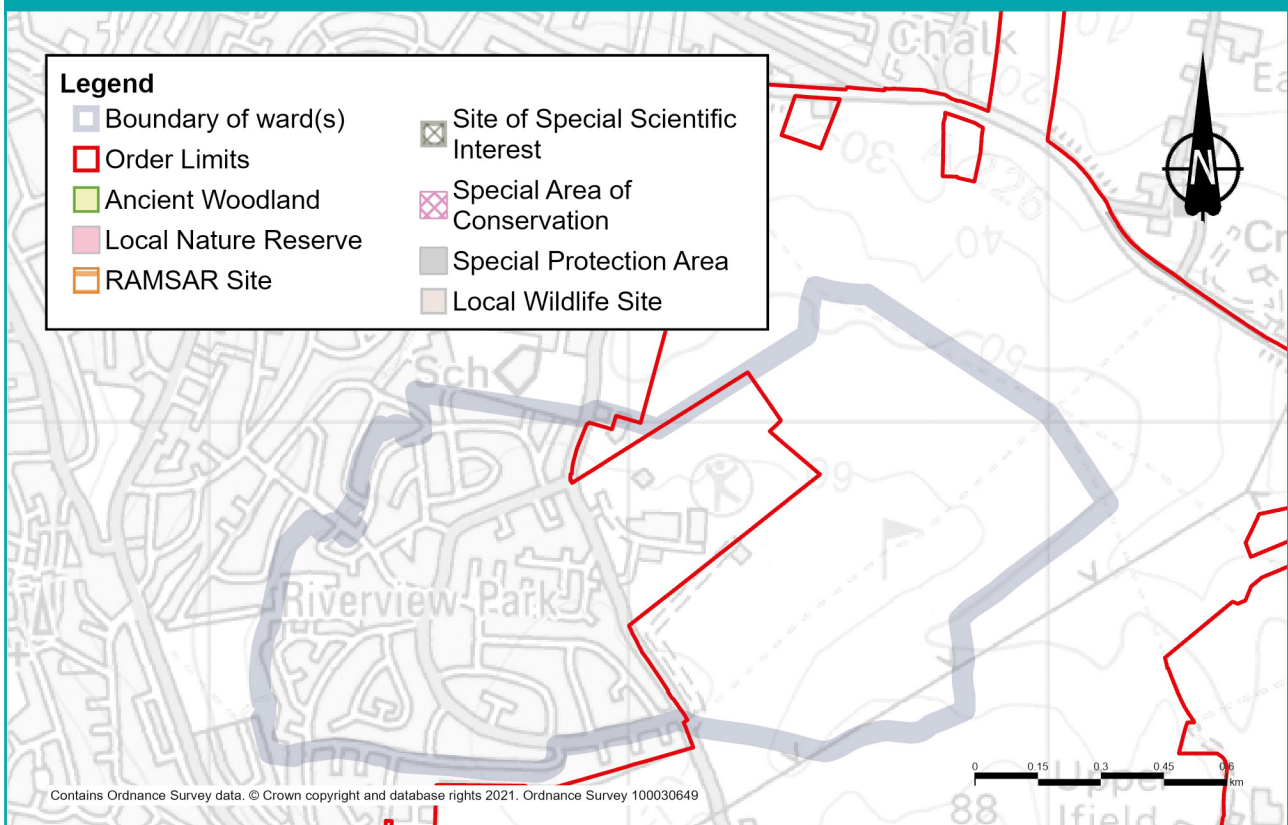
7.10 Biodiversity

Existing situation

Of the habitats present within the Order Limits in Riverview ward, the main area is Southern Valley Golf Course. The golf course habitat consists of short amenity grassland with some areas of rough grassland and scrub. There is a small area of arable field within the Order Limits in Riverview ward. Riverview ward contains no designated or non-designated sites.

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. Within the habitat present on the golf course, these included reptiles, badgers, and dormice.

Figure 7.19 Designated and non-designated biodiversity sites in Riverview ward



7.10.1 Construction

Construction impacts

The construction activities in this ward are summarised in the project description section above. Construction of the project would require the removal of areas of habitat, both temporarily and permanently, from the route alignment. This habitat consists of areas of arable fields, scrub and rough grassland. This habitat supports protected and notable species which would be impacted by construction in terms of direct habitat loss (the loss of badger setts, dormouse and reptile habitat); fragmentation of habitat (loss of hedgerows); and disturbance to retained habitat.

Measures to reduce construction impacts on biodiversity

Vegetation clearance would be carried out during the winter where possible to avoid the impacts on breeding birds. Where this would not be practical, clearance would be supervised by an Ecological Clerk of Works to ensure that no nests are disturbed or destroyed. Where protected species are present, these would be moved away from the site before any construction activities, either through habitat manipulation (for example strimming to reduce the height of vegetation to displace reptiles), or translocation. Where required, works affecting protected species would be carried out under a Natural England licence. Boxes to support dormice and birds would be erected within retained habitat. To provide habitat connectivity within this area a green bridge would be created over the project immediately to the south of Riverview ward.

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.

7.10.2 Operations

Operational impacts

The operational activities in this ward are summarised in the project description section above. Operation of the project has the potential to cause mortality of species as a result of them being hit by road traffic, habitat fragmentation, and noise disturbance from traffic.

Measures to reduce operational biodiversity impacts

Once the Southern Tunnel Entrance Compound and nearby haul roads have been removed, the area to the west of the southern tunnel entrance would be landscaped to create Chalk Park, a new recreational area, part of which falls within Riverview ward. Additional open space land would also be implemented east of the southern tunnel entrance. A map showing open space land can be found in chapter 3 of the Operations update. Chalk Park would include a mix of grassland, woodland planting, hedges and hedgerows with trees. This habitat would be suitable for a number of species and would increase the value for terrestrial biodiversity in this area. Landscape planting has been designed to provide strong links for animals to move and forage along, guiding them to safe crossing points over the new road such as the green bridge mentioned above. To mitigate disturbance from traffic, the new road would be in a cutting, north of the A2/M2, reducing noise and visual impacts.

Newly created habitat, including all that created specifically to support animals moved from the construction area, would be managed to ensure that they provide high-quality habitat to support a broad range of different plant and animal species. More information about habitats can be found in Map Book 1: General Arrangements, which form part of our consultation materials.

The impact of operation on biodiversity would be controlled through the range of good practice measures set out in the project's CoCP and the REAC.

7.11 Built heritage

Existing situation

There are no buildings of historic relevance identified within Riverview ward in relation to the project. The site of a former 19th century farm and World War 2 infrastructure are known to have existed in the area, but these have been demolished in recent times.

7.12 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 Riverview ward, the following have been identified:

- Former Gravesend Airport, which covers the majority of Riverview ward. It is a former civilian and military airfield. Former land uses of this site are known or suspected to include aviation fuel storage and dispensing, firefighting, blast pens, aircraft service/manufacture/ breaking, deep Made Ground, and an aluminium smelter.
- Southern Valley Golf Course, which is located to the north-east of the ward. This has been a golf course since 1998 and covers the north-east of the former Gravesend Airport. It is understood that material from Bluewater Shopping Centre was imported for landscaping fill during its construction.

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

7.12.1 Construction

Construction impacts

Construction activities in this ward would include topsoil stripping, earthworks movements and excavations, which could cause the mobilisation of contamination if present. The area is part of the main construction compound, where stockpiling of soils would occur as well as the storage of materials and chemicals. In addition, verification reports would be prepared of remediation carried out in site specific areas.

During construction, 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.

Measures to reduce the risk during construction

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 carried out 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.

Contamination would be controlled through the range of good practice measures set out in the project's CoCP and the REAC.

7.12.2 Operations

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