M2 Junction 5 Improvements

Environmental Statement
Volume 4 - Non-Technical Summary

June 2019

Status: A1 Approved - Published

Document Ref: HE551521-ATK-EGN-RP-LM-000025

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Introduction

Highways England is proposing the M2 Junction 5 Improvements Scheme in Kent to support the regional and local economic development and housing growth. These improvements will provide additional capacity at each junction to smooth traffic flow, improve journey time reliability, and the safety of the M2 Junction 5 and surrounding local road network for road users, and support the development of housing and the creation of jobs. More information is included in the Statement of Reasons, which accompanies this application.

Under Section 105B of the Highways Act 1980 (as amended) it has been determined that the M2 Junction 5 Improvements Scheme should be the subject of an Environmental Impact Assessment (EIA) to identify the likely environmental effects, and their significance. An EIA has been undertaken and reported in an Environmental Statement (ES).

This booklet provides a non-technical summary of the key findings. Its main purpose is to summarise the likely significant effects of the proposals on the natural, built and social environment reported in the Environmental Statement.

The proposed M2 Junction 5 Improvements Scheme is referred to as the 'Scheme' throughout the Environmental Statement, including this Non-Technical Summary.

The Environmental Statement and supporting documents can be viewed online at:
https://highwaysengland.citizenspace.com/he/m2-junction-5-improvements/

The full Environmental Statement comprises four volumes in total, as follows:

Volume 1
Environmental Statement main text setting out the environmental assessment in chapters;

Volume 2
Environmental Statement technical appendices;

Volume 3
Environmental Statement figures, including drawings, photos and other illustrative material; and

Volume 4
(this document) Environmental Statement Non-Technical Summary.

Printed hard copies will be available to view until 25th July 2019 at the following locations:

Highways England, Bridge House, 1 Walnut Tree Close, Guildford, Surrey, GU14LZ
Monday to Friday (9.30am - 5pm)

Maidstone Borough Council, King Street, Maidstone, ME15 6JQ
Monday to Friday (8.30am - 5pm)

Swale Borough Council, 38 - 42 High Street, Sheerness, ME12 1NL
Monday to Friday (9.00am - 5pm)

Kent County Council, County Hall, Maidstone, ME14 1XQ
Monday to Friday (8.30am - 5pm)

Maidstone Library, James Whatman Way, Maidstone, ME14 1LQ
Monday to Wednesday and Friday (9am - 6pm), Thursday (9am - 8pm) and Saturday (9am - 5pm)

Sittingbourne Library, Central Avenue, Sittingbourne, ME10 4AH
Monday to Wednesday and Friday (9am - 6pm), Thursday (9am - 8pm) and Saturday (9am - 5pm)

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The Scheme

The existing M2 Junction 5 is an at-grade roundabout and is the main access point for people travelling north-east to Sittingbourne, the Isle of Sheppey and the Port of Sheerness and south-west to Maidstone and surrounding villages.

Junction 5 has capacity constraints resulting in unsatisfactory network performance affecting the M2 east-west movements and A249 north-south movements between Sittingbourne and Maidstone, with current traffic demands significantly exceeding capacity. Junction 5 is also identified as one of the top 50 national casualty locations on England's major 'A' roads and motorways. Additionally, people travelling to and from the Maidstone area currently use rural roads to avoid the congested M2 Junction 5. This puts pressure on the local road network, which is not suited to large volumes of traffic and results in increased safety risk.

The proposed Junction 5 improvements involve the replacement of the existing Stockbury Roundabout with a new grade-separated junction.

The Scheme has been designed to avoid key environmental constraints as much as possible. Design measures include: avoidance of ancient woodland and veteran trees; and minimising the construction footprint for earthworks. During detailed design, opportunities to reduce and avoid residual environmental impacts will be developed further.

The Scheme location and environmental constraints plan is shown on pages 10-13.

Environmental constraints that have been considered in the EIA and reported in more detail in the ES include:

- The Kent Downs Area of Outstanding Natural Beauty (AONB) which the Scheme lies majorly in;
- Church Wood and Chestnut Wood Ancient Woodlands, located adjacent to the Scheme;
- Queendown Warren Site of Special Scientific Interest (SSSI) (located approximately 2km from the Scheme), North Downs Woodlands Special Area of Conservation (SAC), located approximately 7km from the Scheme and Wouldham to Detling Escarpment SSSI are located adjacent to the Affected Road Network (ARN) for the Scheme;
- One Air Quality Management Area (AQMA) - Maidstone Borough AQMA within the air quality study area associated with the M20/A249 junction;
- Six Noise Important Areas (NIAs) in proximity to the Scheme, which are areas identified as being subject to high levels of noise;
- Heritage assets including a Scheduled Monument, Grade I, II* and II Listed Buildings, WWII air crash sites, one non-designated historical landscape, non-designated heritage assets and a find spot nearby;
- Chatham Land Front WWI defences; and
- Flood Zone 1 and Source Protection Zones.

The components of the Scheme are outlined below and shown on pages 12-13.

The existing Stockbury Roundabout would remain at-grade and would be enlarged to accommodate connections to the roundabout. The A249 mainline would flyover the Stockbury Roundabout, with the approaches on embankments and retaining walls, and with two single span bridges over the roundabout.

Four new slip roads will be provided, three of which include dedicated left turn lanes at the roundabout for the following turning movements:

- A249 southbound to M2 westbound;
- A249 northbound to M2 eastbound; and
- M2 eastbound to A249 northbound.

The existing Maidstone Road connection with Stockbury Roundabout will be stopped up and a new Maidstone Road link will be provided, connecting to Oad Street to the north of the M2.

A new link road will be provided between Stockbury Roundabout and Oad Street, with the new link road connecting into Oad Street near the existing junction of Oad Street and the A249. The existing Oad Street and A249 junction would be closed. Oad Street will remain open for local access to properties but will not have direct access onto the A249 as currently exists. The existing southbound lanes of the A249 will be retained south of the existing junction with Oad Street and this will be converted into a two-way single carriageway to provide continued access to properties and land fronting this section of road and connection to South Green Lane. The Honeycrock Hill junction with the A249 will be stopped up.

The roundabout and the approaches will remain lit during operation. The new lighting design has taken into consideration careful design measures including the use of LEDs to ensure measures to avoid and/or minimise light spill onto adjacent areas, particularly within the Kent Downs AONB area.

The construction of the Scheme is expected to commence in 2020 and take up to 18 months to build. Site mobilisation will include ecological mitigation works, construction compounds and site clearance. Construction will take place between 07:00 - 17:00 and extended to 19:30 in the summer. Overnight work will be required for any changes to traffic management layouts and surfacing to slip roads and junctions where traffic management is required to close or restrict lanes to one lane.

An Outline Environmental Management Plan (OEMP) has been prepared and is included as part of the ES. A Record of Environmental Actions and Commitments (REAC) is included within the OEMP which identifies the environmental commitments made during the Preliminary Design to address the potential environmental effects of the Scheme. The OEMP will be developed into a full Construction Environment Management Plan (CEMP) during the detailed design stage and will include further details on the construction methodology and programme.

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Looking towards the roundabout from the south west corner

Looking towards the roundabout from Whipstakes Farm

Alternatives Considered

The Scheme has been through a thorough option selection and identification process (detailed in the Chapter 3 of the ES Volume 1) based on a staged approach that begun in 2009. All options have been assessed in terms of their technical feasibility, safety, engineering, value for money and environmental considerations.

During the option stage, twelve options were initially reviewed. Of these twelve options, nine options were discounted, because they were considered unlikely to deliver significant positive effects in terms of relieving congestion, reducing queuing and improving local connectivity. This left three options, referred to as Option 4, 10 and 12. Additional options were also identified and referred to as Option 12A and Option 12A Oad Street Alignment Route B. All six options were further reviewed and assessed and four of the options discounted from further consideration based on cost, capacity performance and impacts on Chestnut Ancient Woodland. Option 12A Oad Street Alignment Route B was selected as the preferred option to take to public consultation in September and October 2017 as this option achieved the Scheme objectives, avoided the need to remove Ancient Woodland and fell within the budget allocated for the Scheme.

The response to consultation resulted in a revised Option 12A being developed to address concerns, including those raised by the Kent Downs AONB, regarding the intrusive nature of the Oad Street Link alignment. Further feedback during public consultation indicated strong support for the reconsideration of Option 4. As a result, a variant called Option 4H1, the current Scheme, was developed and considered to perform the best against the Scheme objectives. The preferred route announcement in May 2018.

Looking north from the west side of the A249

Looking east from Church Hill

Looking south towards the M2 from Maidstone Road

View looking south west from the Wormdale Hill Crossing

Assessment of Significance and Mitigation

The EIA provides:

- A thorough assessment of the likely effects of the Scheme on the environment;
- Consideration of mitigation measures and alternatives based on the potential environmental effects of the Scheme; and
- Assessment of the cumulative effects of the Scheme.

The EIA considers both the indirect and direct effects of the Scheme. Direct effects are those caused by activities that are an integral part of the proposals resulting in a change in environmental conditions, such as the removal of vegetation to build the road. Indirect effects are those due to activities that affect environmental conditions or the receptors, which in turn affects other aspects of the environment or receptors, such as increased noise from construction activities.

Best practice guidance including established criteria outlined in the Design Manual for Roads and Bridges (DMRB) Volume 11 has been used to assess the significance of effects of the Scheme, which combines the magnitude of the impacts and the sensitivity of the receptors/resources. The significance criteria for environmental effects are defined in terms of the amount of change from the existing environment i.e. the baseline. Effects can range from neutral to very large and effects that are moderate, large or very large are considered significant. Environmental effects can be adverse or beneficial. Within this document the significance of effects is described as significant or not significant.

Where there are significant adverse effects, measures to avoid, reduce and where possible remedy these effects have been included within the assessment.

The following environmental topics have been assessed as part of this EIA:

- Air Quality;
- Noise and Vibration;
- Biodiversity;
- Road Drainage and the Water Environment;
- Landscape and Visual;
- Geology and Soils;
- Cultural Heritage;
- Materials and Waste,
- Population Health;
- Climate; and
- Cumulative effects.

Environmental Constraints Plan

LEGEND

- Scheme Boundary
- Sites of Special Scientific Interest (SSSI)
- Scheduled Monuments
- Ancient Woodland
- Local Wildlife Sites (LWS)
- Historic Landfill Sites
- Kent Downs Area of Natural Beauty (AONB)
- Conservation Areas
- Important Hedgerows
- Roadside Nature Reserves
- Archaeological Constraint Zone
- Area of High Landscape Value (AHLV)
- Important Areas for Noise
- Air Quality Management Areas
- Waterbodies
- Flood Zone 3
- Flood Zone 2
- River Network

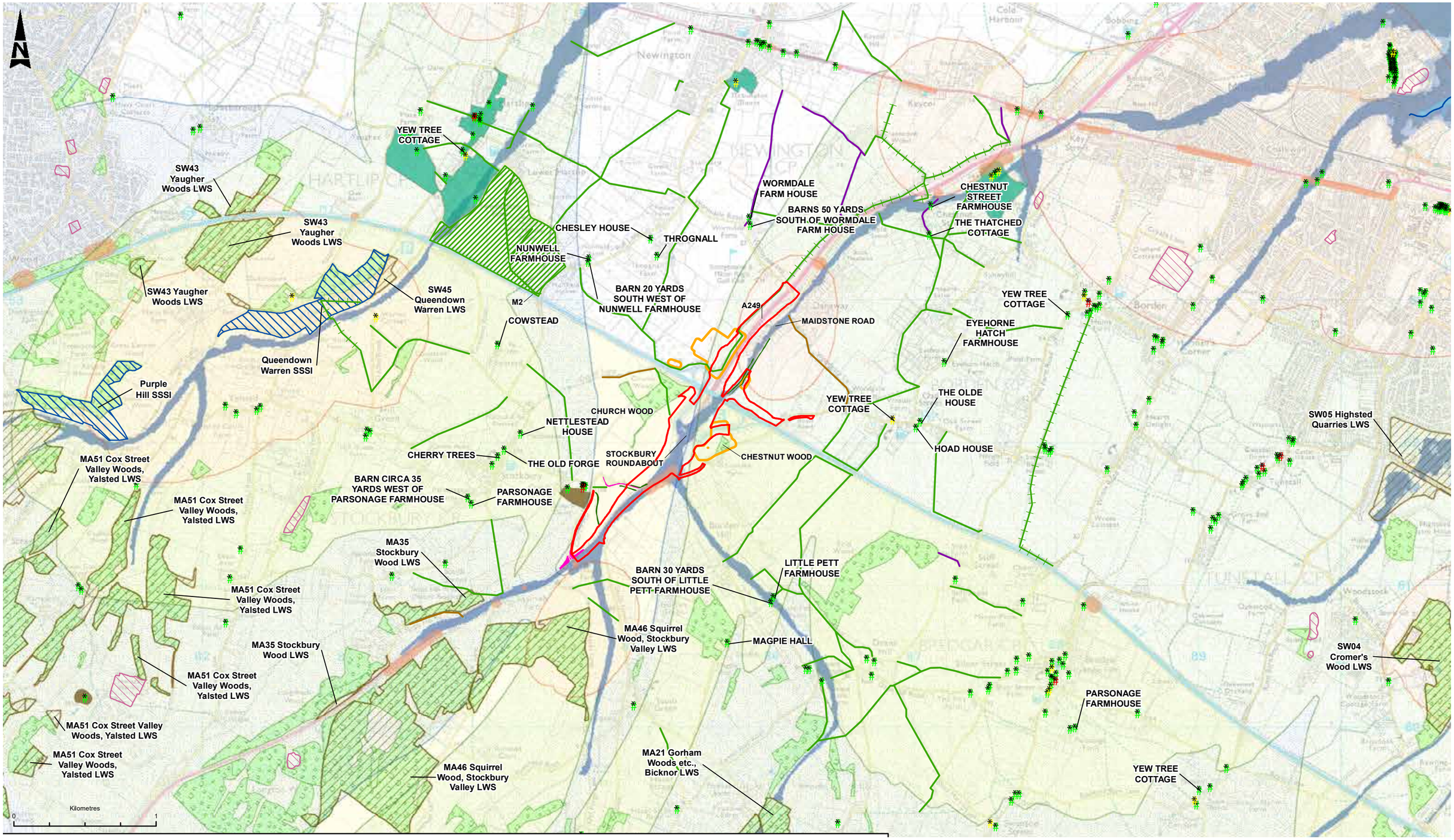
Source Protection Zones

- SPZ 1 - Inner Zone
- SPZ 2 - Outer Protection Zone
- SPZ 3 - Total Catchment

- Listed Buildings Grade I
- Listed Buildings Grade II*
- Listed Buildings Grade II

Public Rights of Way (PRoW)

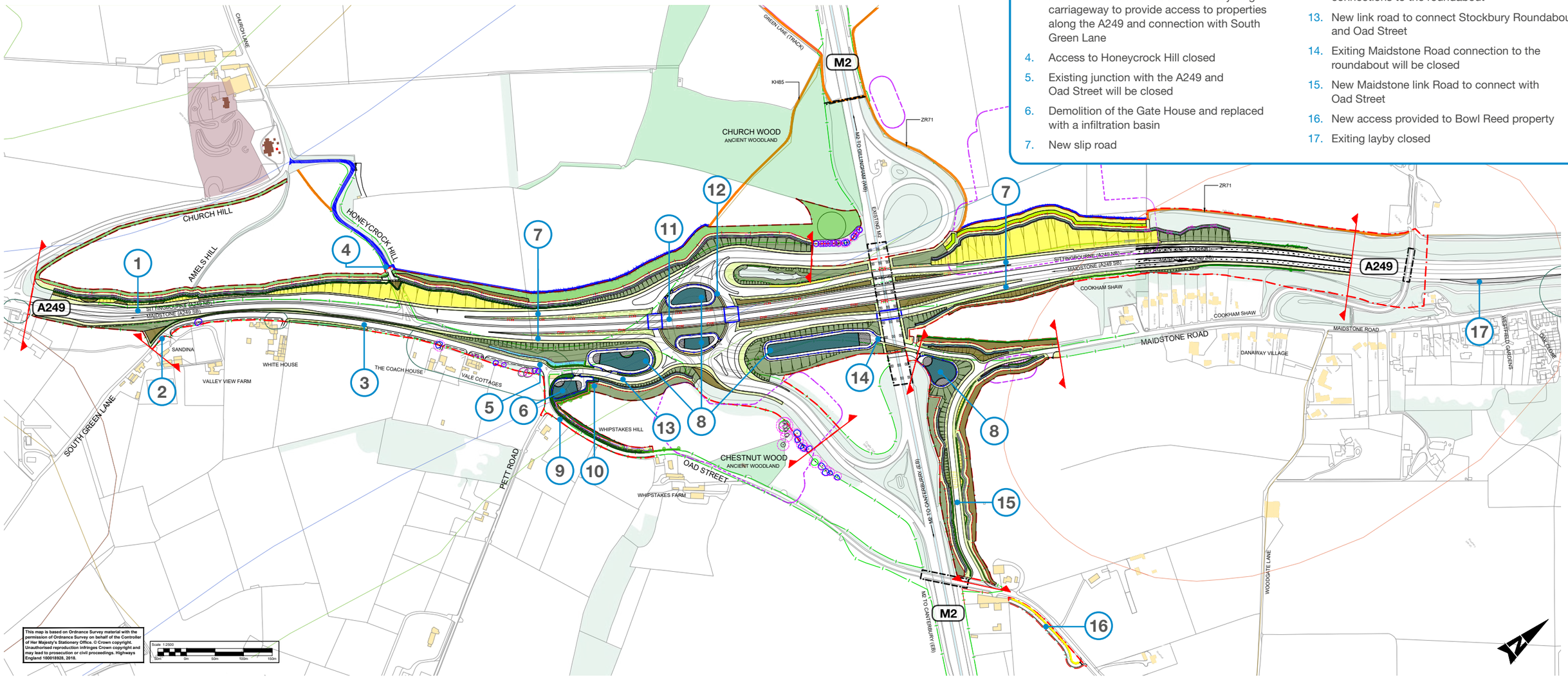
- Footpath
- Bridleway
- Byway
- Byway Open To All Traffic (BOAT)



M2 Junction 5

Scheme Key

1. Existing A249 will be slightly realigned to the north
2. Existing junction of South Green Lane and the A249 will be closed and connected to the access road
3. Existing southbound lanes of the A249 will be retained and converted to a two-way single carriageway to provide access to properties along the A249 and connection with South Green Lane
4. Access to Honeycrock Hill closed
5. Existing junction with the A249 and Oad Street will be closed
6. Demolition of the Gate House and replaced with a infiltration basin
7. New slip road
8. New infiltration basin established and planting
9. Oad Street widened
10. New ecological pond
11. New flyover for the A249 with two single span bridges over the roundabout
12. Stockbury Roundabout would remain at-grade and would be enlarged to accommodate connections to the roundabout
13. New link road to connect Stockbury Roundabout and Oad Street
14. Exiting Maidstone Road connection to the roundabout will be closed
15. New Maidstone link Road to connect with Oad Street
16. New access provided to Bowl Reed property
17. Exiting layby closed



Scale 1:2500
50m 0m 50m 100m 150m

Key

- LE 1.1 Amenity Grassland (EFE)
- LE 1.2 Grassland With Bulbs (EFE)
- LE 1.3.1 Species-rich Grassland - Chalk Mixture (EFD)
- LE 1.3.2 Species-rich Grassland- Hedgerow Wildflowers (EFD)
- LE 2.1 Woodland (EFA / EFB / EFD)
- LE 2.1.1 Woodland And Le 1.3.3 Species Rich Grassland - Woodland Understorey (EFA / EFB / EFD)
- LE 2.6 Shrubs And Le 1.3.4 Species Rich Grassland - Marginals (EFB / EFE)
- LE 2.8 Scrub And Le 1.3.5 Chalk Meadow Grass Mix (EFB / EFD)
- LE 4.2 Native Species Hedgerow (EFB)
- LE 4.3 Native Species Hedgerow (EFA / EFD)
- LE 4.3.1 Native Species Hedge - Bund (EFA / EFF)
- LE 4.4 Native Hedgerow With Trees (EFA / EFB / EFD)
- LE 5.1 Individual Trees (EFA / EFD)
- LE 6.1 Waterbodies And Associated Plants (EFD / EFE)
- LE 6.2 Banks And Ditches (EFD / EFE)
- Translocated Hedgerow
- Archeological Constraints - 20m Buffer
- Footpath
- Byway Open To All Traffic(Boat)
- Bridleway
- Flood Zone Boundary
- Known Asbestos In Soil
- Proposed Tree

Veteran Tree Survey

- Catagory A Tree / Group
- Catagory B Tree / Group
- Catagory C Tree / Group
- Catagory U Tree / Group
- Root Protection Area

NMU

- Public Right Of Way
- Re-routed Public Right Of Way
- External Pathways

Drainage

- Proposed Trench Soakaway
- Proposed Unlined Ditch
- Proposed Swale Unlined Ditch
- Proposed Filter Drain
- Proposed Infiltration Pond
- Ecological Pond

Existing Environmental Key

- Existing Vegetation
- Grade I Listed Building
- Grade Ii Listed Building
- Noise Important Areas
- Scheduled Monuments

Structures

- Proposed Bridge
- Existing Bridge

Highways

- Existing Highway Boundary
- Proposed Highway Fence Line
- Proposed Infiltration Pond Fence Line
- Temporary Fence Line
- Proposed Retaining Wall
- Existing Buildings
- Proposed Earthwork Slope
- Extent Of Main Works

General

- Proposed Scheme Boundary

Assessment of the likely significant effects

Air Quality

What is the existing environment like?

There is one Air Quality Management Area (AQMA) - an area where national air quality objectives have been breached - within the air quality study area that could be affected by changes in traffic with the Scheme. This AQMA is within the Borough of Maidstone and has been declared for exceedances of the annual average nitrogen dioxide (NO_2) objective. The AQMA covers major roads in the borough, including the A249 north of the junction with the M20 which is affected by the scheme. Air quality monitoring data shows that thereare exceedances of the national annual mean air quality objective for NO_2 within the study area at roadside sites. PM_{10} concentrations are below the objectives. There are no sections of Pollution Climate Mapping (PCM) links in the study area which exceed the annual mean NO_2 EU limit value for the 2015 reference year.

What are the effects during construction?

During construction, there is the potential for increased emissions of dust at receptors within 200m of the Scheme. However, with the application of appropriate mitigation outlined in the Outline Environmental Management Plan (OEMP) (Environmental Statement Volume 2 Appendix B) including: regular water-spraying and sweeping of unpaved roads; using wheel washes for vehicles; sheeting vehicles leaving site; and enforcing speed limits. It is considered significant adverse effects at nearby receptors would be unlikely.

Additional traffic from construction vehicles is considered unlikely to affect air quality, given that the numbers of additional HGVs a day does not meet the criteria for assessment.

Summary of construction assessment:

There will be no significant adverse effects with the implementation of suitable mitigation measures.

What are the effects during operation?

The air quality assessment has concluded that there is not expected to be any exceedances of the NO_2 annual mean objective at the human health receptors in the opening year (with or without the Scheme). Four receptors are expected to have a small increase in NO_2 concentrations with the Scheme and all other receptors are expected to experience an imperceptible change or small decrease in NO_2 concentrations, with one having a very large decrease due to the realignment of the A249. There are not expected to be any exceedances of the PM_{10} objectives with the Scheme.

The Scheme is expected to result in an increase in NO_x concentrations at the Wouldham to Detling Escarpment Site of Special Scientific Interest (SSSI), which overlaps with the North Downs Woodlands SAC SSSI, although changes in nitrogen deposition rates are expected to be less than 0.1 kg/N/ha/year.

Summary of operational assessment:

The Scheme is not expected to have a significant adverse effect on human health or ecological receptors with regards to air quality.

Noise and Vibration

What is the existing environment like?

There are 119 residential properties within 600m of the Scheme. The nearest noise sensitive residential receptors include the Gate House, Whipstakes Farm, The Coach House, Vale Cottages, Vale House, Threeways and Woolpit Ash. Further dwellings are located along Maidstone Road. Two non-residential noise sensitive receptors, Milton Regis Golf Club and St Mary Church Magdalene Church are also located near the Scheme. There are a number of Defra Noise Important Areas (NIAs), which are areas that have been identified as being subject to high levels of noise are located near the Scheme. The dominant noise source influencing the noise climate in the area consists of road traffic noise from A249 and M2.

What are the effects during construction?

Construction and demolition activities as well as construction vehicles on the road network can give rise to increases in noise levels if not effectively managed and this can affect nearby receptors. The construction assessment has identified that without mitigation, areas represented by Threeways, Vale Cottages, The Studios, Whipstakes Farm and Sandina could be significantly affected by construction noise levels. It is expected that all activities undertaken at night would exceed the night time thresholds even with mitigation in place. The frequency of these impacts can be reduced, if night time construction works are limited to essential works only. Mitigation measures including good practice measures in the Outline Environmental Management Plan (OEMP) (Environmental Statement Volume 2 Appendix A) as well as following the methods outlined in the Traffic Management Plan will reduce impacts from noise. Considerate working hours as well as frequent and open communications with stakeholders will also help to reduce the residual impact of construction noise and vibration.

Summary of construction assessment:

With the implementation of suitable mitigation, residual effects are unlikely to be significant.

What are the effects during operation?

In the opening year of the Scheme, a minor increase in noise level at one property (along Maidstone Road) is predicted due to road traffic. Minor to major decreases in noise are expected at 21 properties, including at two NIA. All remaining properties will experience no change or a negligible change in noise levels.

With the scheme in place there would be six properties with minor reductions in noise by the long term, including two NIA. Long term changes in noise at all otherreceptors would not be perceptible. There would be no perceptible change in noise at any noise sensitive receptors in the long term without the Scheme.

Significant noise effects are not predicted for the Kent Downs AONB area. No properties are predicted to have impacts from airborne vibration with the Scheme.

Summary of operational assessment:

The Scheme will not have a significant adverse effect on any noise sensitive receptors.
A significant beneficial effect is expected at a small number of properties, including two Noise Important Areas (NIA). No significant noise effects are predicted for the Kent Downs AONB.

Biodiversity

What is the existing environment like?

There are no statutory sites designated for nature conservation within the Scheme. Queendown Warren Site of Special Scientific Interest (SSSI), North Downs Woodlands Special Area of Conservation (SAC) and Wouldham to Detling Escarpment SSSI are located adjacent to the ARN for the Scheme. There are two non-statutory sites designated for nature conservation located within the Scheme area: Honeycrock Hill Roadside Nature Reserve (RNR) and Church Hill, Stockbury RNR. Church Wood Ancient Woodland (AW), Chestnut Wood AW and one veteran oak tree are located adjacent to the Scheme. The Scheme and immediately adjacent land comprises notable habitats including hedgerows, traditional orchard, lowland mixed deciduous woodland, lowland beech and yew woodland, lowland calcareous grassland as well as other habitats including ponds, scrub, poor semi-improved grassland, tall ruderal, species poor hedgerows, arable farmland and amenity grassland. The Scheme and immediately adjacent land support notable and protected species comprising of man orchid colonies, roosting, foraging and commuting bats, hazel dormice, notable birds, reptiles (common species), and terrestrial invertebrates. The non-native invasive plant species cotoneaster is also present within the Scheme area.

What are the effects during construction?

During construction there will be some direct loss of habitat within Honeycrock Hill RNR and Church Hill, Stockbury RNR. There will be no direct loss of habitat from Chestnut Wood AW or Church Wood AW, and no direct impact on the veteran tree. The Scheme requires temporary and permanent habitat loss from woodland, scrub, semi-improved grassland, arable land, hedgerows, dry ditches, and ponds. There may be indirect impacts (i.e. habitat degradation) caused by pollution to Honeycrock Hill RNR, Church Hill, Stockbury RNR and other retained habitats, resulting from increased dust during construction and groundwater and water pollution during construction. Temporary habitat loss will affect bats, breeding and wintering birds, hazel dormouse and reptiles, which are present within the Scheme area. The Scheme also has potential to cause the spread of the non-native invasive plant species cotoneaster.

The Scheme has been designed to avoid the loss of ancient woodland and veteran trees, and minimise habitat loss as far as possible. Mitigation measures will comprise of pollution prevention methods, protection of designated sites and retained notable habitats through construction exclusion fencing, pre-construction planting, habitat translocation (i.e. orchid colonies and 'important' hedgerows), and habitat creation in the form of nest boxes, brash piles and reptile refugia. All habitats to be temporarily and permanently cleared for the Scheme and assigned for environmental mitigation will be reinstated after construction and planted with new native species of local provenance including woodland, scrub, species-rich grassland and hedgerows. Habitat creation will ultimately contribute to an overall increase in the total area of ecologically valuable terrestrial habitats within the Scheme area.

Pre-construction surveys will be carried out for notable and invasive plants, badgers and bats as a final precaution prior to construction. A European Protected Species Licence will be obtained from Natural England for works affecting hazel dormice. Where appropriate, vegetation clearance will be conducted under a Precautionary Method of Working to avoid harm to individual hazel dormouse and other protected species such as reptiles and nesting birds.

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Summary of construction assessment:

- A slight adverse temporary effect will occur on Honeycrock Hill RNR and Church Hill, Stockbury RNR due to the loss of small areas of habitat. This habitat will be translocated; however, it will take time to establish following translocation (anticipated within 1 - 2 years) and will require further time to settle and fully establish, as well as ongoing management thereafter.
- A slight adverse temporary effect will occur on habitats, including broad-leaved semi-natural woodland, plantation woodland, hedgerows and standing water until translocated hedgerows, grassland and new planting become established. Habitat creation is anticipated to result in slight beneficial effects once the vegetation is established.
- A moderate adverse temporary effect will occur on the population of hazel dormice due to habitat loss and disturbance. Once the new habitats are established, the Scheme is anticipated to result in beneficial effects due to an increase in total woodland area and enhanced habitat connectivity.
- There will be no significant effects on other designated sites, ancient woodland, the veteran tree, bats, reptiles, breeding and wintering birds, terrestrial invertebrates and invasive non-native plant species due to the avoidance and mitigation measures incorporated into the Scheme.

What are the effects during operation?

During operation, the replacement habitats that will be created as part of the Scheme will become established providing enhancement and an increase in the total area (and quality) of habitats present. All newly created habitats, installed nest boxes, and the hazel dormice population will be monitored as part of the Habitat Management Plan and Landscape and Ecology Management Plan.

Sensitive lighting has been designed to minimise light spill onto adjacent vegetation, including ancient woodland, the veteran tree and other habitats immediately surrounding the road network that are associated with the Scheme.

Summary of operational assessment:

- A slight beneficial permanent effect will occur on habitats, hazel dormice and breeding and wintering birds due to the new habitats created for the Scheme.
- There will be no significant effects on designated sites, ancient woodland, the veteran tree, bats, reptiles, and terrestrial invertebrates.

Road Drainage and the Water Environment

What is the existing environment like?

The key water environment features near the Scheme include:

- There are no Main Rivers with the Scheme;
- The Scheme is within Flood Zone 1 (low flood risk), however there are areas where surface water flooding has occurred;
- An attenuation pond which forms part of the existing surface water management system for the highway network and a small artificial pond with no ecological value;
- The Scheme area underlain by the North Kent Swale Chalk groundwater body Water Framework Directive (WFD);
- Principal Aquifer and a Secondary A Aquifer underlay the Scheme; and
- Groundwater Source Protection Zone (SPZ) 1, 2 and 3.

What are the effects during construction?

Temporary impacts during construction have the potential to affect the water environment through the excavation and deposition of materials, spillage of contaminating liquids (i.e. fuels) and runoff from construction sites. Mitigation measures include (but not limited to) undertaking works using best practice with regard to Pollution Prevention Guidelines (PPGs), bunding of areas where contaminated water is stored, ensuring no discharge to groundwater within SPZ1 and appropriate piling methods followed.

Summary of construction assessment:

There will be no significant effects, with the implementation of mitigation measures on surface water, flood risk, groundwater and WFD compliance.

What are the effects during operation?

During operation, roads are designed to drain freely to prevent build-up of standing water to avoid flooding. Pollutants from contaminants built up on the road and accidental spillages can lead to pollution incidents and contamination of road runoff into surface and groundwater bodies. The design of the drainage system will comply with all current standards and SuDS best practice techniques including ensuring all proposed infiltration basins and soakaway features are located outside of SPZ1. This will provide mitigation for both water quality and attenuation and ensure that contaminants are treated before reaching the surface and groundwater bodies and reduce flood risk.

Summary of operational assessment:

There will be no significant effects, with the implementation of mitigation measures on surface water, flood risk, groundwater and WFD compliance.

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Landscape and Visual

What is the existing environment like?

The existing junction is largely screened by mature roadside vegetation, with the existing M2 viaduct a noticeable feature in the local landscape. It lies partly within the Kent Downs AONB which is renowned for its special characteristics, including: dramatic landform, panoramic and long-ranging views, rich habitats, tranquillity, remoteness and built heritage.

The study area features mixed geology, typical of the North Downs dip slope, with chalk found on higher ground, and head and clay-with-flints on the lower lying slopes. The landform of the dip slope limits views to areas within the valley and resultantly towards the existing A249, which is situated within the base of a dip slope valley.

The vegetation pattern of the study area is varied, to the southwest of the Scheme, about the vicinity of Honeycrock Hill, agricultural fields are of a small-medium irregular size, which allows for a sense of time depth, views towards the A249 are apparent from these fields, however, the rural lanes are densely vegetated by hedgerows and hedgerow trees, which limits views into the fields towards the A249. Elsewhere, agricultural fields within the study area are often larger in scale, particularly north of the M2 viaduct, this is in association with the intensification of agricultural land, which has led to the loss of historic, internal field boundaries, creating open views in these parts. There are areas of small-medium sized fields, isolated ancient woodlands, often adjacent to hedgerows, woodland shaws and grassland, which provide important ecological corridors.

Mature vegetation associated with the major road corridors provides important visual screening and helps to lessen the impacts of the M2, and visually encloses the A249. To the south of the M2 views from agricultural fields are often more open towards the A249 due to fragmentation of tree belts, however, the landform is such that views are limited as the landform foreshortens views towards the base of the valley.

Remnant orchards appear as dilapidated features within the landscape, creating a sense of neglect. Further detraction is found in the equestrian facilities, whereby additional loss of internal field boundaries is encountered due to their replacement by a proliferation of post and wire fencing and other non-vegetative boundary treatments, particularly north of the M2 Viaduct.

Overall, this is a study area that retains a strong rural character and feel, particularly to the south-southwest of the Scheme, but is eroded as it continues towards the M2 Viaduct and beyond, where land uses have become more intensive and less traditional, and the management of the landscape less sympathetic.

What are the effects during construction?

Construction effects associated with the Scheme include: vegetation clearance, building of structures and significant earth movements which would lead to a dynamic and disruptive character to the local landscape during the works. Vegetation clearance associated with the Construction Phase would lead to increased visibility towards the Scheme and will exacerbate the impacts of the construction works. Construction effects would be largely temporary, in part reversible and intermittent throughout the Construction Phase.

Summary of construction assessment:

- There will be significant adverse effects on the following landscape character areas: Bicknor: Mid Kent Downs, Chatham Outskirts: Mid Kent Downs, Hucking Dry Valleys, Newington Arable Farmlands and Tunstall Farmlands, due to the loss of established vegetation and opening up of views towards the Scheme.
- Significant adverse effects due to loss of screening vegetation opening up views of the existing and new infrastructure on the residents along the Maidstone Road at Danaway; residential properties along Oad Street: Milton Bungalow, Bowl Reed and Whipstakes Farm; residential properties immediately adjacent to the A249: Vale Cottages, The Coach House, Vale House, Hillside Farm, Hinecom, Sandina, Valley View Farm and White House; and residential receptors in proximity to the vantage point overlooking the M2 viaduct at Norton Green; users of Public Rights of Way: KH81, ZR70, KH85, KH80 and ZR71; transport receptors travelling along Oad Street; and outdoor employment receptors adjacent to the A249.

What are the effects during operation?

Views of the Scheme opened up during construction would remain until the proposed mitigation planting has matured. The Scheme will have led to the diversification of landscape elements within the soft estate of the development, strengthening and enhancing fragmented field boundaries and other fragmented landscape elements. The Stockbury Flyover will have been sensitively design using local, natural stone to respond to the sensitive setting of the Kent Downs AONB. Although a significant local impact to the AONB is anticipated at Operation Year 1, the Scheme would not impact upon the wider extent of the Kent Downs AONB and design measures have been employed to reduce the long-term visual and landscape impacts resulting from the Scheme in its immediate context.

Summary of operational assessment:

- At Operation year 15, it is anticipated that mitigation planting will have reached relative maturation and there will be no significant residual effects on the landscape character areas; and
- There will be a residual significant effect upon the residential receptor Whipstakes Farm along Oad Street.

Geology and Soils

What is the existing environment like?

The condition of soils across the Scheme and study area is deep and loamy textured and well drained close to the surface, but often having slowly permeable subsoil. The soils respond well to field drainage. Grade 2 and 3 Best and Most Versatile (BMV) agricultural land is present in the study area.

Across the Scheme, Made Ground is expected to be present, including under the M2 and A249 and associated embankments. Infilling of depressions, ponds, World War I trenches, old pits and quarries is also expected to have occurred. Embankments are known to have been formed from materials generated from cuttings made during previous improvement works.

The bedrock consists of localised sandstone (beneath the slip roads of the M2), with chalk underling the remainder of the study area. The bedrock is designated as a Principal aquifer. SPZ 1, 2 and 3 are present across the Scheme and study area.

Identified potential pre-existing geological stability hazards that will be considered as part of the Scheme design include:

- Ground dissolution, where chalk is close the surface;
- Landslides, associated with embankments within the Scheme;
- Running sands near the M2 and roundabout; and
- Subsistence hazards in the north-east section of the Scheme.

Sources of potential contamination identified within the study area include Made Ground of unknown physical and chemical quality throughout the study area, vehicle emissions, active commercial and light industrial land uses;' historical land uses, tanks and unclassified waste storage/ burning on private properties.

Receptors to potential contamination and ground stability risks include residents and workers, ancient woodland, BMV land and existing infrastructure and services.

What are the effects during construction?

Construction activities (such as piling, dust generation or groundwater control activities) have the potential to introduce new pathways for the migration of existing contamination. New receptors (such as workers in new confined spaces i.e. manholes) may also be introduced during construction. Construction activities and site clearance has the potential to increase soil erosion and ground instability. Permanent loss of agricultural land will occur for the Scheme.

Mitigation measures include the completion of appropriate risk assessment and method statements prior to construction. These will include appropriate dust suppression measures, groundwater and surface water management methods, stockpile management measures, limits of the duration of earthworks and soil exposure and will follow pollution control measures.

Summary of construction assessment:

- There are no anticipated significant effects with the implementation of mitigation measures with regards to land contamination, geomorphology and ground stability.
- With design and mitigation measures, a number of identified land contamination impacts are considered to be beneficial to receptors.
- No significant effects are anticipated to agricultural holdings. Although some BMV land will be lost permanently, this is well below Natural England's threshold of significance.

What are the effects during operation?

During operation, it is unlikely that new pathways will be created however accidents and incidents have the potential to create new sources. To minimise contamination, accidents and incidents will be minimised by good practice measures outlines in the Outline Environmental Management Plan (OEMP) (Environmental Statement Volume 2 Appendix A).

Summary of operational assessment:

- No significant residual impacts with regards to land contamination and geomorphology and ground stability are expected post-construction of the Scheme.
- No significant effects are anticipated to agricultural holdings.

Cultural Heritage

What is the existing environment like?

Potential historic resources within the Scheme study area include:

- One Scheduled Monuments, the Ringwork and Baileys at Church Farm within Scheme boundary;
- Six Listed Buildings: Church of St. Mary Magdalene (Grade I), four gravestones and tombs within the churchyard (Grade II) and Church Farmhouse and cottage (Grade II);
- 18 non-designated heritage assets;
- Eight non-designated historic landscape types;
- Pre-historic activity: sizeable flint assemblage dating from the Mesolithic to Neolithic or Early Bronze Age periods , and two areas of smelting activity of Iron Age or early Roman date which included evidence of technological development towards more effective smelting techniques; and
- Presence of the World War I Chatham Land Front Defence lines comprising trench systems, battery positions and strongpoints.

What are the effects during construction?

A significant effect on two non-designated heritage assets (multi-period archaeological sites) will occur from partial removal during the construction of the northbound A249 slip, and the Oad Street link. There is high potential for encountering both known and unknown heritage assets and buried archaeological remains during construction. Temporary setting impacts are also likely from construction.

An archaeological mitigation strategy will be prepared that includes archaeological excavation, targeted watching briefs, monitoring of geotechnical works and archaeological monitoring and sampling. The mitigation would ensure preservation by record of the known heritage assets and would enable identification and preservation by record of any previous unrecorded archaeological remains and identify areas where impact to significant archaeology could be designed out if possible.

Summary of construction assessment:

- A significant effect on two non-designated heritage assets (multi-period archaeological sites) will occur from the construction of the northbound A249 slip, and the Oad Street link; and
- No significant effects are anticipated on all other heritage assets with the implementation of mitigation measures.

What are the effects during operation?

During operation, no additional direct physical impacts on buried archaeology are anticipated, as any impacts will have been either designed out, leaving assets preserved in situ or mitigated through archaeological excavation and recording prior to construction.

The setting of heritage assets may be impacted due to increased road infrastructure however, mitigation measures including vegetation screening and careful design will reduce any impacts.

Summary of operational assessment:

No significant effects are anticipated with the implementation of mitigation measures.

Materials and Waste

What is the existing environment like?

The materials and waste assessment considers the effects the Scheme will have on the capacity of the local / regional waste infrastructure (e.g recycling facilities) and the availability of aggregate materials within the region.

The baseline for materials and waste includes:

- The materials assets baseline - sourced from the South-East of England regional baseline which identifies the main construction materials. The regional sales of aggregate (the main material to be used on the Scheme) is estimated to be 13,000,000 tonnes per annum; and
- The waste infrastructure baseline - sourced from the Kent Waste Needs Assessment, which identifies the capacity of waste infrastructure for an area. Kent has the capacity to manage 5,983,247 tonnes of construction, demolition and excavation waste per annum.

What are the effects during construction?

During construction the Scheme has the potential to impact the market and availability of material assets and total available waste infrastructure capacity. The impact on the material assets markets would be due to the use of construction materials and the impact on waste infrastructure capacity would be due to the generation of waste. Significant effects are anticipated on the waste infrastructure capacity due to large quantities of earthworks and minimal quantities of re-used / recycled material assets. (The suitability of excavated for re-use within the Scheme will not be known until the detailed design stage). Design improvement ideas including; reducing cut and fill material from the highway realignment and reducing cutting along embankments have helped decrease material use and waste generation. Further mitigation measures include best practice waste management, not overordering materials, reusing materials and training staff.

Summary of construction assessment:

Significant effects on the waste infrastructure capacity will occur due to large quantities of earthworks and minimal quantities of re-used / recycled material assets.

What are the effects during operation?

During operation, only small quantities of materials will be used and waste generated will be minimal.

Summary of operational assessment:

Operational assessment was scoped out due to the minimal impact it was estimated to have.

Population and Human Health

What is the existing environment like?

Private dwellings and community facilities are found in the main settlement of Sittingbourne and the smaller local villages and areas of Danaway, Stockbury, Borden, Oad Street, Newington and South Green. The closest private residential dwellings to the Scheme include The Gate House, Coach House, Vale Cottages, Vale House, Threeways, Woolpit Ash and Whipstakes Farm. Community land and facilities including St Mary Magdalene Church, Sittingbourne and Milton Regis Golf Club, Outdoor Pursuits and Quad Nation centre at Wormdale Farm are located near the Scheme.

Several rural enterprises and local businesses are also located within the core study area. Several Public Rights of Way (PRoW) and footways run through the core study area allowing pedestrians and others travelling between the nearby villages to cross the M2, A249 and other local roads in the area. Four bus stops are located along the A249.

The health of residents in Swale and Medway is generally worse than the England average and the profile for the area indicates higher unemployment rates and low incomes. Most of the views of the Scheme are restricted by woodland and vegetation adjacent to the M2 and A249. The M2 carries high volumes of traffic at peak times which can cause disruption and delays to the surrounding road network, particularly when emergency closures and lane closures are imposed which contributes to increased driver stress.

What are the effects during construction?

The demolition of The Gate House and permanent land take required at Bowl Reed will result in significant adverse effects on these private residential dwellings. However, this effect is considered as a local factor and small scale only, in a core study area that comprises 3,912 households. Therefore, it does not constitute an overall significant adverse effect on private residential dwellings in the core study area as a whole.

Temporary disruption effects are predicted for local businesses and vehicle travellers from increased traffic congestion and/or delays during construction and for NMU from increased journey times, however these effects are not considered to be significant.

Mitigation measures will help reduce the effects from construction. This includes minimising permanent land take, ensuring access is retained where possible to private residential dwellings, community land and facilities, and local businesses; notifying NMU and vehicle travellers of changes to routes; providing clear signage; reducing public transport disruption; and ongoing community engagement.

With suitable mitigation measures in place, no significant effects are predicted to occur on the local economy and employment, development land, rural enterprises, and human health.

Summary of construction assessment:

- Demolition of The Gate House and permanent land take at Bowl Reed will result in significant adverse effects. However, this effect is considered a local factor and small scale only so does not constitute an overall significant adverse effect on private residential properties in the core study area as a whole, in an area which comprises 3,912 households.
- No significant adverse effects are predicted for any other population receptor types and/or health determinants.

What are the effects during operation?

There will be significant beneficial noise effects at two Noise Important Areas (NIA's) and residential dwellings at Stockbury Valley in the long and short term due to the change in the road alignment which will move the source of noise away from these locations and noise mitigation measures incorporated into the design.

Significant beneficial amenity effects are predicted for NMU using the improved route for pedestrians and others along Honeycrock Hill to Church Wood, following the stopping up of Honeycrock Hill and diversion/ extension of PRoW KH85 to Honeycrock Hill.

Significant beneficial effects are also predicted for families with children and adolescents and people who are physically or mentally disadvantaged through reduced risk of injuries associated with improvements to NMU routes, improved safety and access to local services.

No significant operational effects are predicted for private residential dwellings, community land and facilities, the local economy and employment, development land, rural enterprises and human health.

Mitigation proposed includes screen planting to reduce the impact from changes in views and the use of low noise road surfacing.

Summary of operational assessment:

- There will be significant beneficial effects on 2 NIAs, private residential dwellings at Stockbury Valley, NMU using the improved route for pedestrians and others at Honeycrock Hill and families with children and adolescents and people who are physically or mentally disadvantaged.
- No significant effects are predicted for private residential dwellings, community land and facilities, the local economy and employment, development land, rural enterprises and human health.

Climate

The climate chapter is presented in two separate sub-chapters:

- Effects of the Scheme on Climate; and
- Vulnerability of the Scheme to Climate Change.

What is the existing environment like?

For effects on climate, the condition of the existing environment is based on the quantity of emissions that are generated by the existing road users in terms of greenhouse gases. For vulnerability of the Scheme to climate change, the baseline includes the current climatological conditions, as well as the projected climate changes for the area. The current climate in Kent is one of relatively mild winters and warm summers and the long-term average monthly rainfall is lower than the UK average. Going forward it is projected that, on average, the study area is likely to experience hotter and drier summers and warmer and drier winters. Alongside these changes in the average conditions, it is likely that climate change will increase the frequency and severity of extreme weather events, such as heavy rainfall, storms and heatwaves.

What are the effects during construction?

Emissions are produced from the production of materials to be used in construction and those emitted onsite through construction activities (for example from emissions from diesel-fuelled construction plant). Mitigation measures including exploring potential low carbon solutions (including technologies, materials and products) to minimise resource consumption and re-using and / or refurbish existing assets to reduce the extent of new construction.

With regard to vulnerability of the Scheme to climate change, construction is not expected to be sufficiently far into the future for the climate to change so significantly that construction related impacts would be different to those expected in the current climate. Climate change would therefore not intensify construction related impacts and accordingly no significant construction effects are identified. However, mitigation measures including best practice drainage design and pollution prevention measures and dust pollution measures will minimise the impacts from climate change.

Summary of construction assessment:

- There will be no significant effects on climate from emissions; and
- No significant effects of climate change on the Scheme.

What are the effects during operation?

Emissions are produced from road users and operational energy use (e.g. lighting). Although the Scheme will produce emissions, it may cause a reduction in emissions compared to not building the Scheme which would in turn result in improvements in effects on climate. Mitigation includes designing the Scheme to minimise emissions by incorporating non-motorised user (NMU) routes to encourage less car use and use of low energy lighting and traffic management systems.

UK climate projections for the 2050s consider that average mean temperatures are likely to increase throughout the year leading to warmer winters and decreases in mean snowfall rates. Increased temperatures are likely to result in a reduction in the cost and frequency of winter road maintenance and improved driver safety. The increased risk of heat waves could lead to increased deformation and rutting of road surfaces as well as expansion joints and cracking in concrete pavements and thermal expansion in bridges. There are potential risks to staff welfare due to increased need for night-time working. Higher rainfall is also predicted which can lead to flooding which can damage roads and pavements and reduce safety. It is uncertain about the impacts of storms in the future, but increased storms would cause widespread damage to signs/signals and roadside vegetation as well as increased accumulation of debris on roads.

Mitigation measures include best practice bridge and road construction techniques (including designing for changes in windspeeds), use of appropriate materials, monitoring of infrastructure, appropriate use of drainage systems and landscaping to reduce impacts from climate change.

Summary of operational assessment:

- There will be no significant effects on climate from emissions; and
- No significant effects from climate change on the Scheme.

Assessment of Cumulative Effects

What is the existing environment like?

The cumulative effects assessment considers both the in-combination effects the combined environmental effects identified within the different environmental assessments, on the same receptor, caused by the Scheme) and cumulative effects (the cumulation of effects on a receptor from the Scheme in tandem with effects from other developments planned or under construction within the Scheme's study area).
The baseline for each environmental topic is described above in the previous sections. The following proposed developments have been shortlisted in the Cumulative Effects Assessment:

- **Land at Wises Farm** - Construction of 595 dwellings including schools, retail stores and recreation facilities - distance from site 2.7km;
- **Manor Farm** - Construction of 50 dwellings - distance from site 2.9km
- **Land at Woodgate Lane** - Removal of existing builders' yard and construction of 11 new dwellings including access road; - distance from site 0.1km; and
- **Builders Yard** - Change of use for 3 buildings - distance from site 0.2km.

What are the effects during construction?

In-combination effects

During construction, residents at Bowl Reed will experience a slight adverse effect resulting from the permanent loss of land combined with a reduction in visual amenity.

No other in-combination effects have been identified during construction.

Cumulative effects

Land at Wises Lane and Manor Farm developments could potentially have a significant cumulative effect due to construction traffic along the A249 causing visual disturbance and disrupting tranquillity in a sensitive landscape. However, this is dependent on construction schedules overlapping with the Scheme.

Summary of construction assessment:

- No significant in-combination or cumulative effects were identified during the construction phase.

What are the effects during operation?

In-combination effects

No in-combination effects are anticipated during the operational phase of the Scheme and the overall significance is assessed as being neutral.

Cumulative effects

Beneficial effects on population and human health may occur for the 'Land at Wises Farm' and 'Manor Farm' developments which will provide, cumulatively with the Scheme, new housing and additional community infrastructure. Conversely both developments will have effects, on the rural landscape due to expanding the urban edge of Sittingbourne however mitigation planting will lessen the effects once established. The overall effect is neutral.

Summary of operational assessment:

- No significant in-combination or cumulative effects were identified during the operational phase.

M2 Junction 5 Improvements
Environmental Statement: Volume 4 - Non-Technical Summary

What happens next

The Compulsory Purchase Orders and Side Roads Orders have been made and published by Highways England and have been submitted to the Secretary of State for confirmation. The Line Order has been prepared in draft and submitted to the Secretary of State for making.

Until 25th July 2019, any objection or representation can be made to the Orders, in writing, to:

The Secretary of State for Transport
National Transport Casework Team
Department for Transport
Tyneside House
Skinnerburn Road
Newcastle Business Park
Newcastle upon Tyne NE4 7AR

or by email to: nationalcasework@dft.gov.uk

stating the title of the Scheme and, if relevant, the grounds of objection.

Following the expiration of the representation period, the Secretary of State will decide whether the Orders should be confirmed, with or without modifications. If objections are received, the Secretary of State will consider whether an inquiry is to be held before they make their decision, which in the event of an inquiry will be after consideration of the inspector's report and recommendations.

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Registered office Bridge House, 1 Walnut Tree Close, Guildford GU1 4LZ
Highways England Company Limited registered in England and Wales number 09346363

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