M25 junction 10/A3 Wisley interchange

TR010030

9.41 Scheme Assessment Report (2017)

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M25 junction 10/A3 Wisley interchange

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9.41 Scheme Assessment Report (2017)

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Scheme Assessment Report

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Document control

The Project Manager is responsible for production of this document, based on the contributions made by his/her team existing at each Stage.

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Executive Summary

In December 2014 the Department for Transport (DfT) published the Road Investment Strategy (RIS) for 2015-2020. The RIS sets out the list of schemes that are to be delivered by Highways England over the period covered by the RIS (2015 – 2020).

The RIS identifies improvements to M25 J10/A3 Wisley Interchange as one of the key investments in the SRN for the London and South East region. The proposed improvements being as follows:

"Wisley interchange to allow free-flowing movement in all directions, together with improvements to the neighbouring Painshill interchange on the A3 to improve safety and congestion across the two sites". Expected cost £100m to £250m.

Following the option identification and assessment throughout Stages 1 and 2, Highways England have proposed a change to the wording of the RIS statement to remove *"in all directions"* from the scheme description. Evidence has been provided to the DfT to show that the scheme budget would be insufficient to allow free-flowing movement in all directions and that scheme objectives can be achieved with a smaller scheme.

Need for the scheme

Safety - In 2013 Highways England's National Intelligence Unit undertook some analysis on accident data across the Strategic Route Network (SRN) for the period 2009 to 2011. M25 J10 was found to have the highest number of casualties at any junction on the SRN. Data for 2010 to 2015 shows that with 28 casualties per year, M25 J10 has more than double the average number of casualties at M25 junctions. In the study area (M25 J10 and the A3 from Painshill to Ockham) there were an average of 33 accidents per year.

Traffic - M25 J10 is a heavily used junction, with approximately 48,000 vehicles entering the roundabout from the A3 every day, and another 48,000 entering from the M25.

Reliability – average journey times are typically twice the duration of a free flowing junction and thus are unreliable.

Delay - For the south east of England, the average delay was 8-10 seconds per vehicle per mile in 2016. Not only is this value typically exceeded in the AM and PM peaks at many locations on and around M25 J10, the A3 northbound between Ockham and M25 experiencing delays of more than 40 seconds per vehicle per mile.

Growth – Planning data provided by Guildford, Elmbridge and Woking has identified proposed increases of 18,500 houses and 10,500 jobs by 2037. This is forecast to result in a further 4000 vehicle trips through M25 J10 in 2037.

Design challenges

The following design challenges have been identified:

- Large areas around the junction are designated as part of the Thames Basin Heaths Special Protection Area, so are of international importance with the highest level of protection from development. This land is also designated as SSSI and Local Nature Reserve
- Numerous historic features present including Scheduled Monuments, listed buildings and two Registered Park and Gardens
- Large areas designated as common land or access land which the public can use for informal recreation and any loss of land would need to be replaced in the area
- High levels of noise and air pollution affecting human health, flora and fauna

- Poor provision for non-motorised users to move around the junction either within proximity of the junction or linked access around existing land which is accessible to the public
- Important waterbodies in the area and some flooding issues
- Located within the greenbelt, surrounded by heath and woodland with residential properties nearby

Option Identification

The main focus of the earlier stages of the study was to generate options at M25 J10 / A3 Wisley Interchange. Twenty-one options were identified at the start of Stage1, of which three were shortlisted for detailed assessment. The Technical Assessment Report produced at the end of Stage1 recommended that whilst one of those options (Option 16) would meet the aim of the study by providing the free-flowing movement in all directions, it would exceed the scheme budget and require the largest land take. The economic analysis shows that the extra expenditure, compared with Option 9, would not deliver extra benefits and therefore consultation was undertaken with a recommendation for rejecting Option 16. Feedback from consultation agreed with the recommendation, and a request to alter the wording of the RIS was made to the DfT.

Therefore, for this current stage (Stage 2) the two options were reviewed as follows:

- Option 9 retains the existing roundabout but adds a fourth level layout to provide free-flowing right turns from the A3 to the M25 whilst also providing free-flowing left turns
- Option 14 involves modifying the existing roundabout by elongating the existing roundabout with additional lanes to provide more circulatory capacity and enable more traffic to discharge the roundabout whilst also providing free flowing left turns
- A3 from Ockham to M25 J10 and M25 J10 to Painshill to be widened from D3AP to D4AP in both directions. This will necessitate the closure of existing accesses to the A3 and alternative provision made

A key element of the Option Selection stage was the public consultation event and this provided a valuable opportunity to discuss local access requirements with those members of the public and stakeholders more directly affected by the scheme proposals. It became evident at the consultation that the M25 J10 / A3 Wisley interchange scheme contains three primary components which combine to form the scheme package:

- M25 J10
- A3 corridor
- Side road options

Preferred route

Following analysis and appraisal, the study team recommend that Option 14 should be pursued as it provides significant traffic and safety benefits up to 2037. The benefits associated with Option 14 would be achieved at a lower environmental impact than Option 9. This should be accompanied by widening of the A3 from D3AP to D4 AP.

The widening of the A3 will necessitate providing alternative access for the business and residents that presently have direct access to the A3. Throughout this report these components have been presented and assessed and during the Value Management Workshop the following recommendations are made:

A3 Ockham to M25 J10 (including Wisley Lane) access:

- Wisley Lane

Further assessment of the impacts and benefits of the two proposed options (WIS-01 and WIS-10) to be undertaken.

Further options developed in collaboration with RHS Garden Wisley to be considered.

- Pond Farm

  Access to Pond Farm and the campsite to be provided from Wisley Lane, although further discussion with stakeholders is required to ensure that option CAMP-02 meets all stakeholder needs.

A3 M25 J10 to Ockham access:

- Elm Corner

  To provide access as presented in the ELM-05 option – eastwards towards Old Lane via upgrades to the BOAT 525 part of Elm Lane.

A3 M25 J10 to Painshill access:

- M25 J10 to Painshill

  To provide access as presented in the SAN-02 option, with access to/from the San Domenico site and Long Orchard House and Farm to be via Seven Hills Road South.

A3 Painshill to M25 J10 access:

- Painshill to M25 J10

  Further assessment of the impact of the two proposed options (PAIN-04 and PAIN-05) to be undertaken.

Further options developed following agreement with Painshill Park and English Heritage.

Assessment relative to scheme requirements and design objectives

Traffic is forecast to increase by approximately 25% in the local authorities surrounding M25 J10 between 2015 and 2037[1], with over 4000 trips from new developments forecast to pass through M25 J10 in the morning peak of 2037. Given this increase in traffic, Option 14 is forecast to reduce delay in the morning peak by 36% compared to no intervention and by 45% in the evening peak. The elongated roundabout at M25 J10 is forecast to be operating within capacity by 2037.

The impact of these improvements at M25 J10 / A3 Wisley Interchange is not forecast to affect the operation of the M25 between J9 and J11.

The improvements which will be delivered by Option 14 at M25 J10 and along the A3 are forecast to result in a 26% decrease in accidents during the appraisal period, which equates to 10 fewer accidents in 2022 and 6 fewer accidents in 2037 compared to an average of 33 per year at present.

However, there is still an environmental impact with Option 14, not least 3ha of Habitats/Birds Directive: Special Protection Area land, although the impact on the integrity of this land is to be determined. Furthermore, Option 14 also covers land with the following designations: SSSI, Ancient, woodland, Green Belt, Open Space/Common Land and Habitat of Principal Importance.

[1] Based on TEMPRO 7.2 analysis.

Option 14 should be accompanied with widening of the A3 between Ockham Interchange and Painshill Interchange from D3AP to D4AP. The A3 within M25 J10 is to remain D2AP.

Further engagement with stakeholders is required to confirm local access routes and revisions to design should be made to reduce environmental impact further. This is planned to occur during Stage 3 when work to improve conditions for pedestrians, cyclists and equestrians will also be undertaken.

1 Introduction

1.1 Background

In December 2014 the Department for Transport (DfT) published the Road Investment Strategy (RIS) for 2015-2020. The RIS sets out the list of schemes that are to be delivered by Highways England over the period covered by the RIS (2015 – 2020).

The RIS identifies improvements to M25 J10/A3 Wisley Interchange as one of the key investments in the SRN for the London and South East region. The proposed improvements being as follows:

"Wisley interchange to allow free-flowing movement in all directions, together with improvements to the neighbouring Painshill interchange on the A3 to improve safety and congestion across the two sites". Expected cost £100m to £250m.

This commitment to take forward the scheme for delivery in RIS 1 was confirmed within the Highways England Delivery Plan.

In 2015 Atkins were commissioned by Highways England to compile existing and new information and to produce the necessary documentation for Stage 0 (Strategy, Shaping and Prioritisation). This work confirmed the case for the need for an improvement at M25 J10/A3 Wisley Interchange and Painshill Junction and considered the options available to take forward to the options identification stage. Atkins were subsequently commissioned to undertake Stage 1 in December 2015 and in November 2016 recommended two options for the Options Selection stage (Stage 2).

1.2 Previous work

Several studies have been completed over recent years that have considered options to improve M25 J10, either directly as part of the RIS programme or as localised junction improvement initiatives. The relevant projects completed are summarised below.

WSP PB undertook a study in 2013/2014 to look at the issues over the Surrey section of the A3. The report contains a range of options for consideration at M25 J10 (including A3) and Painshill.

Prior to that the following studies were undertaken:

- 2014 – Highways England and Parsons Brinckerhoff – two studies:

  Stage 2, Route Based Strategy: M25 J10 and A3

  Stage 2, Route based Strategy: M25 J10 to 12

- 2012 – Connect Plus

  J10 dedicated left-turn to A3 north with 3 options merge exit, 2-lane dedicated exit and 3-lane dedicated exit

- 2007/08 – Mouchel

  M25 J10 roundabout, proposed improvements

  M25 J11, capacity improvement, northbound – widening from 4 to 5 lanes

  M25 J12 to 11, capacity improvement, southbound, widening from 4 to 5 lanes

1.3 Timeframe

The scheme is being developed to be delivered under the RIS 1 (2015-2020) period with construction to be started by the end of that timeframe. Table 1-1 sets out the

timeframe over which the scheme will develop through the Highways England Project Control Framework (PCF) Stages.

Table 1-1 M25 J10 scheme timeframes within RIS 1

PCF Stage	Phase	From	To
1	Option phase	10/2015	10/2016
2		11/2016	06/2017
3	Development phase	07/2017	08/2018
4		09/2018	12/2019
5		12/2019	03/2020
6	Construction phase	03/2020	05/2022
7		2022	2023

1.4 Scheme context

The Government's Road Investment Strategy (RIS) was published in December 2014 and set's out a long-term vision for the strategic road network, together with a multi-year investment plan and high-level objectives for the first roads period of 2015 to 2020. The RIS identified five overarching long-term challenges for the SRN, of which the following were of key importance to the M25 J10/A3 Wisley Interchange scheme:

- Access around major cities – addressing serious congestion at the periphery of the major cities which are anticipated to be the greatest drivers of growth (particularly London) through lasting solutions which make the best use of all modes;
- Building a smarter network – unlocking the potential of smarter infrastructure and new technologies to enable the most to be made of the SRN.

The RIS presents a vision for the SRN in 2040 is founded on the following aspirations that are applicable to the M25 J10/A3 Wisley Interchange scheme:

- Smoother – Connecting people and businesses safely, swiftly and seamlessly;
- Smarter - A world leader in road building and traffic management technology
- Sustainable – Driving the transition to a decarbonised, environmentally and locally sensitive road network

1.5 Purpose of the Scheme Appraisal Report (SAR)

The purpose of the Scheme Assessment Report (SAR) is to provide a summary of the more detailed technical reports produced for the scheme, which at Stage 1 were included within the Technical Appraisal Report, along with a summary of the Public Consultation. The report summarises the expected environmental, economic, engineering and traffic impacts of the scheme interventions, allowing the public and statutory bodies to comment on the proposals. SAR describes the merits or otherwise of each option considered, and identifies the key factors considered when recommending a preferred option to be taken forward. This report is not intended to replace the technical reports.

1.6 Structure of this report

The SAR report is arranged in 10 chapters following this introduction, supported by a number of appendices.

- Chapter 2 describes the existing traffic conditions, topography and land use, and the problems to be solved
- Chapter 3 sets out the generic project objectives and specific phase objectives, and the strategic context for the scheme development

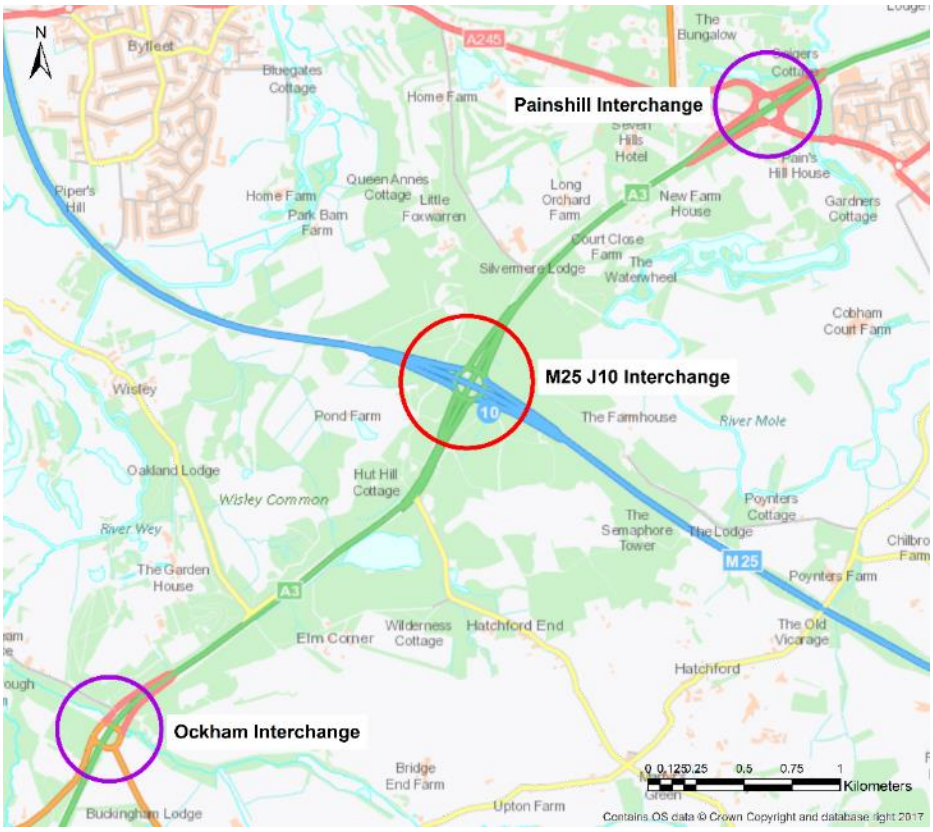
- Chapter 4 describes the impacts of doing nothing
- Chapter 5 presents a detailed engineering assessment of the options, identifying key engineering considerations for developing the scheme further, covering the alignment and geometry, existing and new structures required, and the cost estimates
- Chapter 6 presents the traffic analysis undertaken, and summarises the economic assessment
- Chapter 7 provides an overview of the scheme operating regime and driver compliance requirements during construction and operational phase
- Chapter 8 describes the technology requirements of the scheme, and summarises the maintenance regime of civil infrastructure and roadside technology
- Chapter 9 summarises the environmental assessment
- Chapter 10 provides a summary of the public consultation feedback and outlines how this has been considered in the design of the options
- Chapter 11 presents a summary appraisal summary table, and
- Chapter 12 concludes the report with a summary of the key findings and a recommendation on the preferred option.

2 Summary of existing conditions

2.1 Description of the locality

The M25 J10 lies in the south west quadrant of the M25 London Orbital Motorway. At M25 J10 the A3, a key radial route from London to Portsmouth, crosses the M25 motorway. In addition to M25 J10 itself, it has been recognised that the adjacent junction on the A3, Painshill Interchange to the north, is also a pinch-point. Figure 2-1 provides an overview of junctions on the M25 and A3 within the study area.

Figure 2-1 Location of junctions, and side roads



The interchange is situated in the south-west quadrant of the M25 London Orbital motorway, approximately 30km to the south-east of the City of London and 12km to the north-east of Guildford and forms the confluence of several radial routes between Surrey, Hampshire and Greater London with orbital routes between Kent, East and West Sussex, Surrey, Berkshire and beyond.

The built–up area of Cobham is approximately 3km to the north-east of M25 J10 (and closer to Painshill Interchange), whilst Byfleet and St. George's Hill are just over 2km to the north-west. The villages of Ripley, Send and Burnt Common are situated between 3.5km and 5.5km to the south of the junction. South of the M25, the small hamlets of Elm Corner and Wisley are situated on either side of the A3, with Elm Corner being located just 320m to the east of the A3 and Wisley being approximately 1.4km to the west. The village of Ockham lies approximately to the south east of the A3 Ockham Interchange. The popular visitor attractions of Painshill Park and the Royal Horticultural Society's Garden at Wisley are situated immediately alongside the A3, both to the north and south of M25 J10.

The M25 J10 interchange sits on the eastern edge of the Borough of Guildford, and is also near the boroughs of Elmbridge and Woking. Together these boroughs have a population of over 375,000. These boroughs have strong and diverse economies, all

containing offices of multi-national companies as well as local retail and business centres.

Putting it in a broader context, the M25 J10 / A3 Wisley interchange area is on the eastern side of the Enterprise M3 Local Enterprise Partnership (LEP) area which has a population of 1.6 million and sustains 740,000 jobs. High levels of housing and employment growth are planned for this wider area.

2.2 Existing highway network

2.2.1 M25 Junction 10

The M25 is a D4M motorway (dual carriageway with four lanes in each direction) either side of M25 J10, although the section of the motorway between the slip-roads through the junction is of D3M standard (three lanes in each direction). The A3 is a D3 road (dual carriage way with three lanes in each direction) either side of the junction, but only D2 between the slip-roads of M25 J10.

The junction itself is a signal controlled roundabout junction with no free-flow left-turn lanes. The roundabout has three lanes on the circulatory carriageway. All slip-roads have two lanes; with the A3 northbound off-slip and M25 westbound off-slip having four lanes at the stop-line, and the A3 southbound off-slip and M25 eastbound off-slip having three lanes at the stop-line

There are pedestrian, cycle and equestrian crossings on the roundabout.

2.2.2 Painshill Interchange

Painshill Interchange is approximately 2km to the north of M25 J10 on the A3, where it crosses the A245. This junction is the principle access point to the trunk road network for many surrounding settlements, including Cobham (via A245 east), Byfleet and Brooklands (via A245 west) and the southern parts of Weybridge and Walton-on-Thames via B365 Seven Hills Road. The A3 is a D3 road (dual carriage way with three lanes in each direction) either side of, and through, the junction. The A245 has a two-lane approach from the west and a single lane approach from the east. The junction consists of a signalised two-lane roundabout with two lanes at each stop line.

To the west of Painshill, the A245 is a D2 dual carriageway for a short stretch until it crosses Seven Hills Road (Seven Hills Junction). Seven Hills Junction is a signalised junction. West of Seven Hills, both the A245 towards Byfleet and Seven Hills Road towards Weybridge are single carriageways.

2.2.3 Ockham Interchange

Ockham Interchange is approximately 2.5km to the south of M25 J10 where it provides local access from Ripley, Ockham and surrounding areas. It has north facing slips only and the next junction to the south (Clandon) has only south facing slips. This junction is a non-signalised roundabout.

2.2.4 Along the A3

The A3 is a D3AP road (dual carriage way with three lanes in each direction) either side of, and through, the Ockham Interchange. Between Ockham and M25 J10 the A3 is a D3 road (dual carriage way with three lanes in each direction) but is only D2 between the M25 J10 slip-roads. The A3 is a D3 road (dual carriage way with three lanes in each direction) either side of, and through, the Painshill Interchange.

There are a number of minor junctions along the A3 between M25 J10 and Ockham Interchange. Southbound from M25 J10 , there is a junction with Old Lane on the southbound on-slip road. Just before the turn-off into Old Lane is a layby. After the point of merging of the on-slip is the junction with Elm Lane. Elm Lane provides access to a small number of dwellings and is signed as a non-through route. There is access only between Elm Lane and the southbound A3. There is no diverging lane at Elm Lane, and turning traffic has to slow down on the main carriageway; there is also

no merge lane onto the A3 from Elm Lane. Immediately after Elm Lane is a bus stop, presently served by Route 515 between Kingston and Guildford. Buses serving this stop must also decelerate and accelerate on the main carriageway.

On the northbound carriageway between Ockham Interchange and M25 J10 there is the junction with Wisley Lane, which leads to RHS Wisley Gardens. There is no access between Wisley Lane and the southbound A3. There is only a small length of diverging lane off the A3 into Wisley Lane. Traffic coming from Wisley Lane travels some 100m on a 'slip-road' before merging. This slip-road is also used as a bus stop and a layby. On the northbound on-slip there is an access road to Park Barn Farm.

Between M25 J10 and Painshill Interchange there are a number of residential accesses on to the A3 on both north and southbound carriageways in addition to access/egress from the San Domenico site.

2.2.5 Non-motorised user arrangements

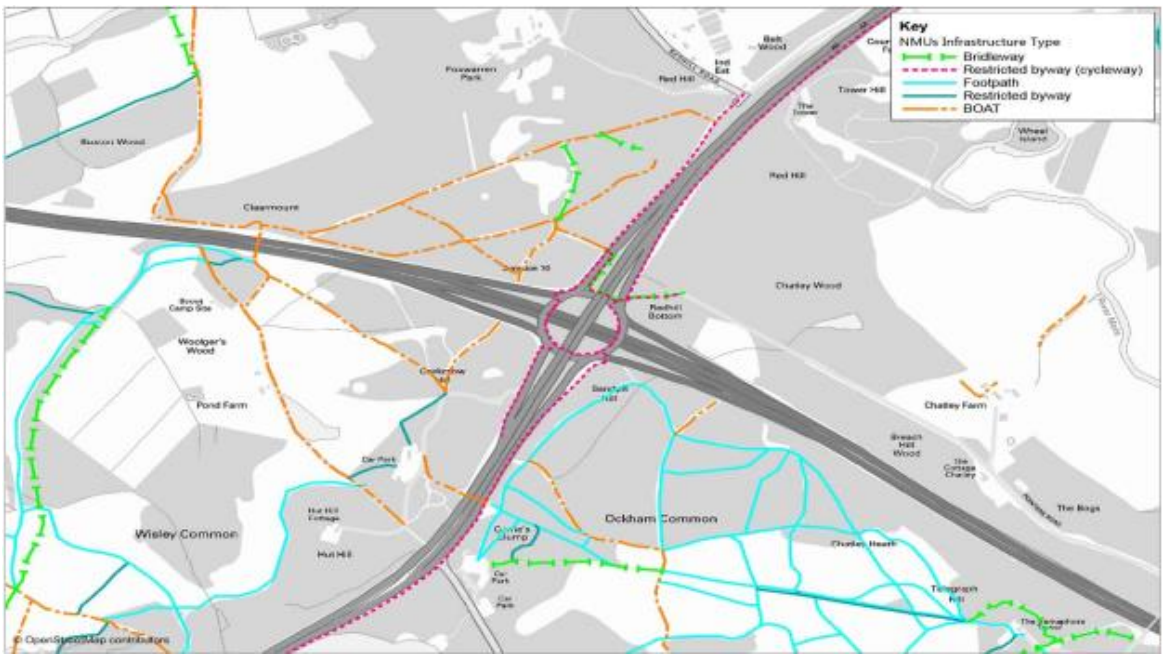
Several non-motorised user (NMU) routes have been identified within the study area around M25 J10. These are briefly described below and shown graphically in Figure 2-2.

Considering the land use in the local area (Wisley and Ockham Commons) as well as existing trip generators (Wisley RHS Gardens), it can be assumed that the NMU infrastructure mainly accommodates leisure movements. This is supported by the generally low flows of NMUs observed during a survey undertaken in 2015. Because of the low flows of users, it is difficult to assess a priority of importance to specific desire lines.

NMU infrastructure in the vicinity of the junction includes shared use paths, footways, paths, tracks and bridleways. There is also a Pegasus crossing at M25 J10 and a bridleway travelling east to west.

The NMU Context Report referenced a previous NMU assessment (*Integrated M25 DBFO Network Pedestrians, Cyclists & Equines Study)* which found a number of areas around the M25 J10 / A3 Interchange and the wider area where tactile paving, and/or dropped kerbs are of poor quality, or stepped access is the only means of accessing areas. Barriers to movement can present major safety issues for some of the most vulnerable road users, either resulting in risky behaviour or avoidance of travel.

Figure 2-2 M25 Non-motorised users – current arrangements



2.3 Current problems

2.3.1 Traffic

The western section of the M25 is the busiest in terms of annual average daily traffic flow (AADT) on the entire Strategic Route Network[2]. The two-way AADT between M25 J10 and J11 was 177,500 vehicles per day in 2016 whilst the two-way AADT on the section between M25 J10 and J9 was 158,000 vehicles per day. Traffic volumes on both links have been rising since 2013.

The A3 between M25 J10 and Ockham interchange to the south has a two-way AADT (in 2016) of 112,000 vehicles, whilst the A3 between M25 J10 and the Painshill interchange to the north had an AADT of approximately 90,000 in 2016.

The M25 J10 is a heavily used junction, with approximately 48,000 vehicles entering the roundabout from the A3 every day[3], and another 48,000 entering from the M25.

Based on counts collected from March 2015 between 08:00 and 09:00 around 7,600 vehicles make turning movements at the roundabout. Between 17:00 and 18:00 this figure is approximately 7,400. In both peaks, there are approximately 1000 vehicles on six of the possible eight turning movements; meaning the movements at the junction are both heavy and complex. The heaviest single movement is the A3 northbound left-turn to the M25 clockwise.

2.3.2 Accidents

In 2013 Highways England's National Intelligence Unit undertook some analysis on accident data across the Strategic Route Network (SRN) for the period 2009 to 2011. M25 J10 was found to have the highest number of casualties at any junction on the SRN for that period.

Whilst this analysis has not been updated by Highways England for a more current study period, accident and casualty statistics around the M25 network for the six-year period between 2010 and 2015 have been provided and supplemented with the Department for Transport's STATS19 dataset. An analysis of each junction on the M25 was undertaken to rank the junctions in terms of total collisions and total casualties over the six-year period. The M25 J10 is shown to have the fourth highest number of accidents on the M25, with approximately 33 accidents per year recorded in a 1km buffer including and around M25 J10.

The data was further broken down to analyse just those accidents which can be attributed purely to the junction (by removing all accidents on mainlines). In this instance M25 J10 has the third highest number of accidents (15 per year), and the highest number of casualties (28 per year) on the entire M25.

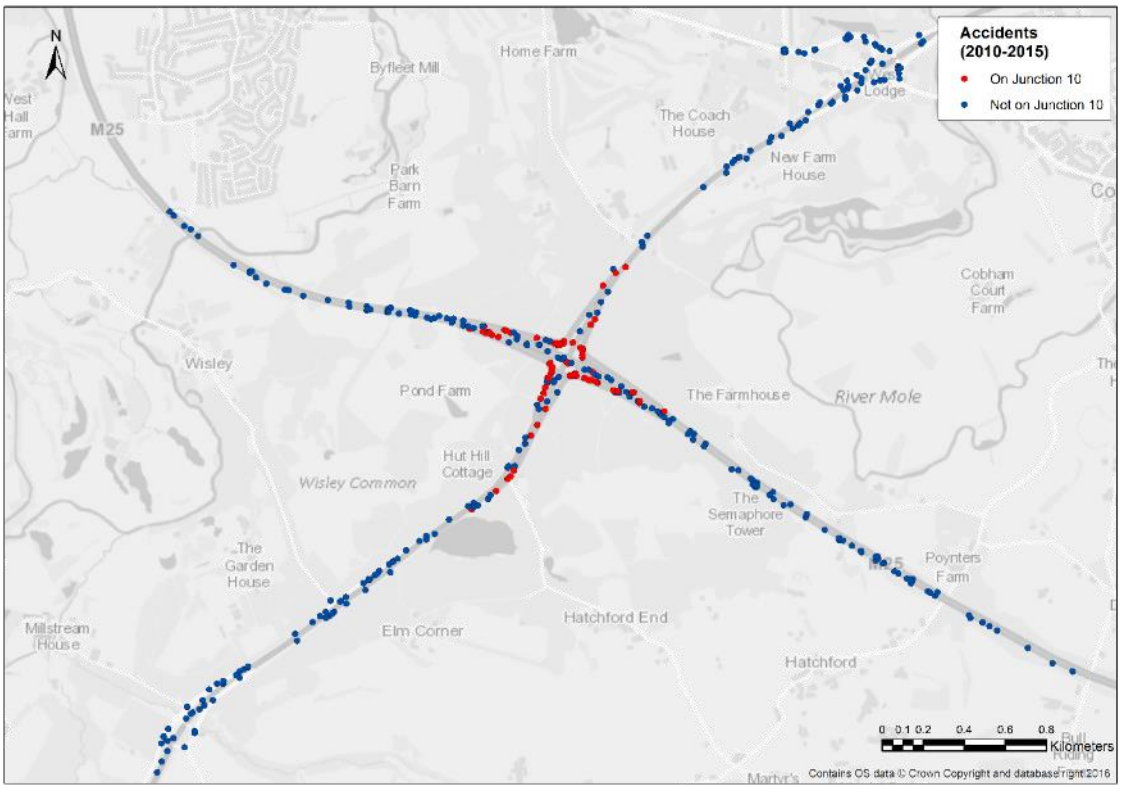
M25 J10 has more than double the average number of casualties at junctions on the M25 over the analysed period. Although there have been no fatal accidents at M25 J10 between 2010 and 2015, the percentage of serious accidents (7.6% of total number accidents) is close to the median percentage observed when all M25 junctions are considered (8.0%).

In addition, M25 J10 is shown to have significantly higher number of accidents and casualties compared to other M25 junctions which are of broadly similar nature, such as Junctions 23, 28 and 29. Moreover, M25 J10 has significantly greater accident rate compared to Junction 12, which also lies in the southwest quadrant of the M25 and has high volumes of traffic, but has a free-flow layout.

[2] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/610669/tra0303.ods
[3] Based on 2016 average AADT

Further analysis of accidents has been undertaken on a defined area of impact as shown in Figure 2-3 along with the location of all accidents. It is important to note that this area of impact is larger than the 1km buffer studied above for the comparative analysis and therefore values will be different).

Figure 2-3 Accidents near M25 J10 between years 2010 and 2015, by location



To determine local 'hotspots', accident rates for the links within the study area have been calculated by using STATS19 data for the period between 2010 and 2015.

The highest link accident clusters are observed on:

- M25 clockwise and anti-clockwise off-slips (9 and 13 accidents respectively)
- The northbound A3 off-slip (10 accidents)
- Western circulatory carriageway and A3 NB on-slip at Ockham interchange (10 accidents)
- Links in proximity to the access/egress at Wisley Lane (13 accidents)

High accident incidences are also observed on the A245/Seven Hills Rd junction (12 accidents), on the four M25 J10 roundabout signalised locations (33 accidents), as well in two of four signalised junctions of the A3/A245 Painshill Junction (11 accidents) and the A3 Ockham Interchange Junction (11 accidents).

2.3.3 Congestion and journey time reliability

Highways England no longer produce journey time reliability as a key metric, and therefore an updated version of the data provided in the Stage 1 Technical Appraisal Report cannot be provided. An analysis of Highways England journey time data[4] taken

[4] http://tris.highwaysengland.co.uk/detail/journeytimedata

from the TRIS dataset was therefore undertaken for investigating the reliability of junction turning movements at Junction 10, as well as on M25 and A3 mainline movements.

Journey time and traffic flow data have been analysed for the peak AM1 (07:00-08:00) and peak PM (17:00-18:00) hours of 88 days (normal weekdays of April, May, June, September, October 2015[5]), to calculate a Planning Time Index (PTI) for the movements around M25 J10. PTI is a method of determining the predictability of travel times which aims to measure the additional time (compared to free flow conditions) that drivers need to leave to ensure that they arrive on time. The PTI analysis provides a ratio of the 95th percentile travel time to the free flow travel time which is defined as the 20th percentile travel time. A PTI greater than 2 means that journey times could take double free flowing conditions.

The analysis suggests that in both the AM and PM peaks, PTI for turning movements is approximately 2 for the left-turns (both directions) from the A3 to the M25 with the left-turn from the A3 northbound to M25 clockwise having the highest PTI of all turning movements in the AM peak. The PTI on the mainline M25 clockwise has a PTI of 2.2 in the AM peak and 3.1 in the evening peak.

2.3.4 Vehicle delay

Highways England's Regional Intelligence Unit have provided statistics detailing the average delay during peak hours (weekday peak hours for averaged for 2015/16) that vehicles encounter at or near M25 J10. The delay statistics are expressed as seconds per vehicle per mile (sec/veh/mile). Average speeds data was also provided.

Highways England does not have a KPI target for delay but lower delay represents better performance. For the south east of England, the average delay was 8-10 seconds per vehicle per mile in 2016[6]. This value is typically exceed in the AM and PM peaks at the following sections on and around M25 J10, with the A3 northbound between Ockham and M25 experiencing delays in excess of 40 seconds per vehicle per mile:

- A3 northbound within the M25 junction
- A3 southbound between Painshill and M25
- A3 southbound within the Painshill junction
- A3 northbound between M25 and Painshill
- A3 northbound between Ockham and M25
- A3 northbound between M25 and Painshill
- A3 northbound between A245 and Ockham
- M25 anti-clockwise within J10
- M25 anti-clockwise between J11 and J10
- M25 clockwise within J10
- M25 clockwise between J10 and J11
- M25 clockwise between J9 and J10
- M25 clockwise between J9 and J10

[5] The latest available data
[6] http://www.orr.gov.uk/__data/assets/pdf_file/0017/23444/benchmarking-highways-England-performance-2016-progress-report.pdf

2.4 Environmental constraints

The M25/A3 Wisley Interchange lies within the Surrey Greenbelt and is surrounded by attractive woodland and heathland which has high environmental value. Principal amongst these is its designation as a Special Protection Area as part of the Thames Basin Heaths SPA which is an ecological designation of international importance. The qualifying species for the designation are three species of ground nesting bird – Woodlark, Nightjar and Dartford Warbler. In addition to its designation as SPA much of the area is also designated as a Site of Special Scientific Interest for its population of dragonflies, damselflies and other invertebrates. The area is also designated as a Local Nature Reserve, Habitat of Principal Importance and has several Sites of Nature Conservation Interest which reinforces its importance for nature conservation.

In addition to these ecological designations there are extensive areas of tree planting and woodland around the junction with several areas of Ancient Woodland, the closest to the scheme lying alongside the A3 at Painshill and several veteran trees in close proximity to the junction.

Large parts of the area around the junction are designated as Common Land or Access Land with a smaller area of Village Green at Elm Corner and some other areas having de facto public access. As such much of the area is used by the public for walking and informal recreation. There are some facilities for walkers/cyclists along the A3 on the southbound carriageway but they are in a poor state and a submission has been made to the Highways England Environment Designated Fund (Walking and Cycling) team to fund an upgrade to the facilities and provide a Disability Discrimination Act compliant footbridge to replace the existing one at Elm Corner. There are at-grade, controlled pedestrian and equestrian crossings at the M25 J10/A3 Wisley Interchange and several Public Rights of Way (PRoW) in the surrounding area.

RHS Wisley Garden is to the south west and Painshill Park is to the north east; are both designated as Registered Parks and Gardens of Historic Interest with Painshill being Grade I and Wisley Grade II*. There are several Noise Important Areas close to the M25 J10/A3 Wisley Interchange. No Air Quality Management Areas (AQMA) have been declared by the local authorities for the area immediately around the junction though there is one in Cobham to the north east and there are few human health receptors nearby.

There are four Scheduled Monuments in the area around the M25 J10/A3 Wisley Interchange and several Listed Buildings in the study area. There are no Source Protection Zones or groundwater water abstractions near the junction and flooding is not an issue although both the River Mole and River Wey are nearby and there is a large water body, Boldermere Lake next to the A3 south of the junction. There are several disused landfill sites that accepted inert waste in the study area and the sand and gravel geology means that the area is sensitive to pollution incidents.

An environmental constraints plan is provided in Appendix A.

2.5 Problems to be solved

The following problems and issues have been identified:

- There are no real alternatives that cater for the demands of orbital travel via other modes in this corridor
- The south west quadrant of the M25, where M25 J10 sits, is one of the busiest sections of the motorway network and experiences severe congestion
- Queueing occurs on the mainline A3 daily on the approach to M25 J10, causing knock-on impacts to junctions to the south of M25 J10 and as far back as Ripley to the south and Painshill to the north and even further back during incidents

- Part of the queuing problem is caused by the difficulty accessing the M25 clockwise due to congestion on the M25 but this is being addressed through a separate M25 J10-J16 scheme
- Traffic leaving the A3 at Painshill is often prevented from doing so because of local network congestion tails back from the A245 Seven Hills Road junction that is signal controlled
- The area around M25 J10 has one of the highest recorded collision rate across the M25 J10. Between 2010 and 2015 there were approximately 30 Personal Injury Accidents per year on or around M25 J10
- The land around M25 J10 and the A3 is of high environmental value and include Special Protection Areas and Sites of Special Scientific Interest
- facilities for walkers/cyclists along the A3 and at M25 J10 require improvement

Without appropriate intervention to improve the performance of M25 J10, each of these problems would be expected to deteriorate further in the future as traffic levels increase. This would result in significant consequences for the efficiency of traffic flow, road safety, network resilience, user satisfaction and environmental impact. Ultimately it will reduce the ability of the junction to perform its role in supporting local and regional aspirations for development and growth.

3 Planning Factors

3.1 Phase objectives

The scheme is currently in Stage 2 and the phase objectives are therefore to:

- take the shortlisted options to public consultation, analyse the comments received and undertake any relevant changes within the remit of the scheme
- update the traffic forecasts, environmental assessment, economic assessment and cost estimates
- recommend a preferred option to be taken forward to the project development phase.

3.2 Project objectives

One of the key aims of the Stage 0[7] work was to confirm the Strategic Case for improving the M25 J10; that is to test and confirm the nature and scale of the problems affecting the performance of junction.

This analysis had been achieved through a review of relevant evidence including information and data from previous and current projects looking at improvements to the junction. It also included engagement with Highways England. Based on this evidence review four key problems were confirmed:

- It one of the busiest interchanges in the country;
- It has one of the highest accident records on the SRN;
- It experiences frequent disruption and unreliable journey times; and
- It is an essential interchange in a growing region.

The project objectives align closely with the business strategies for Highways England, the Local Economic Partnership and for local and central government. The objectives are to reduce delay, improve road safety, cater for future traffic demands and to minimise the impact of high traffic volumes on the environment. Additionally, the Client Scheme Requirements sets out a number of other strategic objectives (Table 3-1).

Table 3-1 The high level transport objectives that the improvement should meet

Category	Objective
Route Operation	Support any projected traffic increases from other committed schemes on the strategic road network.
Capacity	Reduce the average delay (time lost per vehicle per mile) on the mainline A3. Smooth the flow of traffic by improving journey time reliability on the mainline A3.
Safety	Reduce annual collision frequency and KSI ratio on the mainline A3 and slip roads and M25 J10 gyratory.
Social	Support the projected population and economic growth in the area.
Environment	Treat noise important area's (IA's) where practical Support sustainable travel routes promoted by Surrey County Council and Developers. Improve biodiversity within the scheme if the opportunity exists.

[7] Road Investment Strategy – M25 Junction 10 Improvements, PCF0 Final Report (September 2015)

3.3 Key Legal Tests of Relevance

In addition to these objectives, there are a number of principal legal and policy tests that need to be taken into account in the selection of the preferred route for the M25 Junction 10/A3 Wisley Interchange Improvement. The scheme is likely to be a highway-related Nationally Significant Infrastructure Project (NSIP) on the basis that either of the options currently under consideration will be of a scale large enough to exceed the qualifying area of development thresholds stipulated in the Planning Act 2008.

At this stage in the scheme development process the focus has been to identify those tests that could potentially preclude the Secretary of State from being able to grant development consent, if a particular scheme option could result in a breach of the UK's international obligations or any duty imposed under UK legislation. The tests of most relevance to the consideration of options at M25 J10 scheme are as follows:

- The European Directive 2008/50/EC, Ambient Air Quality and Cleaner Air for Europe, transposed in to UK legislation by the Air Quality Standards Regulations 2010, which would prevent consent from being granted for any scheme that would result in non-compliance with legally binding limit values for prescribed pollutants, including nitrogen dioxide (NO2) and particulates of less than 10 microns (PM10). The annual limit values for both are 40 ug m3.
- The European Directive 2000/60/EC, *Establishing a Framework for the Community Action in the Field of Water Policy*, transposed in to UK legislation by the Water Environment (Water Framework Directive) (England and Wales) Regulations 2003 and the Water Industry Act 1991 (Amendment) (England) Regulations 2009. This legislation would prevent consent being granted for any scheme likely to cause deterioration in water quality status; or prevent a waterbody from achieving good ecological status; or compromise the achievement of water framework directive objectives in other classified water bodies within the same catchment.
- The European Directives 92/43/EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna and 2009/147/EC on the Conservation of Wild Birds, which are transposed in to UK legislation by the Conservation of Habitats and Species Regulations 2010 (as amended by the Conservation of Habitats and Species (Amendment) Regulations 2012). These directives would prevent development consent from being granted for any scheme that would give rise to an adverse effect on the integrity of a European site (a Special Protection Area or a Special Area of Conservation), either individually or cumulatively, unless there was no less damaging, feasible alternative; that there were Imperative Reasons of Overriding Public Interest and that suitable compensation could be secured.
- The European Habitats Directive 92/43/EEC and Habitats Regulations 2010 as amended would also prevent consent and/or a mitigation licence from being granted for any scheme that would harm or disturb a European Protected Species, unless there were no satisfactory alternatives; that the favourable conservation status of the species would be maintained and that the development would be in the public interest.
- The Wildlife and Countryside Act 1981, as amended by the Countryside and Rights of Way Act 2000, which would prevent development consent from being granted for any scheme that would disturb or harm nationally protected species, unless there were no satisfactory alternative solution.

In addition, under Section 104 (7) of the Planning Act 2008, development consent cannot be granted for any scheme if the benefits of that scheme do not outweigh its adverse impacts overall.

4 Summary of do nothing consequences

4.1 Context

In this instance, doing nothing refers to leaving M25 J10 and the A3 between Ockham Interchange and Painshill Interchange unchanged from its current layout. The widening of M25 as part of the M25 J10-J16 scheme is assumed to take place and several other schemes described in the Traffic Forecasting Report.

Furthermore, an assessment of Local Plans, which feature development plans for approximately the next 20 years, shows that Elmbridge is planning for over 2,000 new homes, Woking is planning for over 4,600 new homes and Guildford is planning for approximately 12,000 new homes.

4.2 Social impacts

The boroughs of Elmbridge, Woking and Guildford are generally quite affluent and house prices are typically above the national average. This creates the problem of people being unable to purchase homes where they might like and contributes to local skills shortages[8] and potentially greater commutes.

4.3 Route operation and capacity impacts

4.3.1 Traffic

Table 4-1 presents the forecast traffic flows in the *without intervention* scenario for several links on and around M25 J10.

The two-way AADT between M25 J10 and J11 is expected to be 220,000 vehicles per day in 2037 whilst the two-way AADT on the section between M25 J10 and J9 is expected to be 153,000 vehicles per day. This is equivalent to an 24%-22% increase of traffic volumes on these links since 2016.

The A3 between M25 J10 and Ockham interchange to the south is forecast to have a two-way AADT (in 2037) of around 144,000 vehicles, whilst the A3 between M25 J10 and the Painshill interchange to the north is forecast to have an AADT of approximately 127,000 in 2037. Traffic volumes are expected to rise 28% and 41% respectively since 2016.

Traffic at M25 J10 is also forecast to increase in the future years, with approximately 67,000 vehicles expected to be entering the roundabout from the A3 every day[9], and another 58,000 entering from the M25 in 2037.

Table 4-1 Future year *without intervention* traffic flows

Link	AADT			AADT % change from Base scenario	
	Observed	2022	2037	2022	2037
M25 between J10 and J11 (two-way)	177,500	193,900	219,900	9%	24%
M25 between J10 and J9 (two-way)	158,000	167,300	193,300	6%	22%
A3 between M25 J10 and Ockham interchange (two-way)	112,000	120,200	143,600	7%	28%

[8] http://www.guildford.gov.uk/newlocalplan/CHttpHandler.ashx?id=24372&p=0
[9] Based on 2016 average AADT

Link	AADT			AADT % change from Base scenario	
	Observed	2022	2037	2022	2037
A3 between M25 J10 and the Painshill interchange(two-way)	90,000	101,800	126,900	13%	41%
Vehicles entering J10 from the A3	48,000	56,700	66,900	18%	39%
Vehicles entering J10 from the M25	48,000	50,300	57,900	5%	21%

4.3.2 Vehicle delay

Without intervention, vehicle delays during the peak hours are expected to rise significantly on the links on and around M25 J10 because of increased traffic demand. Table 4-2 presents the average vehicle delay during the peak hours for several links on the A3 and M25.

The A3 northbound movements are likely to experience high delay increases, with delay in 2037 expected to be 4-5 times higher compared to the base scenario (in year 2015). Average delay on the M25 clockwise between J9 and J10 link is expected to increase by 44 seconds by 2037. The widening of M25 as part of the M25 J10-J16 scheme is likely to result in lower delay increases or delay decreases on the M25 between J10 and J11 between 2037 and 2015.

Table 4-2 Forecast Average Vehicle Delay (seconds) at M25 J10 *without intervention* – Peak hours

Scenario	Base (2015)	Without intervention 2022	Without intervention 2037
A3 southbound between Painshill and M25	8	12	22
A3 northbound between M25 and Painshill	8	11	35
A3 northbound between Ockham and M25	19	44	101
M25 anti-clockwise between J11 and J10	76	79	94
M25 clockwise between J10 and J11	43	23	32
M25 clockwise between J9 and J10	27	47	71

As shown on Table 4-3, average delay throughout Junction 10 is expected to increase by 28% between years 2037 and 2015, in the *without intervention* scenario.

Table 4-3 Forecast Delay at M25 J10 – AM and PM Peak hours

Scenario	Total Delay (Veh-hrs) at M25 J10	Average Vehicle Delay (s)	% Delay increase from Base
Base - 2015	1,020	123	-
Without intervention - 2022	1,298	146	19%
Without intervention - 2037	1,725	188	28%

4.4 Safety impacts

Table 4-4 presents the expected number of accidents and casualties in the *without intervention* scenario, as forecast in the COBA-LT analysis for the affected road network. The number of accidents and casualties are expected to gradually decrease through the years in the Without intervention scenario, albeit in a slower rate compared with the *with intervention* scenarios.

The forecast decrease in accidents is attributed to the standard assumption that accident rates are decreasing over time. This reduction in accident rate offsets the impact of the traffic growth through the same period.

Table 4-4 Number of accidents and casualties in the *without intervention* scenario

Scenario	Number of accidents	Number of casualties
Base (2010-2015 annual average)	80	126
Without intervention- 2022	72	115
Without intervention- 2037	68	110

4.5 Environmental impacts

The M25 Junction/A3 Wisley Interchange lies within some of the most environmentally sensitive land in the region with much of the area covered by international and national designations. The existing highway arrangements and traffic on them has an adverse impact on the surrounding area.

The high volumes of traffic and the frequent congestion at the junction and in the network around it give rise to significant levels of air pollution. A result of this traffic congestion is the designation of Air Quality Management Areas in Cobham and at several other locations along the M25 towards Heathrow. It also gives rise to raised levels of nitrogen deposition on the ecologically sensitive areas adjacent to the highway boundary. Similarly, noise is an issue in the area with the concrete surface of the M25 and high traffic volumes giving rise to high noise levels with several Noise Important Areas on the local network. As well as it's impact on human health noise also has an adverse effect on the ground nesting birds that are a key species of the Thames Basin Heaths Special Protection Area. The scheme gives the opportunity to tackle these problems and improve the environment for human health receptors and for the fauna of the designated land.

Much of the land around the junction is designated as Common or Access land where the public has the right to roam but the M25 and A3 and poor provision for NMU's restrict this access. Implementing a scheme at M25 J10 could give the opportunity to reduce the severance effect of the existing infrastructure and enhance the accessibility of the land. It would be possible to link up the land and attractions of Wisley, Painshill and historic features to make the area more attractive to visitors. The scheme also gives the chance to correct some of the historical anomalies of land ownership that were left over from when the M25 was built in the 1980's. A comprehensive approach to the land around the junction could enable the ecological value of the land to be enhanced under a management plan that could see habitat linkages to be restored with the use of green bridges for example. The opportunity could also be taken to update the current water pollution measures and make the local environment better protected from normal road run off and pollution incidents.

4.6 Conclusion

Without intervention to M25 J10, the likely outcomes include:

- M25 J10 being a constraint on the wider SRN caused by the inadequate capacity of the junction and the increasingly high traffic demands from proposed developments and would act as an inhibitor to economic growth
- average delays across many movements will increase by four to five times that experienced at present (and could be more)
- the ability of the junction roundabout to remain open and available in the event of an accident or incident will diminish
- ongoing local air quality issues will be exacerbated and the local environment would remain fragmented and provided reduced amenity to non-motorised users.

5 Summary of alternative schemes

5.1 Option constraints

5.1.1 Design

The RIS submission in 2014 assumed that the solution would be substantially within the highway boundary. However, a preferred option may require substantial amounts of land acquisition around M25 J10 which is predominantly in the ownership of Surrey County Council but with a significant number of other land owners potentially affected by the options being considered.

5.1.2 Neighbouring development

On the A3 north of M25 J10 (London bound) the site known as the San Domenico Restaurant has been given consented approval for a hot food takeaway at the Coach House site. Whilst there were no safety concerns about this proposal, the impact of further development on the site could be a concern.

A proposed residential development at Wisley Airfield adjacent to the A3 at Ockham, which presently has had its planning application refused, is anticipated to generate a significant number of additional trips on the network should an appeal or new application be approved. Further to this, Guildford Borough Council's Draft Local Plan proposes new north facing junctions to the A3 at the A247 Burnt Common interchange to mitigate the impact of the level of strategic planned growth and the development traffic flows resulting from the development of a new settlement at the former Wisley airfield site.

RHS Gardens Wisley has growth proposals to increase visitor numbers at its already successful site.

5.1.3 Environment

There are a wide range of sensitive areas adjacent to or close to the junction including: Site of Special Scientific Interest (SSSI), Special Protection Area (SPA), Ancient Woodland, Scheduled Monuments, Listed Buildings and Registered Parks and Gardens.

There may be issues with air quality and noise depending on traffic volumes and speeds. M25 J10 is situated in land of high environmental value, with the majority being managed by the Surrey Wildlife Trust. Much of the area surrounding the junction is Registered Common Land. The design and construction will need to be sensitive to this and the constraints and opportunities presented by the scheme will need to be well communicated.

Although the area around the junction is designated as a Special Protection Area as part of the Thames Basin Heaths SPA the quality of the habitat is variable but fragmentation will reduce its quality. The scheme presents the opportunity to expand, connect and enhance the habitat under a comprehensive management plan which could reduce the impact of the SRN in line with Highways England's licence. Similarly, the various parcels of common and access land could be rationalised, expanded and connected better to rectify some historical land ownership issues and provide a better experience for the public.

Noise from the M25 and A3 which blights much of the area could be addressed with a comprehensive set of noise mitigation measures to provide new or enhance existing provision for the benefit of local people. Other environmental opportunities include new planting to improve the setting and reduce visual impact, better pollution prevention systems and new access and interpretation for the historical features and facilities in the area. All these measures would help fulfil Highways England's Licence commitment to *enhance* the environment.

5.1.4 Operation

The M25 is a route of high strategic, international (European Route E15), national, and regional importance and therefore works associated with construction must not unduly affect the operation of the network. Buildability constraints including:

- making all lanes available to the very busy M25 and A3 during the day and continued access throughout reduce lane operation at night;
- minimising excavation of existing highways and works sequencing; and
- potential extension of existing structures adjacent to live running lanes

5.1.5 Interdependencies

The success of the M25 J10 improvement will be partially dependent on the successful implementation of the M25 J10-J16 improvement scheme. Without the implementation of this project, benefits for traffic movements from the A3 to the M25 westbound may not materialise and any blocking back on to the A3 would affect other A3 movements.

Whilst not directly dependent, the scheme will also have an impact on the success of improvements proposed to the A3 at Guildford which is a RIS 2 scheme; and any delay to the M25 J10 improvement could limit the success of the A3 Guildford scheme.

Regarding other projects in the wider vicinity, the M23 Smart Motorway Programme could affect this quadrant of the M25 and the Government's response to the Davis Commission, and whether further and substantial growth at Heathrow will materialise, is also likely to affect this section of the M25 and M25 J10 to some degree.

5.2 PCF Stage 0 – Strategy, shaping and prioritisation

During the ***Strategy, Shaping and Prioritisation*** stage the key problems at M25 J10 were identified and strategic options that give high level consideration to a range of alternatives dealing with transport supply and demand, included options for different modes as well as different scales of highway intervention, were considered. Based on this assessment a strategic option focussing on localised highway improvements at M25 J10 and Painshill interchange was confirmed as the preferred solution. The key factors in selecting this strategic option recognised that:

- Although a multi-modal approach would assist in reducing highway demand it would not reduce demand sufficiently to meet the scheme objectives due to the wide range of journey origins and destinations of traffic that uses M25 J10;
- a highway proposal is strongly aligned to addressing the local problems identified for M25 J10;
- it is assumed that the M25 J10-J16 improvement scheme will alleviate problems on the M25 mainline that affects M25 J10; and
- it can be delivered within the RIS1 period.

5.3 PCF Stage 1 – Option Identification

The ***Option Identification*** stage considered scheme options that progressively addressed the scheme objectives to deliberately highlight the possible trade-offs between meeting scheme objectives, achieving the scheme budget and acknowledging the uniquely important land around M25 J10, which is covered by international/national ecological designations:

- Option 9 retains the existing roundabout but adds a fourth level layout to provide free-flowing right turns from the A3 to the M25 whilst also providing free-flowing left turns.
- Option 14 involves modifying the existing roundabout by elongating the existing roundabout with additional lanes to provide more circulatory capacity and enable

more traffic to discharge the roundabout whilst also providing dedicated left turn lanes still subject to signal control.

- Option 16 removes the roundabout and replaces it with a cyclic layout (similar to M25 J12) that provides free-flow for all traffic movements.

A complementary set of changes to Painshill Interchange has also been developed that widens the carriageway on the A245 to three lanes in each direction between Painshill Junction and Sevenhills junction. The upgrading of the A3 to D4AP standards between Ockham and Painshill and consequent changes to the accesses to the A3 were also developed and applied to all options.

The review of the evidence demonstrated that whilst only Option 16 would meet the aim of the study by providing the free-flowing movement in all directions, together with improvements to the neighbouring Painshill Interchange on the A3 to improve safety and congestion across the two sites as specified in the RIS; it would exceed the scheme budget and require the largest land take (requiring 30ha more than Option 9). The economic analysis shows that the extra expenditure, compared with Option 9, would not deliver extra benefits and therefore consultation was undertaken with a recommendation for rejecting Option 16. Feedback from consultation agreed with the recommendation, and a request to alter the wording of the RIS was made to the DfT.

5.4 PCF Stage 2 - Option Selection

The focus of the earlier stages of the study was options at M25 J10 / A3 Wisley Interchange, although fully feasible schemes were devised during these stages. During this stage the two options for M25 J10 were reviewed as follows:

- Option 9 - retaining the existing roundabout but adding a fourth level layout to provide free-flowing right turns from the A3 to the M25 whilst also providing free-flowing left turns.
- Option 14 - involving modifying the existing roundabout by elongation, with additional lanes to provide more circulatory capacity and enable more traffic to discharge the roundabout whilst also providing free-flowing left turns.

In addition to the improvements at M25 J10, the scheme also includes widening the A3 from D3AP to D4AP in both directions from Ockham to M25 J10 and M25 J10 to Painshill (the A3 at the M25 J10 interchange would remain D2AP). The widening of the A3 will necessitate the closure of existing direct accesses to the A3 and alternative provision will be made and options have been developed and are discussed below.

Option Selection therefore entails not only selecting an option at the M25 J10 but also for the various side road access options. To make the assessment easier we have consider the scheme as a series of components.

5.5 Scheme components

Following a review of the consultation responses and detailed discussions with stakeholders a long list of side road options along the A3 was generated (Appendix B). These long lists were assessed at an internal workshop of Atkins and Highways England transport, environmental and design professionals in February 2017 and whilst some elements of the scheme are considered single options (highlighted in bold below) a number of side road solutions still have options to be determined.

The full scheme, split into its components is described below and shown in Figure 5-1:

M25 J10 / A3 Wisley Interchange

- Option 9 - retaining the existing roundabout but adding a fourth level layout to provide free-flowing right turns from the A3 to the M25 whilst also providing dedicated free-flowing left turns.

- Option 14 - involving modifying the existing roundabout by elongation, with additional lanes to provide more circulatory capacity and enable more traffic to discharge the roundabout whilst also providing dedicated free-flowing left turns.

A3 Ockham to M25 J10 (including Wisley Lane) access

- WIS-01 - Northern two-way link road between Ockham Junction and Wisley Lane running parallel to A3 mainline
- WIS-10 - Southern two-way link road from Wisley Lane routed under or over the A3 carriageways to Ockham Junction running outside the Ancient Woodland and Common Land
- CAMP-02 - Two-way Access Road connecting Deers Farm Close to Birchmere Scout Campsite and Park Barn Farm

A3 Elm Lane access

- ELM-05 - Elm Lane to Old Lane and M25 J10 slip road to access onto A3 southbound. Access road 4.8m wide and 530m long

A3 M25 J10 to Painshill access

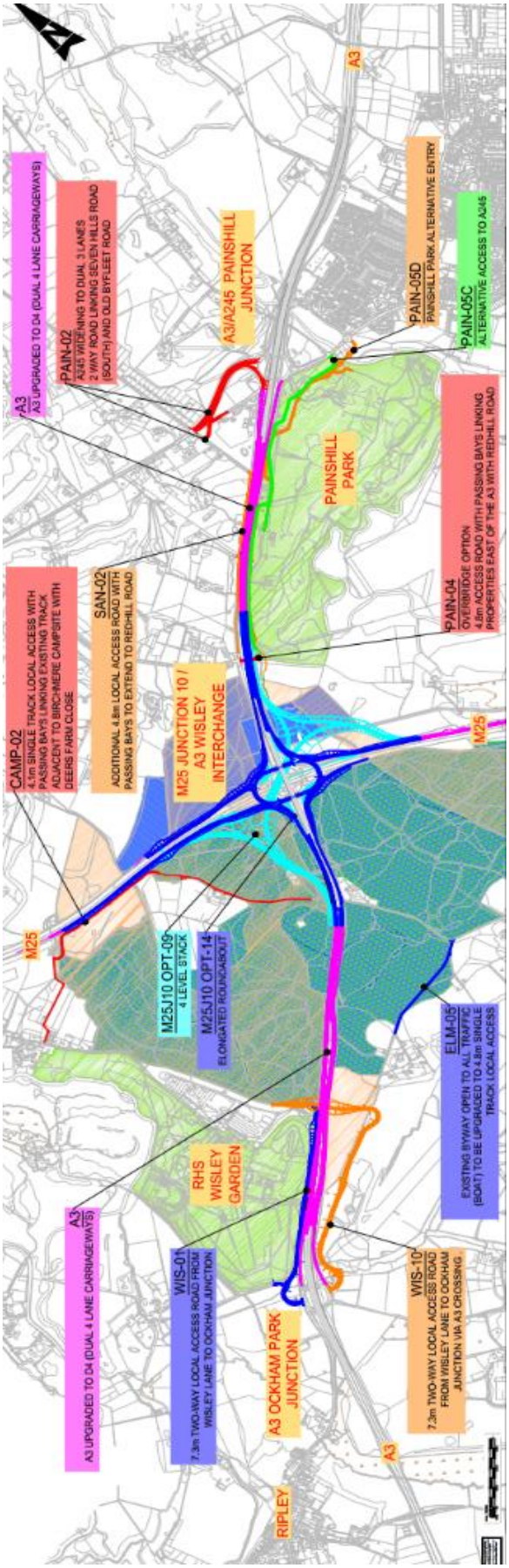
- SAN-02 - Local Access Road from Long Orchard to Seven Hills Road south and footway/cycleway Redhill Road to Long Orchard. Local access 4.8m with passing bays (180m+290m)
- PAIN-02 - Widening of A245 from Painshill Junction to Seven Hills Road junction to dual 3 lanes. Felton Fleet School access road 7.3m wide between Seven Hills Road (South) and Old Byfleet Road (120m). Right turn and exit into A245 to be closed

A3 Painshill to M25 J10 access

- PAIN-04A - Service road running parallel to A3 southbound from Gas compound to New Farm and Gothic Tower with Bridge over A3 to Redhill Road and A245, Byfleet Road.
- PAIN-05D - Service road running parallel to A3 southbound from Painshill to New Farm and Gothic Tower via Painshill to alternative entry to A245 roundabout on A245 Portsmouth Road.

It was widely noted during the consultation that there was a strong desire to improve provision for non-motorised users. This is a study objective and will be actioned but it was agreed that improved provision would be considered during PCF Stage 3, once the scheme options had been selected.

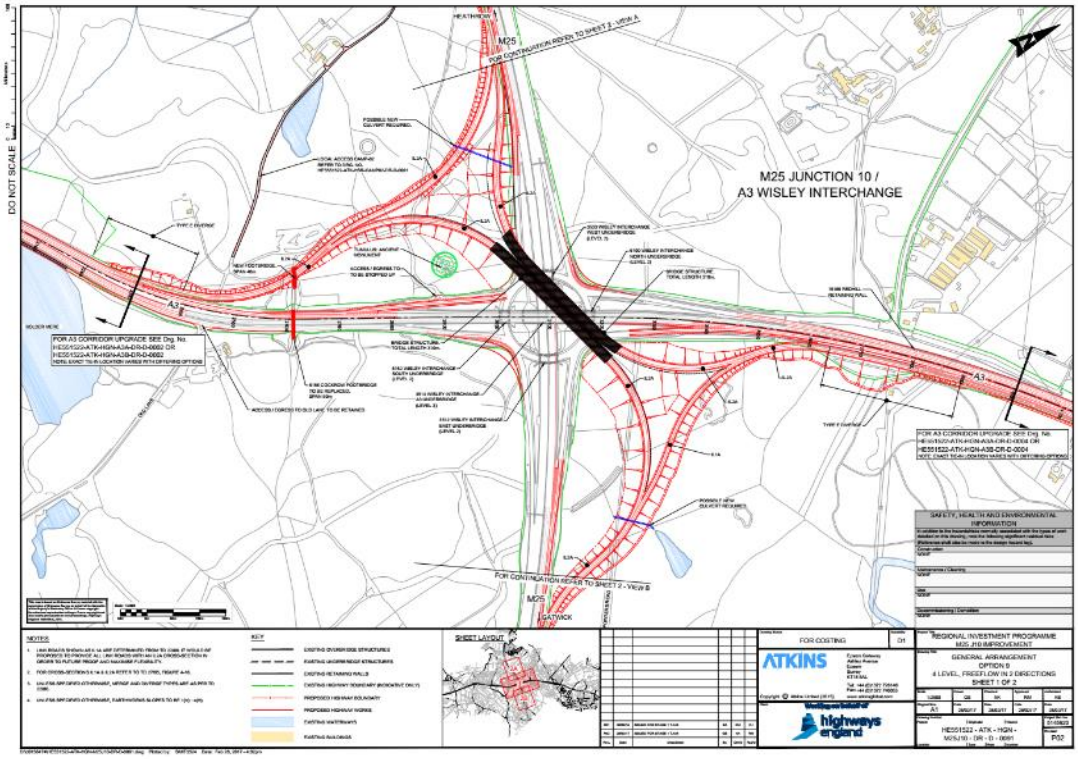
Figure 5-1 Scheme layout selected options



5.5.1 M25 J10, Option 9 - Four level free-flow in two directions

This option is based on providing half the movements of a standard four level free-flow interchange, with the busiest right turns (and accompanying left turns) from the A3 to the M25 being provisioned. The option consists of diverges from the A3, located upstream of M25 J10 in both directions. The two-lane exiting link roads from the A3 then bifurcate to provide two lanes of free-flow movement to both directions of the M25. Each new free-flow link road will consist of two lanes and comply with the standards of TD 27/05 for dimensions of cross-section components for rural motorway connector roads. Following bifurcation each right turn is provided on a medium span viaduct at level four, passing immediately north-west of the centre of the existing junction with intermediate supports to fit within the constraints of the existing junction layout.

Figure 5-2 M25 J10 Option 9



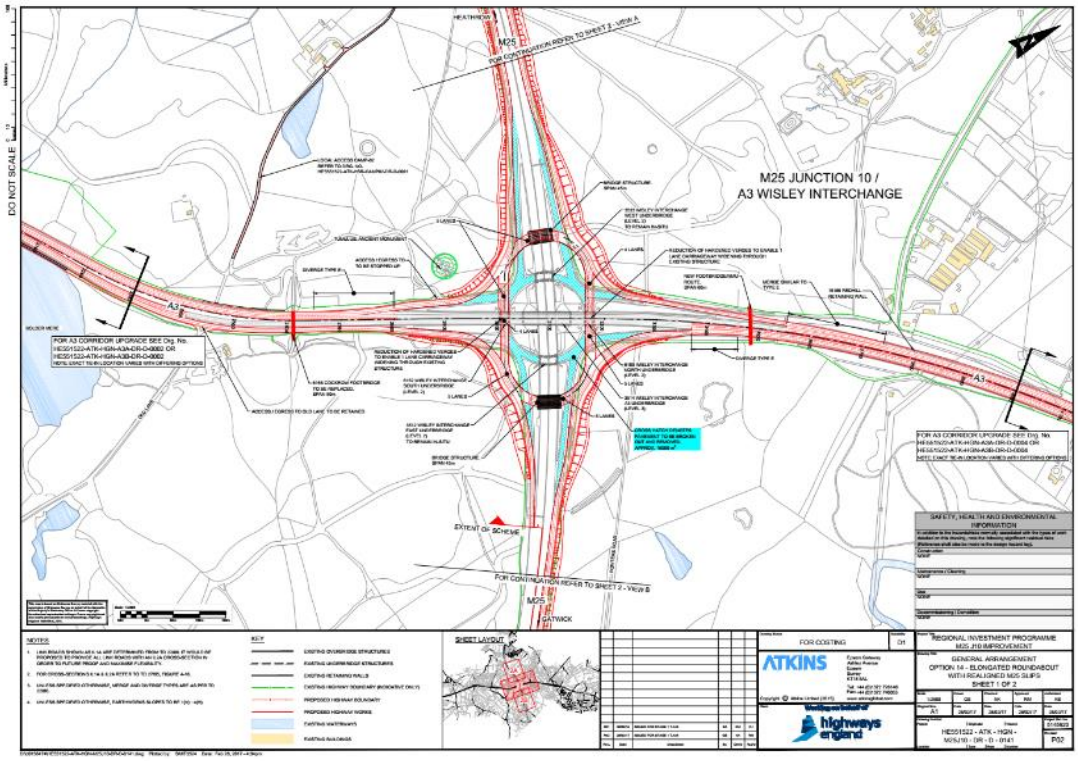
Refer to Drg. No's: HE551522-ATK-HGN-M25J10-DR-D-0091 & 0092 in Appendix C.

The layout of the current M25 J10 roundabout and slip roads all remain in operation as existing. Dedicated left turn filter lanes will be added for the two M25 to A3 movements. The reduction in roundabout traffic will allow greater green signal time and result in greater junction capacity. The existing slip roads and roundabout provide a 'U' turn facility and offer residual back-up in the event of any future closure of the new links.

5.5.2 M25 J10, Option 14 - Elongated roundabout + dedicated left filters

This option involves modifications to the existing roundabout including the provision of new bridges over the M25 and the reuse of the existing underbridges below the A3. The circulatory carriageway through the underbridges would be widened from three to four lanes with five lanes of circulatory carriageway being provided where unconstrained by the existing structures. Right turns would be carried out on the modified roundabout and left turns would use new dedicated left turn filter lanes (not under signalised control).

Figure 5-3 M25 J10 Option 14



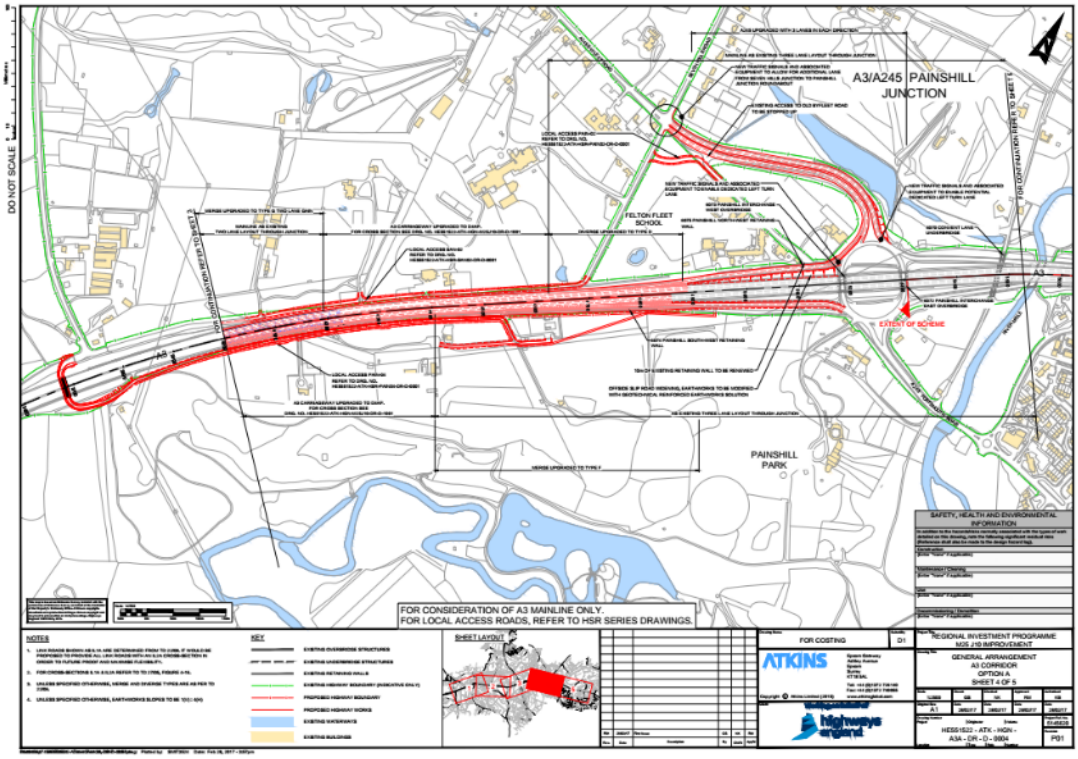
Refer to Drg. no's HE551522-ATK-HGN-M25J10-DR-D-0141 & 0142 in Appendix C.

5.5.3 Painshill Junction and A245 to Seven Hills Road Junction

The existing Painshill Junction is a grade separated roundabout with overbridges spanning the A3 D3AP carriageway. The junction is connected to the A3 with two-lane merge and diverge slip roads. To the east the A245 Portsmouth Road connects to Cobham and Esher. Painshill Junction roundabout is signalised. The A245 western arm is formed of a D2AP link road that connects to the signalised Seven Hills Road junction (crossroads). Ahead the A245 Byfleet Road connects to Byfleet and Weybridge. The right turn destinations are Hersham and Walton-on-Thames. The left turn, Seven Hills Road (South) provides local access only, including the Hilton Hotel.

Due to the constraints of Painshill Park to the south east and Felton Fleet School to the south west there is limited opportunity for major improvements. The southbound merge two-lane slip road will remain largely unaffected, forming the lane gain for widening of the A3 to D4AP. The A3 D3AP and north facing slip roads will be affected by the scheme. The existing northbound diverge two-lane slip road will become a lane drop. The proposal is to widen the slip road to three lanes commencing downstream of the back of nose. At the signalised junction, an island will provide a dedicated left turn onto the A245 Byfleet Road.

Figure 5-4 Painshill Interchange



Refer to Drg. no's HE551522-ATK-HGN-M25J10-DR-D-0164 in Appendix C

The A245 link road that connects Painshill roundabout to Seven Hills Road Junction will be widened from D2AP to D3AP. The access for Felton Fleet School would be amended to provide a safer arrangement than existing, as detailed below (PAIN-02).

5.5.4 A3 Corridor

Widening of the A3 from D3AP to D4AP would be required for both Option 9 and Option 14 and has a number of impacts. Through M25 J10 the existing two lanes of the A3 in both directions would remain to avoid structural modifications to the existing flyover and two underbridges. The central reserve arrangement needs to be further considered as the design develops: The likelihood would be to use a concrete road restraint system that would connect to the gantry supports. Lighting columns would be likely to be positioned in the verges.

The introduction of free-flow link roads and the resultant footprint of Options 9 would result in a reduction of weaving lengths based on design criteria of existing speed limits. This may result in speed limits of 50mph and/or 60mph along short sections of the A3 scheme limits. The introduction of a fourth lane would also result in several side roads that currently have direct access to the A3 being closed off. This results in those accesses/egresses affected having localised diversions to other local roads and being segregated from the A3 trunk road.

Any existing lay-bys or bus stops over this section of D4AP would also be removed. Items mentioned above (i.e. cross-section, weaving and speed limit) would be subject to Departures approvals and are described further below.

The philosophy adopted is based on the requirements of TD 41/95, 'Vehicular Access to All-Purpose Trunk Roads', which are to provide safe movement where the speeds are high and any direct vehicular access on to trunk roads will be strictly limited. The required widening from D3AP to D4AP causes an increase in safety issues which is further exacerbated by shortened weaving length between the main junctions. As a result, all existing direct accesses on the A3 mainline are proposed to be closed. This

action will also future proof against further modification works because of the implementation of Expressway standards. Refer to Doc. No. HE551522-ATK-HGN-1-RP-C-2900, 'Impact Assessment Report, Implementing Expressway Standards on the M25 J10 scheme'.

Side Roads and direct accesses affected by the A3 widening to D4AP are:

- On the A3 southbound: Gas compound, New Farm House, Heyswood Girl Guide Campsite, Court Close Farm, Painshill Park delivery access, Old Lane and Elm Lane.
- On the A3 northbound are: Wisley Lane, Hut Hill/Birchmere Scout camp, Long Orchard House and Euro Garages/San Domingo.

Old Lane junction with M25 J10 slip road would be retained, all other direct accesses to the A3 noted above would be stopped-up.

All direct accesses that are to be stopped up due to the carriageway widening are typically connected by parallel side roads, new or existing sections of road.

5.5.5 A3 Ockham to M25 J10 (including Wisley Lane) access

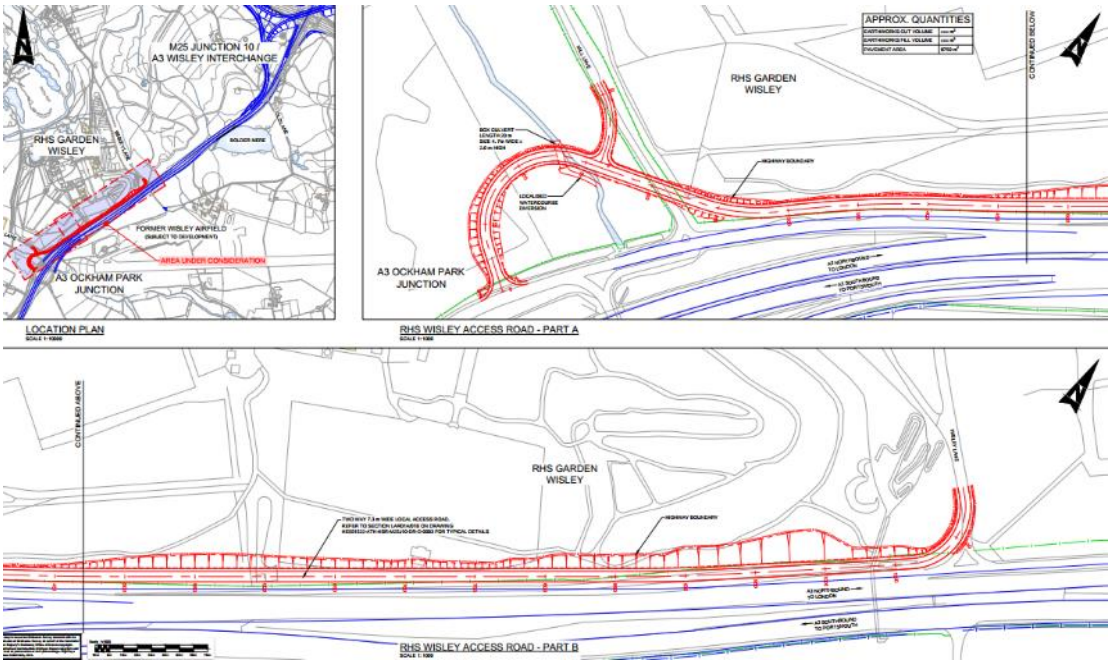
Wisley Lane links the A3 northbound carriageway with the villages of Pyrford, West Byfleet and Wisley and also to the public car park at RHS Garden Wisley. The existing access/egress to Wisley Lane via the A3 is a segregated parallel grade separated 'T' junction. Two alternative options taken forward for further development are Options WIS-01 and WIS-10. Access to Pond Farm is also affected and our proposal this and Elm Lane are described below.

WIS-01- Northern two-way Link Road

In this option a two-way link road running between Ockham Junction and Wisley Lane parallel to the A3 northbound carriageway is proposed. The diversion commences at Wisley Lane and continues parallel to the Ockham Junction northbound slip road until it meets Mill Lane and then connects to the western side of Ockham roundabout.

This will improve and reduce the existing conflict on the A3 due to weaving, diverging, and merging traffic movements for Wisley Lane. This results in a safer entry to the A3 for merging traffic from Wisley Lane using the on-slip lane and gain safer access for Wisley Road traffic to and from the A3 via Ockham Junction. This will result in a strip of land taken from RHS Garden Wisley and may affect several large trees which may need removal.

Figure 5-5 WIS-01- Northern two-way Link Road



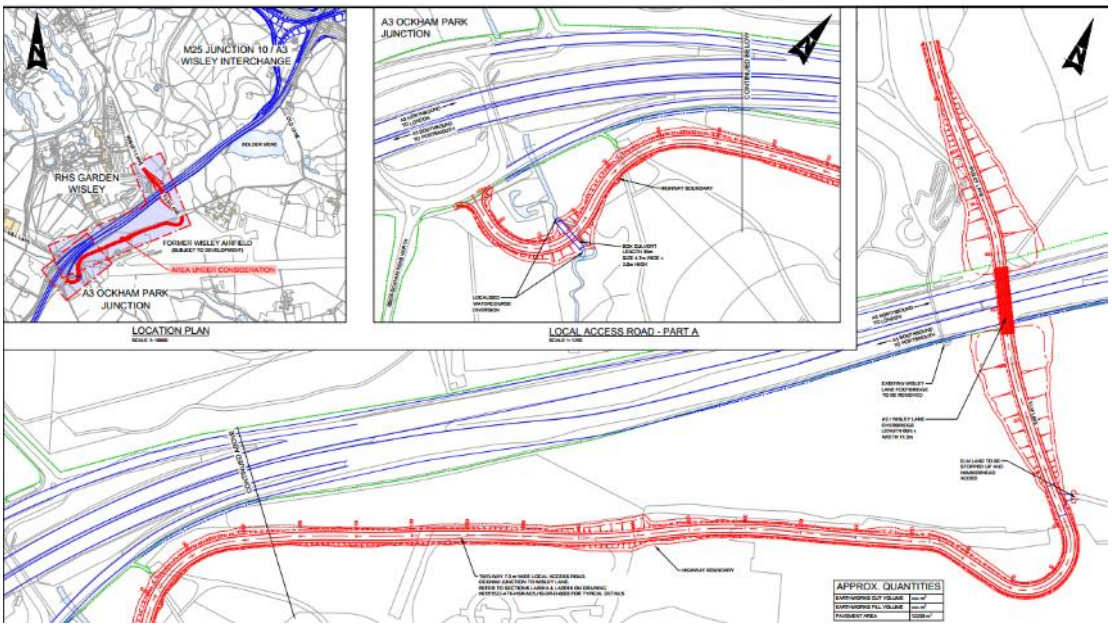
Refer to Drg. No. HE551522-ATK-HSR-WIS01-DR-D-0001 in Appendix C.

WIS-10 - Southern Two-way Link Road

In this option an overbridge from Wisley Lane to the south east side of the A3 with a two-way link road parallel to the A3 southbound carriageway to Ockham Junction is proposed. The diversion commences at Wisley Lane with an overbridge spanning the A3 carriageways, along the existing Elm Lane alignment to beyond the woodland where the route turns to the south to connect to the eastern side of Ockham roundabout. This will result in a safer access for Wisley Road traffic to and from the A3.

The route is outside the Ancient Woodland and common land skirting the border of the former Wisley Airfield site.

Figure 5-6 WIS-10 - Southern Two-way Link Road



Refer to Drg. No HE551522-ATK-HSR-WIS10-DR-D-0001 in Appendix C.

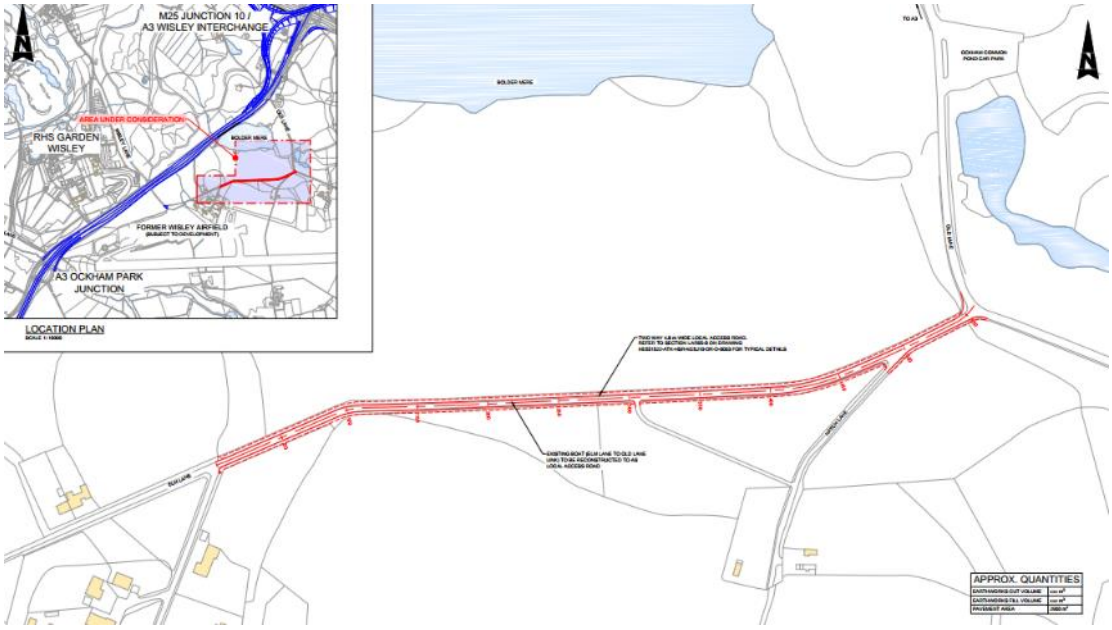
5.5.6 A3 M25 J10 to Ockham access

Elm Lane Option

The existing Elm Lane access/egress is located on the A3 southbound carriageway between M25 J10 and Ockham Junction. Elm Lane direct access/egress to the A3 would be stopped up and traffic re-routed via the local road network. Following the sifting workshop, the ELM-05 (BOAT) option was taken forward.

The existing link Byway Open to All Traffic (BOAT) from Elm Lane to Old Lane to be re-classified as public highway and upgraded to two-way link road. The existing track would be upgraded to an asphalt carriageway, 4.8m approximately 530m long with passing places. Old Lane (on A3/M25 J10 southbound slip road) would be retained with modified improvements.

Figure 5-7 Elm Lane Option ELM-05



Refer to DRG. No. HE551522-ATK-HAC-ELM05-DR-D-0001-P02 in Appendix C

Access road to Pond Farm, Hut Hill Cottage and Birchmere Scout camp site

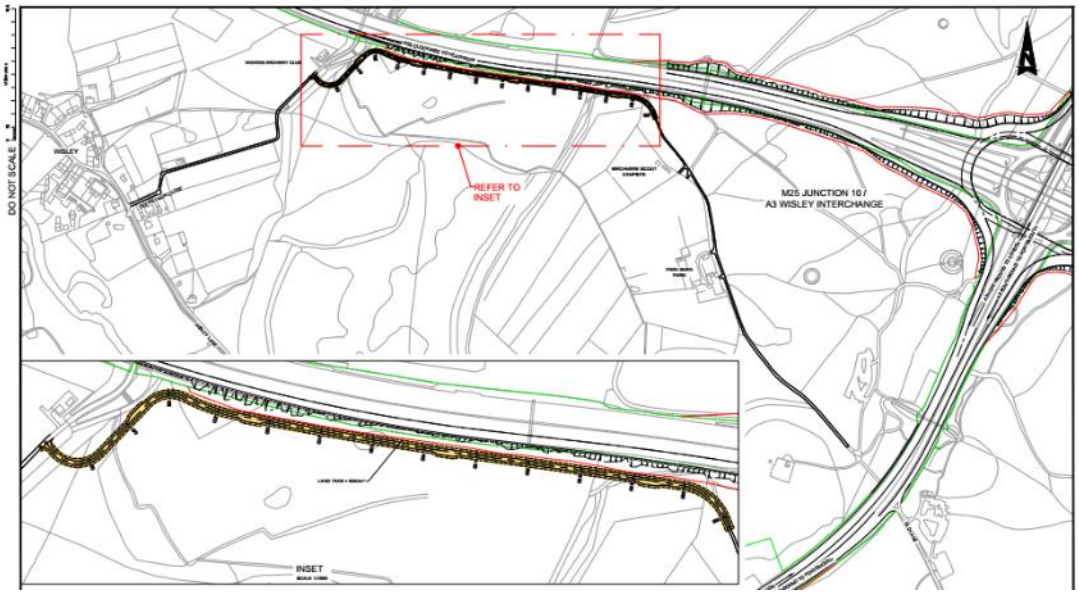
The existing access/egress road to Pond Farm, Hut Hill Cottage and Birchmere Scout camp site is via a left in/left out junction on the northbound diverge of the A3/M25 J10 slip road. The existing access road on the M25 J10 Slip Road would be stopped up.

From the sifting workshop, the CAMP-02 option for access to Pond Farm, Hut Hill Cottage and Birchmere Scout camp site was taken forward.

In this option a two-way access road connecting Hut Hill Cottage, Pond Farm and Scout Camp to Wisley Lane and Deer Farm Close via Wisley Common is proposed. The two-way access road is proposed to be approximately 750m long and 4.2m wide with passing places.

This will result in a safer access for Hut Hill Cottage, Pond Farm and Scout Camp to Wisley Lane and Deer Farm Close via Wisley Common.

Figure 5-8 Access road to Pond Farm, Hut Hill Cottage and Birchmere Scout camp site



Refer to Drg. No. HE551522-ATK-HSR-WCAMP02-DR-D-0001 in Appendix C

5.5.7 A3 Painshill to M25 J10 access

The existing direct access from the A3 southbound carriageway to Court Close Farm, Heyswood Campsite, New Farm and the Gas compound would be stopped-up. Their access is rerouted via a new service road adjacent to the A3 southbound carriageway with a connection to the A245 Byfleet Road or A245 Portsmouth Road. However, an access for emergency vehicles to Painshill Park from the A3 may be retained whilst Painshill deliveries will be routed via the new service road above. From the sifting workshop the following two options are taken forward for further development, Options PAIN-04 and PAIN-5D:

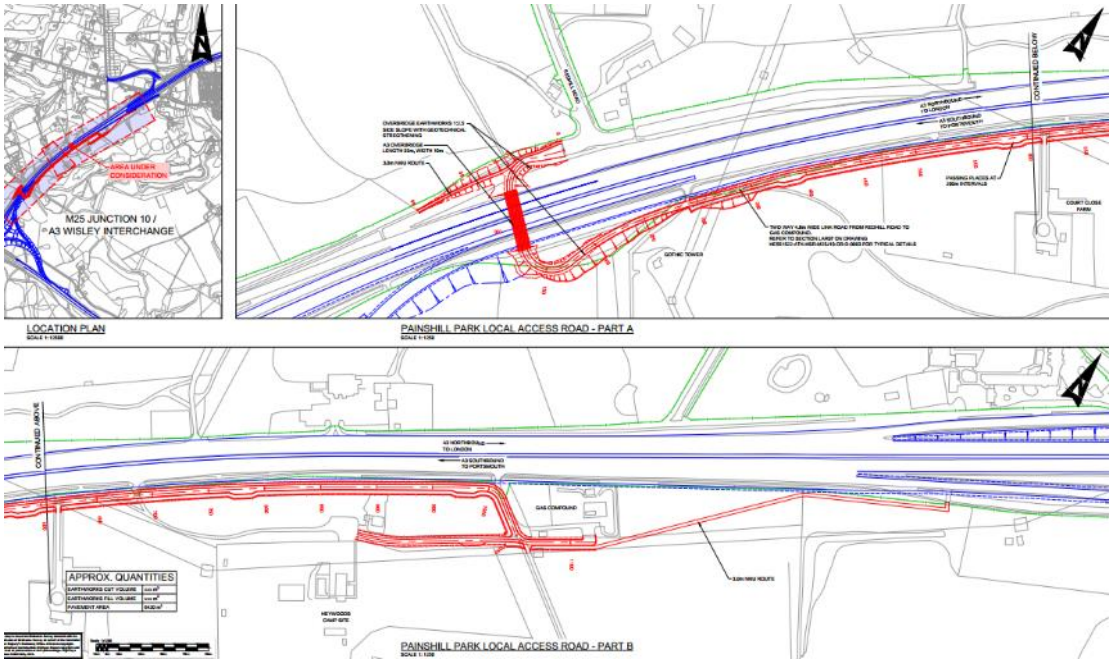
PAIN-04

The local access would run from the Gas compound, New Farm and Heyswood Campsite and would be connected to a new side road adjacent to the A3 southbound carriageway. The route would then pass over the A3 carriageways via an overbridge to Redhill Road and connect to the A245 Byfleet Road.

PAIN-5D

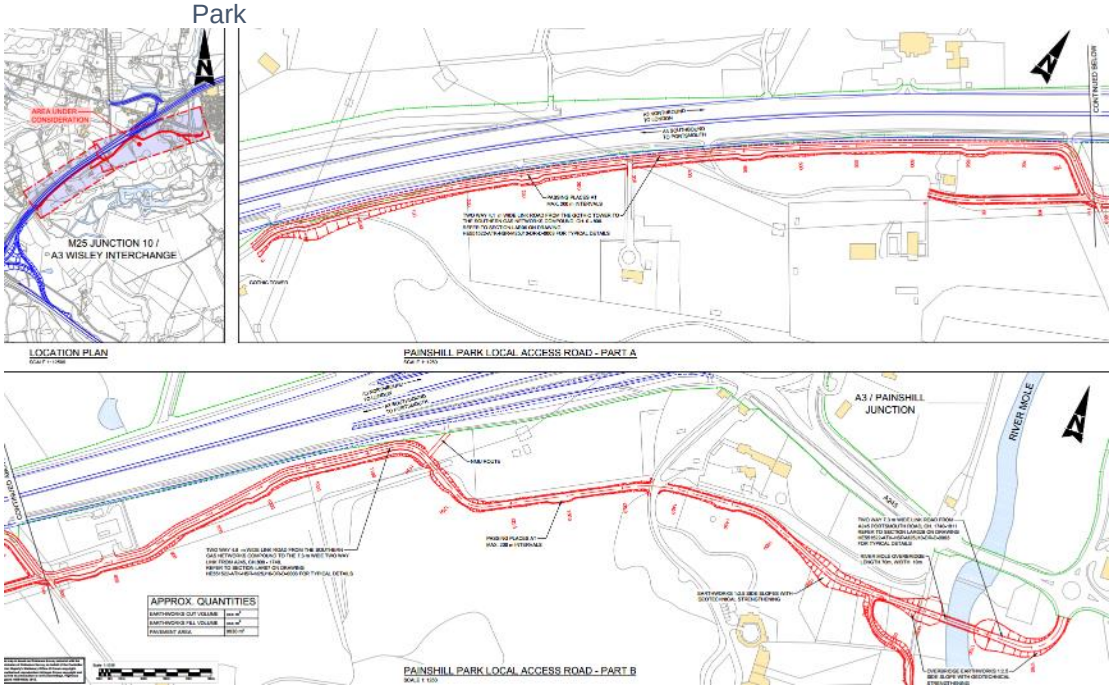
The local access to Court Close Farm, Heyswood Campsite, New Farm and the Gas compound would be served via a new side road adjacent to the A3 southbound carriageway. The route would then pass to the rear of the Gas compound, skirt he outer boundary of Painshill Park before passing alongside the Painshill residential properties, parallel to the A245 Portsmouth Road and connecting to the existing roundabout on A245. The Service road proposed would be 4.2m to 4.8m wide with passing bays and bridge over River Mole. The service Road would span the River Mole with a new bridge parallel to the existing bridge and would provide a new delivery access to Painshill Park landscape garden.

Figure 5-9 PAIN04 - Access to properties adjacent to A3 southbound towards Painshill Park



Refer to Drg.No. HE551522-ATK-HSR-PAIN4A-DR-D-0001 in Appendix C

Figure 5-10 PAIN5D - Access to properties adjacent to A3 southbound towards Painshill Park



Refer to Drg. No. HE551522-ATK-HSR-PAIN05D-DR-D-0001 in Appendix C

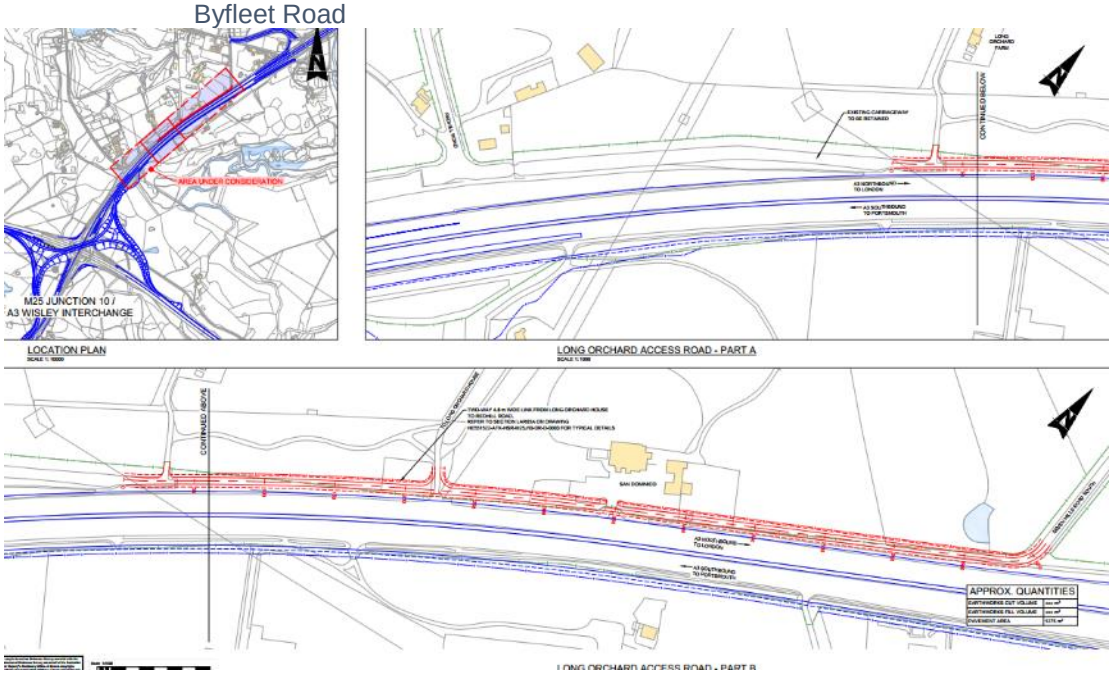
5.5.8 A3 M25 J10 to Painshill Access

SAN-02

The existing direct access to Long Orchard House and San Domenico (Euro Garages) would be stopped-up. Their access would be rerouted via a new side road adjacent to the A3 northbound carriageway with a connection to Seven Hills Road (South) and the A245 Byfleet Road. Following the sifting workshop the SAN-02 option was taken forward.

Access for Long Orchard House and San Domenico (Euro Garages) would be rerouted via a side road from Long Orchard House and San Domenico to Seven Hills Road (South). An NMU route from Long Orchard House to Long Orchard Farm is also proposed. Demountable bollards would be provided to prevent vehicle access.

Figure 5-11 Access to properties adjacent to A3 northbound towards Silvermere and A245 Byfleet Road



Refer to Drg. No. HE551522-ATK-HSR-SAN02-DR-D-0001 in Appendix C

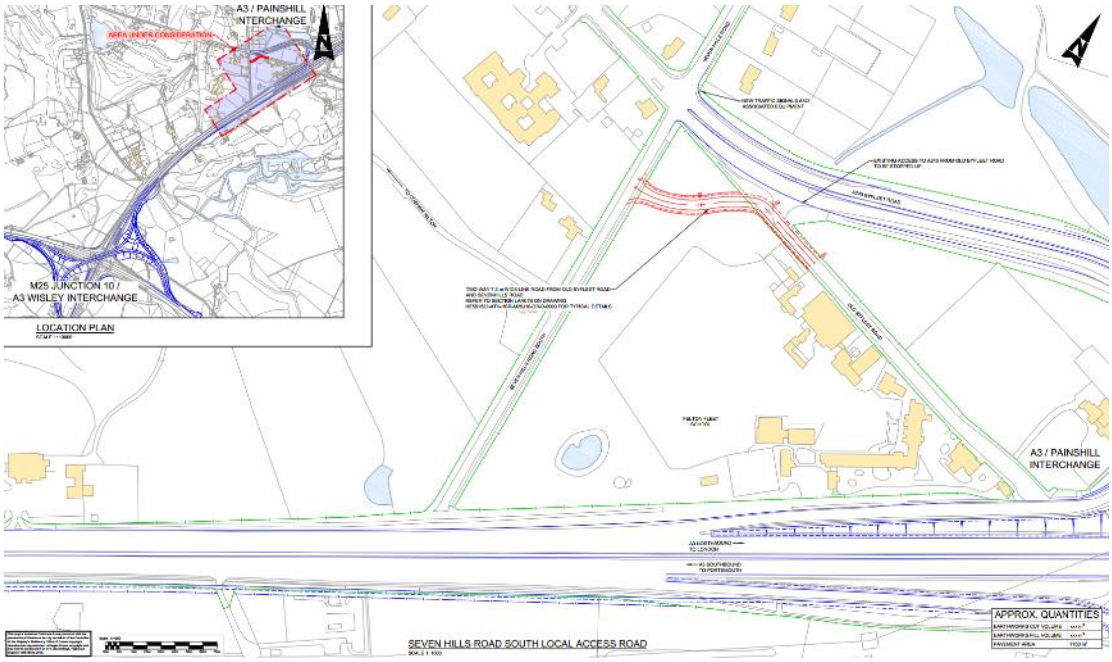
PAIN-02

In this option the A245 link road that connects Painshill roundabout to Seven Hills Road Junction will be widened from D2AP to D3AP. Following the sifting workshop the PAIN-02 option was taken forward.

The exit from Old Byfleet Road (Felton Fleet School) to the A245/Byfleet Road would be stopped up and only a left in entry from the A245 provided. The existing central reserve opening on the A245 would be closed off to remover right turn movements. The school entrance would be rerouted via a new two-way link road from the Old Byfleet Road into Seven Hills Road (South) and have all traffic entering and exiting (other than stated above) via the signalised junction.

This proposal was discussed with the stakeholder. The realigned access road passes through an existing wooded area within the school land.

Figure 5-12 A245 Byfleet Road and access to Felton Fleet School



Refer to Drg. No. HE551522-ATK-HSR-PAIN02-DR-D-0001 in Appendix C

5.6 Departures from Standard

A meeting was held with Highways England Design, Safety, Engineering & Standards on 9th May 2017 to discuss the Departures from Standard that may be required for the scheme.

The Departures that are required for the preferred options are as follows:

- Dual 4 lane all-purpose road not covered by standards
- Weaving length less than 1000m for an all-purpose road – A3 J10 to Painshill Junction and Painshill Junction to Junction 10
- Weaving length less than desirable on interchange links
- M25 J10 anticlockwise merge not to standard
- M25 J10 vertical profile following existing alignment not to standard
- M25 J10 southbound on slip road existing junction with Old Lane retained

Highways England Design, Safety, Engineering & Standard agreed in principle to the above Departures subject to submission of adequate information to back up the submissions. An additional departure was identified regarding headroom on the M25 J10 circulatory carriageway A3 being less than standard however this has now been resolved.

The Departures for alternative arrangements would be subject to further discussion.

5.7 Constructability

A PCF Stage 2 level Constructability Report was undertaken by Skanska in March 2017. Whilst it covered all the scheme components described above, its focus was the issues surrounding the construction of M25 J10, namely Option 9 or Option 14. The report highlighted the following issues with those two options as summarised below.

Option 9 – advantages:

- Minimal disruption to the public, as the bulk of works can be built off line.
- Minimal traffic management phases needed, limited risk to the workforce.

- Bridge slide minimises the need to work over the live carriageway.
- Less risk to programme, as less interface with the existing road layout.

Option 9 – disadvantages:

- Large amount of imported earthworks fill material needed and placement of it will need to be done on a 24hr basis to ensure the project is delivered within a 2-year duration

Option 14 – advantages:

- The works can be built within the proposed two-year period
- Less demand on imported materials than Option 9

Option 14 – disadvantages:

- Building the elongated roundabout necessitates construction of temporary traffic management detours outside the perimeter of the permanents works area. An additional 16875m^2 of land will be required, plus 10000m^2 for a satellite compound located adjacent to the junction and 20000m^3 of temporary fill material. It would also be difficult to relocate the permanent works slip roads further away from the existing slip roads and maintain a compliant alignment through the existing interchange under bridges. It is highly likely that the requirement for temporary detours will be necessary, which will also have to be removed at the end of the project
- Multiple traffic management switches and temporary tie-ins will be needed, increasing the risk to the workforce and disruption to the public

Overall from a buildability perspective Option 9 is a less risky option, as much of the work can be done off line with minimal disruption to the travelling public, providing imported fill material can be obtained from secure sources

5.8 Scheme options and costs

The information presented above has focused upon components rather than combinations of components that would comprise the M25 J10 / A3 Wisley Interchange schemes. The scheme costs have been provided by Highways England Commercial Team at a scheme level. As the side road components are interchangeable with either M25 J10 option, there are eight possible scheme combinations as shown in Table 5-1 and option estimates (excluding portfolio risk) have been produced by Highways England Commercial Planning team during PCF Stage 2.

Table 5-1 Scheme components

Scheme	J10	Ockham to J10	Painshill to J10	Common components	Cost
1	Option 9	WIS01	PAIN04	A3 widening ELM05 CAMP02 SAN02 PAIN02	£228,803,873
2	Option 9	WIS10	PAIN05d		£239,589,049
3	Option 9	WIS01	PAIN05d		£232,506,575
4	Option 9	WIA10	PAIN04		£235,807,665
5	Option 14	WIS01	PAIN04		£177,194,048
6	Option 14	WIS10	PAIN05d		£185,078,369
7	Option 14	WIS01	PAIN05d		£178,940,159
8	Option 14	WIA10	PAIN04		£181,750,923

6 Summary of traffic & economics

6.1 Introduction

This section focuses on the traffic modelling and appraisal work undertaken to test the impact of the proposed scheme options at PCF2. The methods used are in accordance with the standards and requirements as specified by the Transport Appraisal Guidance (WebTAG) and have been discussed and agreed throughout with Highways England S&P Transport Planning Group.

Throughout Section 6 and Section 7, this report will refer to Option 9 and Option 14 rather than specific scheme elements. In most instances the side road options do not contain enough traffic for them to be considered as having a significant impact on the performance of a strategic transport model. For clarity, we have modelled the scheme components as follows:

M25 J10 / A3 Wisley Interchange

- Option 9 – fully modelled
- Option 14 – fully modelled

A3 Ockham to M25 J10 (including Wisley Lane) access

- WIS-01 – fully modelled as an indicative access for Wisley Lane
- WIS-10 – tested using localised junction modelling
- CAMP-02 – not modelled as traffic volumes would be very low

A3 M25 J10 to Ockham acess

- ELM-05 - not modelled as traffic volumes would be very low

A3 M25 J10 to Painshill access

- SAN-02 - not modelled as traffic volumes would be very low
- PAIN-02 – fully modelled

A3 Painshill to M25 J10 access

- PAIN-04A - not modelled as traffic volumes would be very low.
- PAIN-05D - not modelled as traffic volumes would be very low.

6.2 Traffic modelling

6.2.1 Base model

The PCF Stage 2 M25 J10 model has been developed through refinement of the M3M4 model (produced by Mouchel for the M3 M4 managed motorways project), itself based upon the M25 Assignment Model. Amendments were made during PCF Stage 1 to extend the simulation area to include M25 J10 and to provide a present year validation to 2015. At PCF Stage 2, the refinements to the model have comprised:

- extension of the simulation area to include M25 J9 and associated local roads;
- update of the traffic count database used for matrix estimation to March 2015 (for consistency with the SERTM), using data from the SERTM database, TRADS and the surveys on local roads conducted for this study in November 2016;
- recalibration of the model for a 2015 base year
- validation of the model for 2015 against journey time data

The simulation area boundary for the original M3M4 model is shown in Figure 6-1, and Figure 6-2 shows the additional simulation links added for the M25 J10 study.

The above work and the results of the 2015 calibration and are described in the M25 Junction 10/ A3 Wisley Interchange Local Model Validation Report (PCF2) dated March 2017.

Figure 6-1 Extent of M3/M4 strategic model (Mouchel)

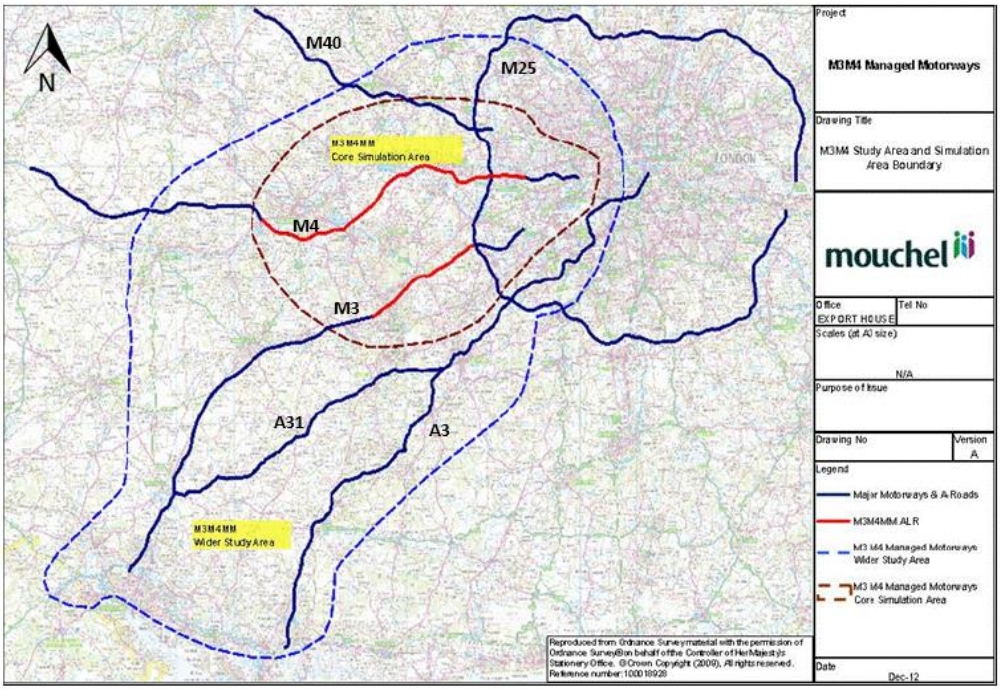
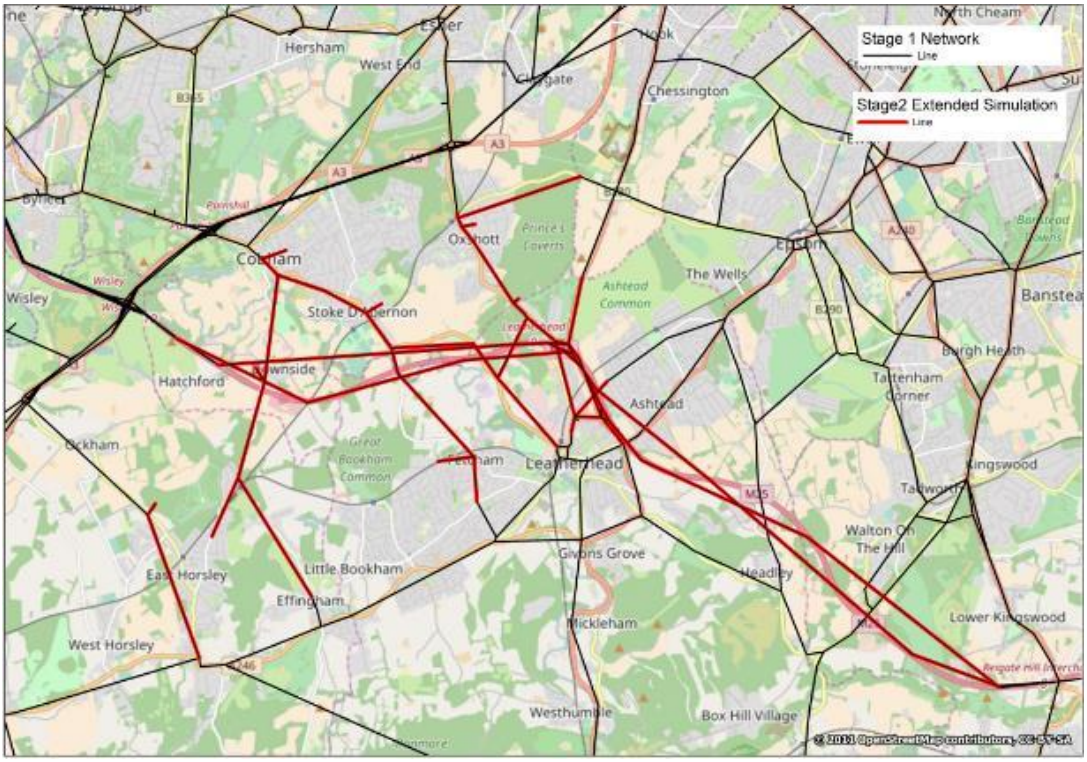


Figure 6-2 Extended simulation area



The M25 J10 PCF2 model is predominantly identical to the existing M3M4 validated model being used to support the M3 and M4 Smart Motorway schemes. The changes made to the M3M4 model for the M25 J10 scheme have focused upon addition of

simulation coding at M25 Junctions 9 and 10, adjacent junctions on the A3 and local roads in the immediate area. The M3M4 model matrices were refined at PCF1 with substitution of select link matrices for turning movements at M25 J10 taken from the validated Surrey model of the Wisley area, these matrices form the basis of those for the PCF2 model.

The 2015 calibration for the M25 J10 PCF2 model shows that the model is close to achieving WebTAG criteria, with more than 80% of flows (link flows for the M25 and A3 together with turning flows at M25 J10) passing the individual link criteria in all time periods, and the 85% criteria achieved in two of the four time periods.

Flow calibration for the M25 between Junctions 9 and 17, the A3 between Send and Oxshott, and the turning movements at M25 J10 is very good, with all flows achieving both WebTAG difference and GEH criteria except one flow on the A3 which just exceeds the GEH criteria.

Link speeds on congested sections of the motorway network are less well represented in the M3M4 and M25 J10 models, particularly in the peak periods. The IP model meets WebTAG criteria, but the congested peak period models tend to under predict journey times. This is due to the inability of standard (WebTAG compliant) speed flow curves to provide adequate representation of very slow speeds during flow breakdown conditions. This does not materially affect the modelling of traffic flows which, as noted above, validate very well for the flows through and around M25 J10. The effect of the under representation of flow breakdown conditions when using the model for forecasting will result in a tendency to under forecast scheme benefits and thus provide a conservative assessment of the scheme. This is due to flow breakdown conditions occurring more frequently in the without intervention case than the with intervention cases, resulting in over-estimation of without intervention speeds and thus under-estimation of speed improvements provided by the with intervention schemes.

6.2.2 Future demand

Demand forecasting was undertaken using the M3M4 variable demand model (VDM) which follows WebTAG guidelines. This model provides:

- forecasts of changes in travel demand over time, because of changes in land-use, economic growth, travel costs and committed transport supply changes
- forecasts of the responses of travel demand to changes to the transport system, such as improvements to existing roads, the construction of new roads, and implementation of highway demand management schemes

Planning data for the area surrounding M25 J10 was collected and assessed to establish a log of ‘near certain’ or ‘more than likely’ developments to be included in the core scenario in accordance with the guidance in WebTAG unit M4. Development planning data has been obtained from Elmbridge, Woking and Guildford Borough Councils and represents the current expectations of their emerging Local Plan site allocation studies.

Thirteen highways schemes proposed in the local area were included in the forecast year models. The schemes of most relevance to the M25 J10 scheme are the M25 J10-16 Smart Motorway scheme and the proposed widening of the A3 Guildford bypass scheme between the A31 and north of Guildford. The latter scheme is only included in the 2037 network and as it is outside the simulation area is represented by the adoption of higher fixed speeds for the improved links.

The highway model matrices have been interrogated to determine which trips use, or could use M25 J10, to complete their journey in the base and future year without intervention scenarios. By 2037 analysis shows that potential demand for trips that currently use M25 J10 is forecast to increase by 4,060 in the AM peak. In the without intervention scenario only 860 of these trips are forecast to pass through M25 J10 with

the rest taking alternative routes. This implies that that there is not sufficient capacity at the junction to meet future demand. The same analysis has been conducted for the 2037 with intervention scenarios. Both Option 9 and Option 14 models show that not only do all 4060 trips are forecast to route through M25 J10 (due to the improvement to capacity) but an additional 1,100 trips from routes (or time periods) which previously didn't use M25 J10 in the AM peak, have also been attracted to the junction to complete their journey.

6.2.3 Impact on the road network

In the future year without intervention scenarios the increases in throughput at the junction compared with the base are modest, whereas total and average delays show large increases. This indicates that the junction is operating at capacity with small increases in flow resulting in disproportionately large increases in delay. For example, between 2015 and 2037 the forecast throughput increases by 5% in the AM1 period (07:00-08:00) whereas the average delay increases by more than 40%.

Both scheme options provide significant increases in traffic flow through the junction together with large reductions in delay when compared with the without intervention scenario. In all future years, the scheme options result in lower average delays than in the 2015 base.

Percentage increases in total throughput (excluding the through M25 and A3 movements) in 2037 compared with the without intervention scenario across the modelled time periods are as follows:

- Option 14: 16% to 53%
- Option 9: 22% to 51%

Both options show a similar general pattern of changes across the road network from the without intervention scenario with increased traffic on the A3 and M25 around J10 and decreases in traffic on the local road network in the surrounding area.

Table 6-1 shows the change in total delay in vehicle hours at M25 J10 for the two options compared to the without intervention scenario. In all peaks and in both future years both options are shown to significantly lower delay at the junction, despite the increases in traffic flow.

Table 6-1 Delays at M25 Junction 10

Year	Time period	Veh-hrs			% change	
		Without	Op9	Op14	Op9	Op14
2022	07:00-08:00	369	154	144	-58%	-61%
	08:00-09:00	357	88	166	-75%	-54%
	17:00-18:00	286	52	92	-82%	-68%
2037	07:00-08:00	432	299	277	-31%	-36%
	08:00-09:00	451	273	346	-39%	-23%
	17:00-18:00	421	114	230	-73%	-45%

Table 6-2 compares the average vehicle delay on the A3 in the Without Intervention scenario and With Intervention scenarios. The widening of the A3 to 4DAP is forecast to result in increased traffic flow, however delays are expected to decrease in all peaks and in both future years. The two schemes are shown to result in very similar levels of delay reduction.

Table 6-2 Delays on the A3 between Clandon and Painshill

Year	Time period	Veh-hrs			% change	
		Without	Op9	Op14	Op9	Op14
2022	07:00-08:00	163	92	93	-44%	-43%
	08:00-09:00	96	59	58	-39%	-40%
	17:00-18:00	106	80	86	-25%	-19%
2037	07:00-08:00	426	300	301	-30%	-29%
	08:00-09:00	295	180	168	-39%	-43%
	17:00-18:00	256	203	199	-21%	-22%

In 2037, the implementation of the scheme is expected to result in an average 4% to 4% increase in trips per hour through the Ripley Lane/High Street/ Newark Lane junction. Journey times are expected to decrease for both directions in both options in the AM peak hour. During the PM peak Option 9 will result in a marginal increase in journey times from Ripley (but not to Ripley) whilst Option 14 will result in increased journey times in both directions.

In summary, whilst both options provide significant improvements compared to the without intervention scenario situation on the M25 J10 and on the A3; Option 9 provides higher level of delay reduction and higher increase in traffic throughput at the junction.

6.3 Economic assessment

6.3.1 Scheme appraisal costs

To consider the uncertainty associated with scheme cost estimation, construction costs are currently produced as a range rather than a single estimate. These costs are known as Range Forecasts (minimum, most likely and maximum) and they consider risks and uncertainty by deriving high, central and low cost estimates. The high forecast considers a high likelihood of risk and uncertainty, the central forecast considers an average risk, and the low forecast a reduced likelihood of risk.

As advised by the Highways England Commercial Unit, optimism bias is not required on Highways England figures. Instead this now takes the form of unscheduled items, project risk, uncertainty and the minimum (low) and maximum (high) ranges.

Outturn costs are the expected costs in the actual years of expenditure. Range Forecasts of outturn costs for construction, land, preparation and supervision for each actual year of expenditure were produced by Highways England and were developed from relevant information (including preliminary design and bills of quantities).

The expenditure profiles are based upon cost estimates for each financial year prepared in 2015 Q4 prices and then inflated to outturn costs using Highways England projected construction related inflation. These costs have then been rebased to 2010 calendar year profiles for economic calculations, using the GDP-deflator series as published in the latest TAG Data book. All the costs are in factor cost unit of account and exclude VAT, both recoverable and non-recoverable. All spend to date (historic cost) has been removed by Highways England Commercial Unit as these costs are considered as sunk costs and not included in the economic appraisal.

Table 6-3 summarises the value of the construction cost with expenditure profile. It also shows total discounted costs in 2010 market price unit of account (Present Value of Costs, 2010 prices, discounted to 2010) for each option.

Table 6-3 Discounted scheme costs – Investment, PV, £million

Item	Option 9	Option 14
Preparation	£11.99	£10.30
Supervision	£3.30	£2.95
Works	£138.17	£105.12
Land	£4.51	£3.75
Total, PVC	£157.97	£122.12
Note: this includes costs relating to side roads and A3 widening consistent with Scheme 1 and Scheme 5 in Table 5-1		

6.3.2 Construction

Construction of each of the scheme options would involve a complex programme of traffic management on the live highways, including:

- reduced speed limits
- narrow lanes
- lane closures
- overnight closures of the road with diversions

For Option 9 construction will last 105 weeks, whilst Option 14 will take 91 weeks. Each scheme will be constructed whilst a 50mph speed limit is in place on the M25 and A3 within the vicinity of works.

The impacts of construction have been estimated within the Saturn highway model and TUBA software by reducing speeds to 50 mph on M25 and A3 mainline in the immediate vicinity of M25 J10. In addition, two seconds of inter-green time were added to each signal phase at M25 J10 to account for delays due to a higher number of construction vehicles using the network. The network delays from the model run were compared with the without intervention network delays to obtain the construction delays. The calculated construction delays from all peak hour models were converted to estimated construction delay cost by multiplying total delay with total duration, annualisation factors and WebTAG compliant values of time.

Option 9 is estimated to lead to a 'loss' of £28 million PV because of impact on journey times, whilst Option 14 will generate a loss of around £23 million PV.

6.3.3 Accident analysis

A full account of the analysis of observed accident data, and the assessment of impact resulting from the scheme options is included within the PCF2 Economic Impact Assessment. This section provides a summary of the impact analysis provided in the above report.

The DfT's COBALT spreadsheet has been used to provide an assessment of the impact of each of the options on accident costs. Links within the Affected Road Network (those links which saw a traffic flow change of more than 5% as a result of the scheme intervention) were assessed as shown in Figure 6-3, and were included for the calculation of accident benefits.

For the area shown in Figure 6-4, the available accident data for the last 5 years on M25 and A3 within the vicinity of M25 J10 was used to determine local link and junction accident rates, and were coded into COBALT for the corresponding mainline links on M25 and A3, as well as corresponding junctions.

Accident rates for the remainder of the modelled network were based on default national average rates by road type defined within COBALT. Each link in the network (including the circulatory carriageway) was assigned to a default COBALT link type and parameters such as accident values (in monetary terms), changes in the rate of

accidents through time and the severity split of casualties were based on default COBALT values for the relevant link type.

Figure 6-3 Area covered by accident analysis

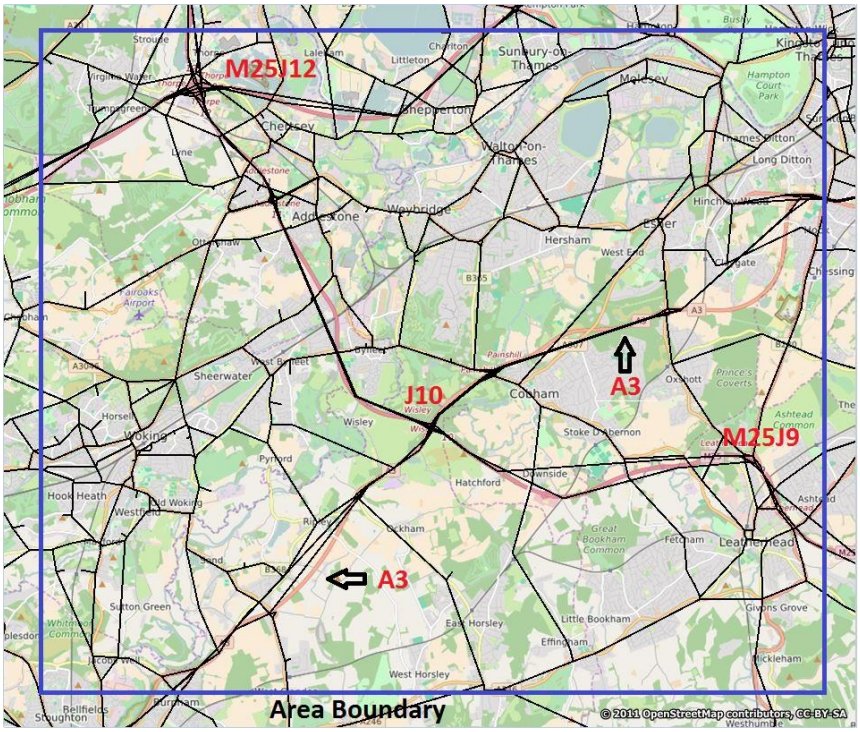
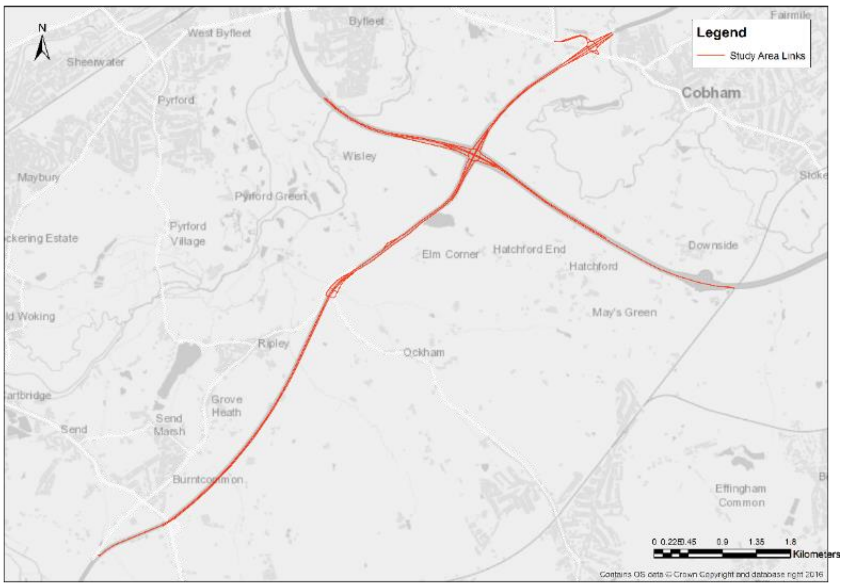


Figure 6-4 Area of accident analysis with observed rates



Consistent with the TUBA assessment, the COBALT assessment considered impacts over a 60-year appraisal period, drawing on traffic flow information from the SATURN models for 2022 and 2037 and assuming no further growth in traffic or benefits beyond 2037 (apart from an allowance from continued growth in the real value of accidents, in line with WebTAG).

Both scheme options result in a net reduction in accidents at Junction 10. The removal of traffic from the roundabout by the provision of free flow elements in Option 9 is

forecast to have the greatest impact on safety over the appraisal period. Accidents are also reduced on the A3 mainline between Ockham and Painshill due to the widening to D4AP and the closure of side roads. Increases in traffic on the wider network (resulting from reassignment of traffic, either from different routes or induced from different time periods) results in an increase in accidents. However, both scheme options result in an overall reduction in accidents and casualties compared to the Without Intervention scenario.

The COBA-LT analysis has shown benefits of £29.2 million PV for Option 9 resulting from an average reduction of 8 per year over the 60-year appraisal period, and £22.9 million PV resulting from a reduction of 5 accidents per year on average through introducing Option 14. summaries the accidents saved and the monetised benefits of that saving.

Table 6-4 – Safety impacts PVB

Option	Casualties saved (60 years)			Accidents saved (60 years)	PVB, £000 (2010 prices and values)
	Fatal	Severe	Slight		
Option 9	12	68	719	460	29,954
Option 14	12	52	433	284	22,853

Whilst the scheme encompasses changes to the network at the Painshill and Ockham interchanges, the most significant changes are to M25 J10 itself.

At M25 J10, Option 9 is shown to result in a 45% reduction in accidents at the junction over the appraisal period whilst Option 14 will result in a 26% reduction.

The largest accident savings for Option 9 are forecast on the M25 J10 roundabout north-eastern (A3SB off slip) and south-western (A3NB off slip) junctions, the M25CW on-slip and A3NB off-slip. For Option 14, the largest accident savings are forecast to be on the A3NB off-slip, M25CW on-slip, M25 ACW off-slip, and the M25 J10 roundabout (M25 CW off-slip) junction. Slight increases in accidents for some links (which usually are not improved as part of the scheme) are a result of increased traffic flow in the Do-Something scenarios.

As shown in Table 6-5, a large percentage of the accident savings for both options comes from links in the south-western quadrant, due to the scheme's safety improvements on links with high accidents rates (e.g. A3 NB off-slip, M25 CW on-slips). For Option 9, 61% of the junction accident savings are on the roundabout, due to reassigning traffic movement from the roundabout to free-flow links. As Option 14 removes fewer vehicles and conflict points from the roundabout it is expected to have a lower accident saving on the junction.

Table 6-5 COBA-LT analysis at Junction 10, by quadrant

Quadrant / Link	Total Number of Accidents (60yrs)			Number of Accidents Saved (60yrs)	
	Without	Option 9	Option 14	Option 9	Option 14
NE Quadrant	49	17	23	32	26
NW Quadrant	87	98	39	-11	48
SE Quadrant	149	175	159	-26	-10
SW Quadrant	162	24	38	138	125
M25J10 Roundabout	364	102	339	262	25
Op9 Flyover	-	29	-	-29	-
Total	810	444	597	366	213

6.3.4 Summary of scheme economics

Table 6-6 provides a summary of the anticipate costs and benefits of the two scheme options. Option 9 has a BCR of 3.20 and Option 14 has a BCR of 3.54.

Table 6-6 – Summary of scheme cost benefit analysis

			Costs Benefit Analysis	
			Option **9**	Option **14**
Benefits	Consumer Commuting User Benefits	Travel Time	168,294	146,014
		VOC	-24,180	-24,215
		Construction Delays	-9,056	-7,338
		Net Consumer User Benefits	135,058	114,461
	Consumer Other User Benefits	Travel Time	150,388	138,447
		VOC	-34,355	-31,766
		Construction Delays	-5,098	-4,132
		Net Consumer User Benefits	110,935	102,549
	Consumer Business User Benefits	Travel Time	230,713	194,500
		VOC	17,392	4,850
		Construction Delays	-14,248	-11,544
		Net Business User Benefits	233,857	187,806
	Accidents Benefits		29,954	22,863
	Indirect Tax Revenues		36,594	33,408
	Noise		29	-377
	Air Quality		-941	-752
	Greenhouse Gases (Carbon)		-39,814	-27,445
	Total PVB (£m)		505,670	432,501
Costs	Operating Costs		-	-
	Investment Costs		157,972	122,125
	Revenue Change		-	-
	Total PVC (£m)		157,972	122,125
Net Present Value (NPV)			347,698	310,376
Benefits to Cost Ratio (BCR)			**3.20**	**3.54**
Values are 2010 prices, in £millions, discounted to a 2010 present value year.				

7 Summary of operational assessment

7.1 Introduction

The strategic highway (SATURN) model was used to understand how the scheme and its variants have impacted a wide area, as well as to generate the outputs used in the economic and environmental assessment.

To understand better how the scheme components have impacted individual elements of the network, the operation of each junction has been modelled using tools which provide more detailed analysis of performance on a smaller scale:

Two simple junction tools (LinSig and ARCADY) have been used to understand stop line capacity and overall junction capacity at M25 J10, Ockham Interchange, Painshill Interchange and Seven Hills Road junctions.

The microsimulation modelling assessment undertaken was carried out using S-Paramics, with a without intervention scenario and proposed schemes coded onto a validated base model. Using microsimulation software allows for a more detailed insight into the local highway network, and how the network is predicted to operate with a given demand. The model also gives and insight into impacts beyond the stop line, both up and downstream.

The demand in each model is based on the representative strategic SATURN model, with cordons taken of the SATURN network. The two option scenarios have been compared against each other, as well as the without intervention model for analysis.

7.2 Junction 10

M25 J10 has been modelled comprehensively in three software packages: SATURN, LinSig and S-PARAMICS.

7.2.1 Operation in LinSig

M25 J10 Options 9 and 14 were tested for the four peak hours (AM1, AM2, IP, PM) and for the design year 2037 using demand flows taken from the strategic model. The results of each model run are shown in terms of PRC and total vehicle delay in Table 7-1. PRC is a performance statistic derived from the worst performing link at the junction. A junction is within theoretical capacity if the PRC is greater than -10%. PRC values over this threshold suggest that arms within the junction will be over capacity.

Table 7-1 M25 J10 Core options LinSig tests

Peak	2037					
	Without intervention		Option 9		Option 14	
	PRC (%)	Total delay (PCU-hrs)	PRC (%)	Total delay (PCU-hrs)	PRC (%)	Total delay (PCU-hrs)
AM1	-76.30%	442.32	-3.20%	37.07	-5.00%	82.38
AM2	-83.20%	400.95	-5.20%	25.98	-4.80%	61.02
IP	-46.90%	265.22	28.10%	13.07	15.30%	38.70
PM	-63.60%	356.87	-6.10%	25.81	0.80%	54.55

The without intervention scenario is shown to operate over capacity and with high levels in delay, in each of the four time periods. The PRC results suggest that both the Option 9 and Option 14 2037 models operate within theoretical capacity, with PRC values greater than the -10% threshold. It must be noted that the M25 J10 roundabout

in Option 9 is unchanged and has not been modified to accommodate the new forecast flows, whilst Option 14 has.

The total delay is significantly less for Option 9 than Option 14 in all time periods. This is partly because of the demand for the free flow links in Option 9 not being included in the model.

7.2.2 Operation in S-Paramics

The operation of the M25 J10 has been assessed in the S-Paramics model for the AM peak hour of 0800-0900, and the PM peak hour of 1700-1800, for the design year 2037, with demand flows taken from the strategic model. The S-Paramics model was run for an AM peak period of 0600-1000 and a PM peak period of 1500-1900. This allows vehicles to get into the network and build to the peak hour level. The additional time after the peak hour allows any vehicles which haven't finished their trips to do so, aiding data collection purposes.

Delay has been calculated by running the S-Paramics model with 'free flow conditions' to calculate a free flow journey time. This free flow journey time has been taken from the journey times from the option models to give a delay for each movement at the junction. The average delay per vehicle is summarised in Table 7-2.

Table 7-2 M25 J10 Average delay per vehicle (s)

Peak	2037		
	Without Intervention	Option 9	Option 14
AM	201	172	168
PM	517	189	176

The data shows that predicted high levels of delay in the without intervention scenario would be reduced with either interventions, significantly so in the PM peak.

Whilst most movements experience significant delay savings, there is a predicted higher level of delay per vehicle for the movements from the M25 clockwise off-slip, in the PM peak for Option 9. This is delay is a result of two combined factors. Firstly, circulating vehicles exiting the roundabout to the A3 southbound are opposed by two lanes of vehicles exiting the from the M25 clockwise off-slip. In Option 14, there are three lanes on the A3 southbound exit, allowing a vehicle split across these three lanes which provides more gaps for traffic using the filter lane to merge than in Option 9.

Secondly, the high demand travelling southbound on the A3 between M25 J10 and Ockham Interchange conflicts with vehicles merging from the A3 southbound on-slip.

7.3 Painshill Junction and A245 to Seven Hills Rd Junction

The operation of the Painshill Interchange and Seven Hills Road/A245 Byfleet Road have been modelled comprehensively in two software packages: LinSig and S-Paramics. At present, there is no coordination between these two sets of signals. To maximise performance these junctions have been linked in the With Intervention scenarios.

7.3.1 Operation in LINSIG

Painshill Interchange and Seven Hills Road/A245 Byfleet Road junctions were assessed for the four peak hours (AM1, AM2, IP, PM) and for the design year 2037, using demand flows taken from the strategic model for Option 9 and Option 14. The results of each model run are shown in terms of PRC and total vehicle delay in Table 7-3.

Table 7-3 Painshill Interchange and Seven Hills Road/A245 Byfleet Road Core LinSig tests

Peak	2037					
	Without intervention		Option 9		Option 14	
	PRC (%)	Total delay (PCU-hrs)	PRC (%)	Total delay (PCU-hrs)	PRC (%)	Total delay (PCU-hrs)
AM1	-122.40%	633.40	-28.90%	475.38	-29.40%	442.05
AM2	-141.00%	548.55	-19.70%	269.26	-20.60%	261.42
IP	-42.60%	189.90	-3.80%	63.56	-2.40%	64.32
PM	-98.90%	539.35	-8.90%	126.87	-15.90%	187.42

The without intervention scenario is predicted to operate significantly over capacity in the design year 2037, with high levels of delay. Both Option 9 and Option 14 are predicted to operate significantly better than the without intervention scenario, with considerably reduced delay forecast to occur.

The negative PRC which is evident in the AM1 and AM2 peaks appears to result from the westbound and eastbound approaches to Seven Hills Road/A245 Byfleet Road operating over capacity. The model suggests that the junction struggles to cope with the high demand on each of these approaches.

The LinSig model predicts queueing on the westbound approach to the Seven Hills Road/A245 Junction, potentially reaching back onto the A3 towards M25 J10. Being a relatively simplistic tool of stopline capacity, LinSig does not model this situation to a high degree, and more accuracy on delay can be presented by the S-Paramics modelling.

7.3.2 Operation is S-Paramics

The operation of the Painshill Interchange and Seven Hills Road/A245 Junction has been undertaken in the S-Paramics model for the AM peak hour of 0800-0900, and the PM peak hour of 1700-1800, for the design year,2037, with demand flows taken from the strategic model.

The average delay per vehicles is summarised in Table 7-4 and shows that the model predicts significant delay in the Without Intervention scenario, with significantly less delay predicted in the Option 9 and Option 14 scenarios. The average delay is less in Option 9 than in Option 14.

Table 7-4 Painshill Interchange and Seven Hills Road/A245 Byfleet Road average delay per vehicle (s)

Peak	2037		
	Without Intervention	Option 9	Option 14
AM	117	75	82
PM	292	28	42

The greatest level of delays occurs with journeys originating from Seven Hills Road South (new access to/from Felton Fleet School), in all time periods. Other movements with higher levels of delay are generally westbound movements through the junction. In the 2037 AM peak, delays of approximately 100 seconds on the westbound approach to the junction result in queueing back towards the A3.

7.3.3 Suggestions for improvement

The issues of delay are not attributable to the design of the junction per se, as using the flows from the Without Intervention scenario show an improvement over the existing layout. A significant factor to the delay at the junction is the increase in flow predicted by the SATURN model once the full M25 J10 and Painshill interchange improvements are assumed. At PCF3 the design, operation and coding of the junction will be developed further.

7.4 Ockham Interchange

The Ockham Interchange has been assessed using the roundabout junction modelling software ARCADY (Junctions 9) and S-Paramics.

7.4.1 Operation in ARCADY

The Ockham Interchange has been tested with the WIS-01 and WIS-10 layouts.

The options were tested for the four peak hours (AM1, AM2, IP, PM) and for the design year 2037, using demand flows taken from the strategic model.

The average junction delay for the WIS01 and WIS-10 scenarios are summarised in Table 7-5. The average junction delay in ARCADY is calculated by multiplying the demand from each arm by the maximum delay on each arm. This value was then divided by the total demand to get an average delay across the junction.

The model predicted that the maximum RFC would be similar for both the WIS-01 and WIS-10 scenarios. Also, the maximum RFC is similar between the Option 9 and Option 14 flow scenarios. The maximum RFC across all time periods for WIS-01 was 0.68 and for WIS-10 0.91, both in the Option 9 2037 PM scenario.

Table 7-5 Ockham Interchange Core options ARCADY tests- average junction delay (s)

	2037		
Option	Time Period	WIS-01	WIS-10
Option 9 Flows	AM1	3.7	3.4
	AM2	4.1	4.0
	IP	2.8	2.7
	PM	5.4	12.9
Option 14 Flows	AM1	3.4	3.2
	AM2	4.0	3.8
	IP	2.8	2.7
	PM	4.9	7.4

The average junction delay is predicted to be similar between WIS-01 and WIS-10, and between the respective Option 9 and Option 14 flow scenarios. The two significant differences are in the Option 9 2037 PM where delay increases from 5.35 seconds in WIS-01 to 12.91 seconds in WIS-10, and in Option 14 2037 PM where delay increases from 4.85 seconds in WIS-01 to 7.42 seconds in WIS-10. However, this delay is still relatively minor.

7.4.2 Operation in S-Paramics

The operation of the Ockham Interchange has been undertaken in the S-Paramics model for the AM Peak hour of 0800-0900, and the evening peak hour of 1700-800, for the future design year, 2037, with demand flows taken from the strategic model. The average delay per vehicles (s) is summarised in Table 7-6.

Table 7-6 Ockham Interchange Average Delay per Vehicle (s)

Peak	2037		
	Without intervention	Option 9	Option 14
AM	13	100	112
PM	37	51	62

The level of delay is predicted to be significantly greater in the Option 9 and Option 14 scenarios compared against the without intervention scenario. This is a result of the delay to vehicles approaching the roundabout from Ockham Road North and Portsmouth Road, as these vehicles are continuously opposed by other vehicles. There is a significant increase in demand in the with intervention scenarios, with approximately 1100 more vehicles entering the network from Ockham Road North and Portsmouth Road from 0700-1000.

8 Summary of technology and maintenance assessment

8.1 Summary of technology and maintenance assessment

Detail of road side technology provision has not yet been finalised. Early discussions have taken place with the MSPs (Area 5: Connect Plus Services and Area 3: Kier) and at this stage no new technology or other assets have been identified which are not already present and part of the existing maintenance regime on the M25 corridor. Overall the scheme has been described as relatively low impact in terms of maintenance and repair.

Provision of lighting, on what will be a relatively complex intersection will have an impact on maintenance demand. This will be subject of further consideration once a detailed lighting assessment has taken place.

Further consultation with MSPs will take place as detail becomes available, any issues or challenges will be addressed in the PCF Product 'Maintenance and Repair Strategy Statement' which will be updated during Stage 3.

8.2 Summary of operational assessment

All the options being taken forward to Stage 3 have taken into consideration safety issues raised in the CSR. Provision of free-flow on the most congested links between the A3 and M25 will avoid queuing onto the A3 which has contributed to poor safety performance. Although there are constraints which mean that weaving lengths on the A3 will be less than the desired minimum, the provision of an alternative off-line access to RHS Garden Wisley will have significant safety benefits. The improved capacity provided by free-flow links will mitigate against queuing onto the mainline A3 and the associated risk of end to end and side swipe collisions as drivers approach the diverge.

Option 14 proposes an increased width of up to five lanes on the gyratory. Lane discipline is likely to be an issue here and it will be necessary to provide clear signage and lane designation to avoid confusion and late decision making. A clear signage regime is also necessary with Option 9 where, due to the retention of the existing roundabout, there are effectively two choices for the user who wants to access the M25 from the A3 in either direction.

There are currently several lay-bys provided on the A3 mainline, which are frequently used as rest areas by HGV drivers who are unwilling to use paid for facilities at nearby MSAs at Cobham (M25) and Wisley (A3). The removal of these will prevent misuse, anti-social behaviour and reduce demand on the MSP. Where there are verges and other areas on the A3 locally, care should be taken to avoid inadvertently providing such areas which could be exploited in this way.

8.3 Safety Impacts

M25 J10 / A3 Wisley Interchange presents several safety challenges. This location was ranked by Highways England as the most dangerous junction nationally in terms of casualty rate. Between 2009 and 2014 there were approximately 30 personal injury collisions per year on or around M25 J10. Congestion is a key factor affecting safety; in the south west quadrant of the M25 queueing can lead to the inability to clear A3 traffic wanting to join the M25. This, combined with the proximity of junctions at Painshill and Ockham and insufficient weaving lengths has contributed to poor safety performance.

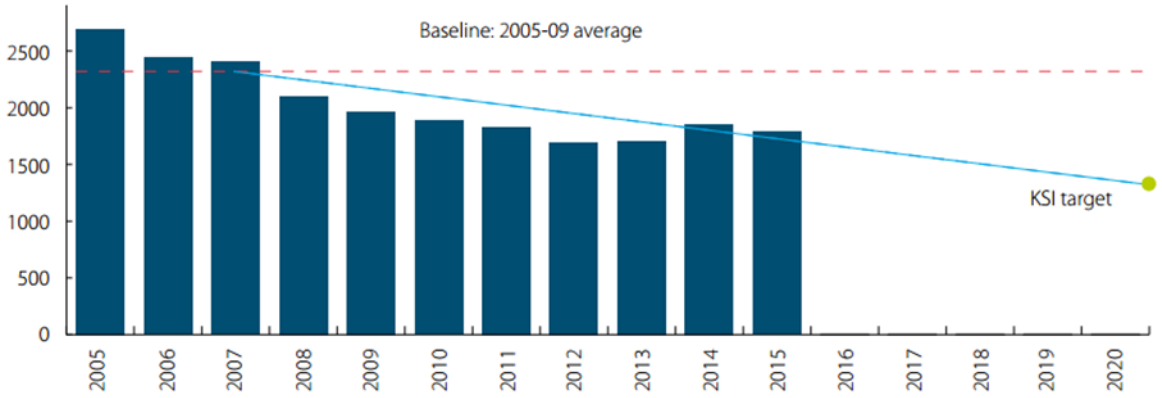
Reducing the annual collision frequency and severity ratio on the mainline A3 and slip roads, and the Junction 10 gyratory is a key objective of the client scheme objectives. Developments planned locally together with increased activities planned at RHS

Wisley will increase pressure on the network, a failure to address these issues will have a detrimental effect on safety performance.

Provision of free-flow links where the radius of the bend is below standard can lead to loss of control collisions, particularly with high sided vehicles. Reduced speed limits may be necessary and this will be considered as part of the detailed design.

Through its 5 Year Health and Safety Plan, Highways England is committed to improving safety on the SRN. Their approach that 'No-one should be harmed when travelling or working on the SRN' is supported by a target to reduce KSI's by 40% (set against a 2005-2009 baseline). After some early reductions, maintaining these levels of KSI reductions has been more of a challenge. Looking forward, it is clear the M25 J10 scheme has a valuable contribution to make towards achieving this challenging target.

Figure 8-5 Killed and Seriously Injured on the SRN, 2005-2015



9 Summary of environmental assessment and environmental design

9.1 Introduction

This section focuses on the environmental assessment and appraisal work undertaken to test the effect of the proposed scheme options at PCF2. The methods used are in accordance with the standards and requirements as specified by the Design Manual for Roads and Bridges (Volume 11 and associated updates).

The assessment considers the following components:

M25 J10 / A3 Wisley Interchange and common elements

- Option 9 - retaining the existing roundabout but adding a fourth level layout to provide free-flowing right turns from the A3 to the M25 whilst also providing dedicated free-flowing left turns.
- Option 14 - involving modifying the existing roundabout by elongation, with additional lanes to provide more circulatory capacity and enable more traffic to discharge the roundabout whilst also providing dedicated free-flowing left turns.
- Common elements:
    - A3 widening,
    - CAMP-02 - Two-way Access Road connecting Deers Farm Close to Birchmere Scout Campsite and Park Barn Farm
    - ELM-05 - Elm Lane to Old Lane and M25 J10 slip road to access onto A3 southbound
    - SAN-02 - Local Access Road from Long Orchard to Seven Hills Road south and footway/cycleway Redhill Road to Long Orchard. Local access 4.8m with passing bays (180m+290m)
    - PAIN-02 - Widening of A245 from Painshill Junction to Seven Hills Road junction to dual 3 lanes. Felton Fleet School access road 7.3m wide between Seven Hills Road (South) and Old Byfleet Road (120m). Right turn and exit into A245 to be closed
- Wisley Lane options
    - WIS-01 - Northern two-way link road between Ockham Junction and Wisley Lane running parallel to A3 mainline.
    - WIS-10 - Southern two-way link road from Wisley Lane routed under or over the A3 carriageways to Ockham Junction running outside the Ancient Woodland and Common Land.
- Painshill to M25 J10 options
    - PAIN-04A - Service road running parallel to A3 southbound from Gas compound to New Farm and Gothic Tower with Bridge over A3 to Redhill Road and A245, Byfleet Road.
    - PAIN-05D - Service road running parallel to A3 southbound from Painshill to New Farm and Gothic Tower via Painshill to alternative entry to A245 roundabout on A245 Portsmouth Road.

9.2 M25 10, A3 and other common elements

9.2.1 Option 9

9.2.1.1 Air Quality

As it is based on the traffic model the air quality assessment considers Option 9 together with the alternatives for Wisley Lane access, so with WIS 1 being Option 9A and with WIS 10 being Option 9B. There are expected to be exceedances of the annual mean NO2 AQS objective in the opening year both with and without the Scheme with both options at three of the modelled receptors. One of these receptors is expected to have a 'large' increase in NO2 concentrations with options 9A and 9B, one receptor is expected to have a 'medium' increase in NO2 concentrations and a third receptor is expected to have a 'small' increase.

There is expected to be a 'small' increase in NO2 concentrations at receptors within both the M25 and Cobham AQMAs, but concentrations are not expected to exceed the AQS objectives in these locations. There is expected to be a 'small' decrease in NO2 concentrations at receptors within the Esher AQMA. The change at receptors in the Addlestone AQMA is expected to be negligible.

The change in PM10 concentrations was expected to be imperceptible in all cases.

There are not expected to be any exceedances of the NO2 1-hour mean AQS objective or of either PM10 AQS objective with or without the scheme.

There are not expected to be any Defra PCM links that exceed in 2020 in the air quality study area and changes in concentrations due to any of the Scheme options would not result in exceedances in 2020 or beyond. There is not expected to be a compliance risk due to any of the route options.

Given the magnitude of changes and number of receptors likely to be affected, it can be considered that the Scheme would not have a significant effect on local air quality at human health receptors for any of the options.

However, it is likely that there could be potentially significant adverse effects on the designated ecological sites in the study area with all options. Further assessment work will be required at PCF Stage 3 to examine mitigation options.

9.2.1.2 Cultural Heritage

The effect of Option 9 with common elements would see the greatest number of impacts upon known cultural heritage assets, with the potential for two Large Adverse effects and three Moderate Adverse effects identified. These result from both the construction and operation of Option 9. Impacts of the common elements on known heritage assets would be limited to those resulting from the widening of the A3 and will have no significant effects.

There is potential for impacts upon hitherto unknown archaeological remains resulting from Option 9 as the proposal will require a large area of land take in the location of known medieval and post-medieval boundary features and within the vicinity of nationally important prehistoric remains.

9.2.1.3 Landscape and Visual

The landscape character of the semi-rural area around this junction will be affected because of the significant loss of mature vegetation which would increase the prominence and visibility of the road corridor. There would be adverse effects for ten visual receptors, which could be mitigated by appropriate planting to some degree.

The potential landscape and visual impacts for this package option are concentrated around M25 J10 and its approach roads, there would be large adverse landscape impacts during the construction phase changing to moderate adverse with mitigation during the operational phase. The significant amount of required land take to construct this scheme results in a higher impact to both landscape and visual receptors.

Careful detailed design taking into consideration the local landscape characteristics, particularly the character of the Common areas would be required to reduce the impact of the proposed scheme.

9.2.1.4 Nature Conservation

Option 9 is likely to have an impact of very large significance on the Thames Basin Heaths SPA, the Ockham and Wisley Commons SSSI and on Ancient Woodland. It would require 11.64 h of land take from the SPA, 20.17 ha form the SSSI and 16.68 ha from the Local Nature Reserve (LNR). In addition, it is considered likely to have an impact of moderate significance on the Thames Basin Heaths SPA features and other notable and/or protected species, as well as an impact of moderate significance on the Ockham and Wisley LNR.

It is possible that mitigation in the form of improved noise barriers around the scheme could reduce the noise disturbance of compared to existing noise levels, thus potentially improving the suitability of the existing heathland habitats for qualifying breeding bird species of the SPA, and allowing the potential clearance of conifer woodland between the heathland and the M25/A3 to increase the area of established heathland.

9.2.1.5 Noise and Vibration

As it is based on the traffic model the noise and vibration assessment considers Option 9 together with the alternatives for Wisley Lane access so, with WIS 1 being Option 9A and with WIS 10 being Option 9B. The magnitude of impact (DMRB) assessment demonstrates that Option 9 is not predicted to result in a “major” increase in noise at the noise sensitive receptors identified within the study area. “Minor” noise increases and decreases, as well as numerous “negligible” impacts in the opening year and the design year are predicted.

The Option B (WIS 10) variants forecasted “negligible” impacts or noise decreases at all properties in the design year whereas the Option A (WIS 01) variants predicted some “minor” noise increases.

A “moderate” noise increase was calculated at one property for Option 9B in the opening year, which was located close to the M25. “Moderate” noise decreases in the opening year are predicted at a property close to the Painshill Interchange.

The Significance of effects assessment demonstrates that the assessments for both Option 9 variants predict a decrease in the number of properties experiencing noise levels above the threshold for adverse effects upon opening and these are sustained in the future year.

9.2.1.6 People and Communities

Option 9 is likely to have an adverse effect during construction and operation on receptors identified in proximity and adjacent to the M25 and A3. It is expected that significant amounts of community land and some development land will be affected by this option, both during construction and operation.

The land take is greatest for Option 9 during construction and operation and there will be a significant effect on community land due to land take from Wisley and Ockham Commons. For community land which will be lost, exchange land will be provided.

Driver stress is expected to be temporarily impacted by construction works, however is expected to reduce during operation from existing stress levels. Similarly, driver views are the most likely to change in this option.

There is potential for the proposed works to have an effect on PRoW, private property (including residential and commercial properties) agricultural land and community land during construction and operation. Option 9 will affect the most receptors both during construction and operation, with most these being adversely affected. The impacts to

NMUs are likely to be substantial and include PRoWs close to M25 J10, the informal footpath network across the commons and the A3 NMU corridor.

In operation with improvements to the existing NMU corridor and the provision of replacement footbridges across A3, Option 9 will provide a Neutral to Slight Adverse effect due to the change in amenity to NMUs resulting from the increased highway infrastructure.

9.2.1.7 *Road Drainage and the Water Environment*

Option 9 would require a 65m culvert for a minor tributary of the River Mole with upstream and downstream realignments also needed. The culvert is likely to cause local reduction in habitat quality and a less dynamic flow, more uniform river morphology, loss of sediment continuity and loss of riparian zone. The river realignment presents a potential and practical opportunity to improve the existing channel. This option would also lead to the loss of approximately 150m of a watercourse assumed to contribute to Wey catchment which is likely to cause a local reduction in habitat quality.

There are also several minor drainage ditches that may need to be realigned or crossed as part of the scheme. These ditches are straightened and of minimal ecological value but there is a risk of loss or disturbance damage to aquatic ecology, substrate and riparian zone.

The scheme could lead to drainage of potentially contaminated surface water runoff to groundwater and deep foundations associated with structures may create rapid vertical flow pathways into the groundwater body for potentially contaminated runoff.

9.2.2 Option 14

9.2.2.1 *Air Quality*

As it is based on the traffic model the air quality assessment considers Option 14 together with the alternatives for Wisley Lane access so, with WIS 1 being Option 14A and with WIS 10 being Option 14B. There are expected to be exceedances of the annual mean NO2 AQS objective in the opening year both with and without the Scheme with all options at three of the modelled receptors. One of these receptors is expected to have a ‘medium’ increase with Options 14A and 14B, one receptor is expected to have a ‘small’ increase and a third receptor is expected to have a ‘small’ increase.

There is expected to be a ‘small’ increase in NO2 concentrations at receptors within both the M25 and Cobham AQMAs, but concentrations are not expected to exceed the AQS objectives in these locations. There is expected to be a ‘small’ decrease in NO2 concentrations at receptors within the Esher AQMA. The change at receptors in the Addlestone AQMA is expected to be negligible.

The change in PM10 concentrations was expected to be imperceptible in all cases.

There are not expected to be any exceedances of the NO2 1-hour mean AQS objective or of either PM10 AQS objective with or without the scheme.

There are not expected to be any Defra PCM links that exceed in 2020 in the air quality study area and changes in concentrations due to any of the Scheme options would not result in exceedances in 2020 or beyond. There is not expected to be a compliance risk due to any of the route options.

Given the magnitude of changes and number of receptors likely to be affected, it can be considered that the Scheme would not have a significant effect on local air quality at human health receptors for any of the options.

However, it is likely that there could be potentially significant adverse effects on the designated ecological sites in the study area with all options. Further assessment work will be required at PCF Stage 3 to examine mitigation options.

9.2.2.2 Cultural Heritage

The combined effect of Option 14 would have the least impact upon known cultural heritage assets, with all effects considered to be non-significant. Regarding the common elements, only the widening of the A3 will have any construction impacts upon known heritage assets, however, these effects will not be significant. The potential for significant effects upon hitherto unknown archaeological remains resulting from Option 14 with common elements is considered to be low due to the limited land take required for these works.

9.2.2.3 Landscape and Visual

The landscape character of the semi-rural area around this junction will be affected because of the loss of mature vegetation which would increase its visibility from a wider area, resulting in adverse effects for eleven receptors, which could be mitigated to some degree by appropriate planting.

The potential landscape and visual impacts for this Option are concentrated around M25 J10 and approach roads and there would be moderate adverse landscape impacts during the construction phase changing to slight adverse during the operational phase.

Careful detailed design taking into consideration the local landscape characteristics, the character of the Common areas would be required to reduce the impact of the Proposed Scheme.

9.2.2.4 Nature Conservation

Option 14 is likely to have an impact of very large significance on the Thames Basin Heaths SPA, the Ockham and Wisley Commons SSSI and on Ancient Woodland. It would require 3.05ha of land take from the SPA, 6.05 ha from the SSSI and 4.99 ha from the LNR. In addition, it is considered likely to have an impact of moderate significance on the Thames Basin Heaths SPA features and other notable and/or protected species, as well as an impact of moderate significance on the Ockham and Wisley LNR.

It is possible that mitigation in the form of improved noise barriers around the scheme could reduce the noise disturbance of either option compared to existing noise levels, thus potentially improving the suitability of the existing heathland habitats for qualifying breeding bird species of the SPA, and allowing the potential clearance of conifer woodland between the heathland and the M25/A3 to increase the area of established heathland.

9.2.2.5 Noise and Vibration

As it is based on the traffic model the noise and vibration assessment considers Option 14 together with the alternatives for Wisley Lane access so, with WIS 1 being Option 14A and with WIS 10 being Option 14B. The magnitude of impact (DMRB) assessment demonstrates that neither Option 14A or B is predicted to result in a “major” increase in noise at the noise sensitive receptors identified within the study area. “Minor” noise increases and decreases, as well as numerous “negligible” impacts in the opening year and the design year are predicted

The Option B (WIS 10) variants forecasted “negligible” impacts or noise decreases at all properties in the design year whereas the Option A (WIS 01) variants predicted some “minor” noise increases.

“Moderate” noise decreases in the opening year are predicted for both option variants at a property close to the Painshill Interchange. Two properties located close to the M25 are predicted “moderate” decreases in the design year of the Option 14 variants.

The Significance of effects assessment demonstrates a decrease in the number of properties with a predicted noise level above the significant effect level in the opening

year. However, by the future year the number of properties with predicted significant adverse effects increased slightly.

9.2.2.6 *People and Communities*

The effects of Option 14 would be less than Option 9. This is due to this option requiring significantly less land take from the commons. The change to the amenity and landscape in the immediate area around M25 J10 are likely to be less than Option 9 due to the relatively small increase in size of the roundabout. The beneficial effects to NMUs of the A3 corridor and M25 J10 crossings are likely to be greater due to the provision of a footbridge and less highway infrastructure than Option 9. Similarly, the footprint of Option 14 will affect fewer PRoWs and the informal footpath network in the common land. Driver stress is expected to be temporarily affected by construction works, however is expected to reduce during operation to below existing stress levels. Drivers views from the road at M25 J10 will be similar to existing.

9.2.2.7 *Road Drainage and the Water Environment*

Option 14 would require two culvert extensions over minor tributaries of the Mole. One is a 40m long culvert extension to the south of the M25 with upstream realignments, the other is a 30m long culvert extension to the north of M25 with downstream realignments

There are several minor drainage ditches that may also need to be realigned or crossed as part of the scheme. These ditches are straightened and of minimal ecological value but there is a risk of loss / disturbance damage to aquatic ecology, substrate and riparian zone

The scheme could lead to drainage of potentially contaminated surface water runoff to groundwater and deep foundations associated with structures may create rapid vertical flow pathways into the groundwater body for potentially contaminated runoff.

9.2.3 Summary

Both Option 9 and 14 have equal potential to achieve the project objectives but overall Option 14 is preferred to Option 9 because of its significantly smaller effect on the following topics: Cultural Heritage, Landscape and Visual, Nature Conservation and People and Communities.

9.3 A3 Ockham to M25 J10 (including Wisley Lane) access

9.3.1 WIS-01

9.3.1.1 *Air Quality*

Included in section 9.2.1.1 and section 9.2.2.1.

9.3.1.2 *Cultural Heritage*

WIS01 has the potential to significantly affect the Royal Horticultural Society's Garden, Wisley, however no significant effects are expected upon hitherto unknown archaeological remains given the proposals location adjacent to the north side of the A3 in areas of previous disturbance.

9.3.1.3 *Landscape and Visual*

WIS 01 would affect the southern edge of RHS Wisley, a Registered Park and Garden of Historic Interest with 2.50 ha of the garden lost to this element of the scheme. This is a receptor of high sensitivity but the proposal would affect only the outer most edge of the park which is compromised by the presence of existing major roads. It would require the loss of a belt of mature vegetation and part of the experimental planting beds in this location.

The route of WIS 01 lies alongside the existing A3 and with the proposed widening of the A3 to four lanes it would increase the width of the road corridor in this location. This would increase its prominence in the local landscape and have a slight adverse effect

on local landscape character. In operation, there would be adverse effects for two visual receptors, which could be mitigated by appropriate planting or other screening.

Careful detailed design taking into consideration the local landscape characteristics in particularly the boundary treatment to the RHS Wisley Park Registered Park and Garden, would be required to reduce the impact of the Proposed Scheme along this stretch of the road corridor.

9.3.1.4 *Nature Conservation*

The only impact of significance anticipated for WIS 01 is an impact of moderate significance on notable or protected species.

9.3.1.5 *Noise and Vibration*

Included in section 9.2.1.5 and section 9.2.2.5.

9.3.1.6 *People and Communities*

RHS Gardens Wisley will be adversely affected with access to and enjoyment of the gardens likely to be affected. It is estimated that 2.50ha of land take from RHS Gardens Wisley would be required to accommodate the option which is likely to have a Very Large Adverse effect This option will provide improved access to the gardens and Wisley Common resulting in a slight beneficial effect. Users of PRoW FP7 are likely to be adversely effected during construction and resulting in a Neutral to Slight Adverse effect in operation.

9.3.1.7 *Road Drainage and the Water Environment*

WIS 01 would require a crossing over Stratford Brook which would require a 20m long culvert with upstream and downstream realignments and which is likely to cause local reduction in habitat quality.

The crossing is expected to be a culvert with potential impacts of less dynamic flow, more uniform river morphology, loss of sediment continuity and loss of riparian zone. The river realignment upstream and downstream presents a potential and practical opportunity to improve the existing channel (though this would need to be confirmed by survey).

There are minor drainage ditches that may need to be realigned as part of the scheme and some crossings may also be required. These ditches are straightened and of minimal ecological value (though survey is needed to confirm this assumption). There is a risk of loss / disturbance damage to aquatic ecology, substrate and riparian zone

The proposed works may damage the riparian zone and restrict floodplain flows (within the Flood Zone) and there may be drainage of potentially contaminated surface water runoff to groundwater

9.3.2 WIS-10

9.3.2.1 *Air Quality*

Included in section 9.2.1.1 and 9.2.2.1.

9.3.2.2 *Cultural Heritage*

WIS10 has the potential to significantly affect the site of a WWII anti-aircraft battery at Wisley Common (MSE21230) during construction. Due to previous disturbance from the airfield, no significant effects are expected upon hitherto unknown archaeological remains due to this option. No significant effects are expected upon the Royal Horticultural Society's Garden, Wisley as the land take would be from areas outside the gardens themselves.

9.3.2.3 *Landscape and Visual*

The potential landscape and visual impacts for this Option are concentrated within the area to the west of Elm Corner and would extend the influence of the road corridor further to the east of the A3 with the alignment up to 200m from the edge of the existing road. WIS 10 will involve the loss of vegetation from the wooded area adjacent

to Elm Lane to construct the proposed over bridge. This would have the result of potentially increasing the visual impact on the residential receptors located at Elm Corner though the belt of established planting here will assist in limiting this impact on these receptors and on the wider landscape. The alignment of the side road back to Ockham junction would be alongside the existing woodland on the edge of the disused Wisley Airfield and would have limited landscape and visual impact. There would be a minor loss of 1.50 ha of land from the RHS Wisley to construct the earthworks for the overbridge.

9.3.2.4 *Nature Conservation*

Due to the need for earthworks required for the crossing over the A3 within the outer edge of the SPA, SSSI and LNR in the south west section, WIS 10 is anticipated to have an impact of moderate significance on Thames Basin Heaths SPA and Ockham and Wisley Commons SSSI. It would require 0.36ha of land take from the SPA, 0.36 ha from the SSSI and 1.06 ha from the LNR. In addition, WIS 10 is considered likely to have an impact of moderate significance on the Thames Basin Heaths SPA features and other notable and/or protected species, as well as an impact of moderate significance on Wisley Airfield SNCI and an impact of slight significance the Ockham and Wisley LNR.

9.3.2.5 *Noise and Vibration*

Included in section 9.2.1.5 and section 9.2.2.5.

9.3.2.6 *People and Communities*

WIS 10 will adversely affect RHS Gardens Wisley and Wisley and Ockham Commons, during construction with access to and enjoyment of the gardens and commons likely to be affected. It is estimated 1.3ha of land take from the commons and 0.03ha of land take from RHS Gardens Wisley would be needed to accommodate the option. 1.23ha of Access Land is also required for this option and there will be a loss of woodland. This option will provide improved access to the RHS Wisley resulting in a slight beneficial effect but there could be adverse effects for residents at Elm Corner with increased traffic moving in close proximity to the housing here. PRoWs FP15 and Bridleway BW544 are likely to be adversely effected during construction with effects on operation likely to decrease to Neutral or Slight Adverse. The construction of the new bridge will alter the view from the road for drivers on the A3.

9.3.2.7 *Road Drainage and the Water Environment*

WIS 10 will require a river crossing over Stratford Brook which is assumed to be a 30m long culvert with upstream and downstream realignments and which is likely to cause a local reduction in habitat quality

The crossing would have potential impacts of less dynamic flow, more uniform river morphology, loss of sediment continuity and loss of riparian zone. The river realignment upstream and downstream presents a potential and practical opportunity to improve the existing channel.

There are several minor drainage ditches that may need to be crossed or realigned as part of the scheme. These ditches are of minimal ecological value but there is a risk of loss / disturbance damage to aquatic ecology, substrate and riparian zone

The proposed works may damage the riparian zone and restrict floodplain flows (within the Flood Zone) and there may be drainage of potentially contaminated surface water runoff to groundwater

9.3.3 Summary

Both Option WIS-01 and WIS-10 have equal potential to achieve the project objectives but overall WIS-01 is preferred to WIS-10 because its smaller effect on Nature Conservation and People and Communities outweighs the larger effect on Cultural Heritage.

9.4 A3 Painshill to M25 J10 access

9.4.1 PAIN-04

9.4.1.1 Air Quality

Included in section 9.2.1.1 and 9.2.2.1.

9.4.1.2 Cultural Heritage

PAIN04 has the potential to have a significant effect upon the setting of the Gothic Tower (1191694) and Foxwarren Cottage (1030053), as well as the setting and character of Painshill Park (1000125). Due to the location and limited extent of works, no significant effects are anticipated on previously undiscovered archaeological remains.

9.4.1.3 Landscape and Visual

The potential landscape and visual impacts for this Option are concentrated in the south west edge of Painshill Park, adjacent to the existing A3. Approximately 1.2 ha of the Registered Park and Garden would be lost with the scheme as well as 0.5 ha of ancient woodland. There would be slight adverse landscape impacts during the construction phase changing to predominantly neutral during the operational phase. There would be adverse visual effects for one receptor, which could be mitigated by appropriate planting. Careful detailed design taking into consideration the local landscape characteristics would be required, in particular the boundary treatment to the Painshill Park Registered Park and Garden.

9.4.1.4 Nature Conservation

PAIN 04 is likely to have an impact of very large significance on Ancient Woodland with approximately 0.5 ha of the woodland lost. In addition, PAIN-04 is considered likely to have an impact of moderate significance on notable and/or protected species. PAIN-04 is also considered to have an impact of slight significance on the Ockham and Wisley LNR.

9.4.1.5 Noise and Vibration

Included in section 9.2.1.5 and section 9.2.2.5.

9.4.1.6 People and Communities

Painshill Park will be adversely affected during construction, with access to and enjoyment of the park likely to be reduced. It is estimated that 1.2ha of land take from the park will be needed to accommodate option PAIN-04 which could have very large adverse effect on the park. It also expected that construction will affect neighbouring residential and commercial receptors in Redhill Road and could temporarily affect access. The provision of a new NMU route away from the existing A3 could have a beneficial effect for pedestrians, cyclists and equestrians. The construction of the new bridge will alter existing views from the A3 for road users

9.4.1.7 Road Drainage and the Water Environment

PAIN 04 would have neutral impacts with only drainage of potentially contaminated surface water runoff to groundwater of note.

9.4.2 PAIN-05D

9.4.2.1 Air Quality

Included in section 9.2.1.1 and 9.2.2.1.

9.4.2.2 Cultural Heritage

PAIN05 has the potential to significantly affect Painshill Park, Belfry House (1030133), Cobham Bridge (1377488), Round House (1191800) and Painshill Park (1000125), with significant adverse effect on the setting and character of Painshill Park and associated designated heritage assets due to the extent of encroachment within the parkland. It also has the potential to significantly affect hitherto unknown archaeological remains.

9.4.2.3 Landscape and Visual

The route of PAIN-05D takes it along the edge of and through the main part of the park with approximately 2.2 ha of the park being taken for the scheme. The highly sensitive nature of the Registered Park and Garden means that there would be a large adverse landscape impacts during the construction and operational phases. There would also be adverse visual effects for three receptors, which could be mitigated to some extent by appropriate planting.

9.4.2.4 Nature Conservation

PAIN-05 is likely to have an impact of very large significance on an area of Ancient Woodland adjacent to the A3 with approximately 0.5 ha lost to the scheme. In addition, option PAIN-5D is considered likely to have an impact of moderate significance on notable and/or protected species. Total land take is expected to be 2.42 ha. and will require a crossing over the River Mole with potential adverse effects on aquatic ecology.

9.4.2.5 Noise and Vibration

Included in section 9.2.1.5 and section 9.2.2.5.

9.4.2.6 People and Communities

Painshill Park will be adversely affected during construction with access to and enjoyment of the park likely to be affected and it is estimated that 2.42ha of land take from Painshill Park will be required. Residential and commercial receptors in Portsmouth Road, Cobham, which include a fire station, close to the junction with Bridgeway are likely to be adversely effected during construction. The adverse effect will decrease in operation. The users of PRoWs FP65 and FP66 in Cobham are similarly likely to be adversely effected during construction with FP 66 being affected by the construction of the new bridge and increased vehicular movements close to the roundabout. The effect of PAIN 05 in operation will decrease.

9.4.2.7 Road Drainage and the Water Environment

A 30m long single span crossing over existing River Mole channel will be required with PAIN-05. The proposed embanked approaches to bridge would run up to the river's edge and the bridge has the potential to affect light entering the channel, affecting habitat. The proposed embanked approaches to bridge may also damage the riparian zone and will significantly restrict floodplain flows (the bridge is within Flood Zone 3). There may be drainage of potentially contaminated surface water runoff to groundwater.

9.4.3 Summary

Both Option PAIN-04 and PAIN-05D have equal potential to achieve the Project objectives but overall PAIN-04 is preferred to PAIN-05D because of its smaller effect on Cultural Heritage, Landscape and Visual and Road Drainage and the Water Environment.

9.5 Environmental summary

Table 9-1 and Table 9-2 provide a summary of the environmental impacts of each scheme option and element.

Table 9-1 Environmental impact summary for Option 9 and Option 14

	Objective	Option 9	Option 14
Environment	Ensure through good design, that an appropriate balance is achieved between functionality and the scheme's contribution to the quality of the surrounding environment, addressing existing problems wherever feasible, avoiding, mitigating or compensating for significant adverse impacts and promoting opportunities to deliver positive environmental outcomes.	Both Option 9 and 14 have equal potential to achieve the project objectives but overall Option 14 is preferred to Option 9 because of its significantly smaller effect on the following topics: Cultural Heritage, Landscape and Visual, Nature Conservation and People and Communities	
Air quality	Support compliance with the UK's legally binding limits and targets on air quality and water quality status and support targets to cut greenhouse gas emissions and objectives for local air quality management areas.	The Scheme would not have a significant effect on local air quality at human health receptors for any of the options. However, it is likely that there could be potentially significant adverse effects on the designated ecological sites in the study area.	The Scheme would not have a significant effect on local air quality at human health receptors for any of the options. However, it is likely that there could be potentially significant adverse effects on the designated ecological sites in the study area.
Cultural heritage	Recognise the significance of designated heritage assets close to the route of the scheme, including at Painshill Park and at Wisley Gardens through incorporating suitable mitigation and/or design measures to avoid or reduce significant harm.	Two Large Adverse effects and three Moderate Adverse effects	Any effects considered to be non-significant
Landscape and visual impact		A large adverse landscape impacts during the construction phase changing to moderate adverse with mitigation during the operational phase	A moderate adverse landscape impacts during the construction phase changing to slight adverse during the operational phase
Nature conservation	Avoid, mitigate and compensate for adverse effects on the integrity of the Thames Basin Heaths Special Protection Area and other statutory designated nature conservation sites and promote opportunities.	Option 9 would require 11.64 ha from the SPA 20.17 ha from the SSSI 16.68 ha from the LNR	Option 14 would require 3.05 ha from the SPA 6.05 ha from the SSSI 4.99 ha from the LNR
Noise and vibration	Improve the quality of life for nearby residents, through addressing the effects of noise on people in the declared noise important area's (IA's) and ensuring that significant noise effects are mitigated.	The magnitude of impact (DMRB) assessment demonstrates that Option 9 is not predicted to result in a "major" increase in noise at the noise sensitive receptors identified within the study area. "Minor" noise increases and decreases, as well as numerous "negligible" impacts in the opening year and the design year are predicted	The magnitude of impact (DMRB) assessment demonstrates that neither Option 14A or B is predicted to result in a "major" increase in noise at the noise sensitive receptors identified within the study area. "Minor" noise increases and decreases, as well as numerous "negligible" impacts in the opening year and the design year are predicted
People and communities	Take account of the concerns of local communities and other key stakeholders raised during consultations.	Adverse effects during construction and operation on receptors close to the M25 and A3. It is expected that significant amounts of community land and some development land will be affected by this option, both during construction and operation	Option 14 requires significantly less land take from the commons. The change to the amenity and landscape in the immediate area around M25 J10 are likely to be less than Option 9 due to the relatively small increase in size of the roundabout
Road drainage and the water environment	Support compliance with the UK's legally binding limits and targets on air quality and water quality status and support targets to cut greenhouse gas emissions and objectives for local air quality management areas.	Would require a 65m culvert for a minor tributary of the River Mole with upstream and downstream realignments also needed. The culvert is likely to cause local reduction in habitat quality. This option would also lead to the loss of approximately 150m of a watercourse assumed to contribute to Wey catchment which is likely to cause a local reduction in habitat quality	Impacts on two sections of watercourse - one requires a 40m long culvert extension to the south of the M25 with upstream realignments, the other requires a 30m long culvert extension to the north of M25 with downstream realignments

Table 9-2 Environmental impact summary for scheme components

	Objective	WIS01	WIS10	PAIN04	PAIN05
Environment	Ensure through good design, that an appropriate balance is achieved between functionality and the scheme's contribution to the quality of the surrounding environment, addressing existing problems wherever feasible, avoiding, mitigating or compensating for significant adverse impacts and promoting opportunities to deliver positive environmental outcomes.	Both Option WIS-01 and WIS-10 have equal potential to achieve the project objectives but overall WIS-01 is preferred to WIS-10 because its smaller effect on Nature Conservation and People and Communities outweighs the larger effect on Cultural Heritage		Both Option PAIN-04 and PAIN-05D have equal potential to achieve the Project objectives but overall PAIN-04 is preferred to PAIN-05D because of its smaller effect on Cultural Heritage, Landscape and Visual and Road Drainage and the Water Environment	
Air quality	Support compliance with the UK's legally binding limits and targets on air quality and water quality status and support targets to cut greenhouse gas emissions and objectives for local air quality management areas.	Included in Option 9 and 14 above	Included in Option 9 and 14 above	Included in Option 9 and 14 above	Included in Option 9 and 14 above
Cultural heritage	Recognise the significance of designated heritage assets close to the route of the scheme, including at Painshill Park and at Wisley Gardens through incorporating suitable mitigation and/or design measures to avoid or reduce significant harm.	Potential to significantly affect the Royal Horticultural Society's Garden, Wisley	Potential to significantly affect the site of a WWII anti-aircraft battery at Wisley Common (MSE21230) during construction. No significant effects are expected upon the Royal Horticultural Society's Garden, Wisley	Potential to have a significant effect upon the setting of the Gothic Tower and Foxwarren Cottage, as well as the setting and character of Painshill Park	Potential to significantly affect Painshill Park, Belfry House, Cobham Bridge, Round House and Painshill Park, with significant adverse effect on the setting and character of Painshill Park and associated designated heritage assets.
Landscape and visual impact		Would affect the southern edge of RHS Wisley, a Registered Park and Garden of Historic Interest and a receptor of high sensitivity but the proposal would affect only the outer most edge of the park which is compromised by the presence of existing major roads.	Would extend the influence of the road corridor further to the east of the A3 and involve the loss of vegetation from the wooded area adjacent to Elm Lane, potentially increasing the visual impact on the residential receptors at Elm Corner. There would be a minor loss of land from RHS Wisley to construct the overbridge	The potential landscape and visual impacts for this Option are concentrated in the south west edge of Painshill Park, adjacent to the existing A3. Approximately 1.2 ha of the Registered Park and Garden would be lost with the scheme as well as 0.5 ha of ancient woodland. There would be slight adverse landscape impacts during the construction phase changing to predominantly neutral during the operational phase	The route of PAIN-05D takes it along the edge of and through the main part of the park with approximately 2.2 ha of the park being taken for the scheme. The highly sensitive nature of the Registered Park and Garden means that there would be a large adverse landscape impacts during the construction and operational phases
Nature conservation	Avoid, mitigate and compensate for adverse effects on the integrity of the Thames Basin Heaths Special Protection Area and other statutory designated nature conservation sites and promote opportunities.	WIS 01 would have an impact of moderate significance on notable or protected species	WIS 10 would require 0.36ha of from the SPA 0.36 ha from the SSSI 1.06 ha from the LNR	PAIN 04 is likely to have an impact of very large significance on Ancient Woodland with approximately 0.5 ha of the woodland lost. In addition, PAIN-04 is considered likely to have an impact of moderate significance on notable and/or protected species. PAIN-04 is also considered to have an impact of slight significance on the Ockham and Wisley LNR	PAIN-05 is likely to have an impact of very large significance on an area of Ancient Woodland adjacent to the A3 with approximately 0.5 ha lost to the scheme. In addition, option PAIN-5D is considered likely to have an impact of moderate significance on notable and/or protected species. PAIN 05 would require a crossing over the River Mole with potential adverse effects on aquatic ecology
Noise and vibration	Improve the quality of life for nearby residents, through addressing the effects of noise on people in the declared noise important area's (IA's) and ensuring that significant noise effects are mitigated.	Included in Option 9 and 14 above	Included in Option 9 and 14 above	Included in Option 9 and 14 above	Included in Option 9 and 14 above

	Objective	WIS01	WIS10	PAIN04	PAIN05
People and communities	Take account of the concerns of local communities and other key stakeholders raised during consultations.	Very Large Adverse effect on RHS Wisley but will provide improved access to RHS Wisley and Wisley Common resulting in a slight beneficial effect.	Slight adverse effect on RHS Wisley but with improved access in the long term. Loss of common land and temporary effect on PRoWs during construction and potential slight adverse effects on Elm Corner residents.	Painshill Park will be adversely affected during construction, with access to and enjoyment of the park likely to be reduced. The provision of a new NMU route away from the existing A3 could have a beneficial effect for pedestrians, cyclists and equestrians	Painshill Park will be adversely affected during construction and operation with access to and enjoyment of the park affected. The users of PRoWs FP65 and FP66 in Cobham are likely to be adversely affected during construction by the construction of the new bridge and increased vehicular movements close to the roundabout. The provision of a new NMU route away from the existing A3 could have a beneficial effect for pedestrians, cyclists and equestrians
Road drainage and the water environment	Support compliance with the UK's legally binding limits and targets on air quality and water quality status and support targets to cut greenhouse gas emissions and objectives for local air quality management areas.	Would require a crossing over Stratford Brook which would require a 20m long culvert with upstream and downstream realignments and which is likely to cause local reduction in habitat quality	Would require a river crossing over Stratford Brook which is assumed to be a 30m long culvert with upstream and downstream realignments and which is likely to cause a local reduction in habitat quality	PAIN 04 would have neutral impacts with only drainage of potentially contaminated surface water runoff to groundwater of note	A 30m long single span crossing over existing River Mole channel will be required. The proposed embanked approaches to bridge would run up to the river's edge and the bridge has the potential to affect light entering the channel, affecting habitat. The proposed embanked approaches to bridge may also damage the riparian zone and will significantly restrict floodplain flows. There may be drainage of potentially contaminated surface water runoff to groundwater

10 Summary of public consultation

10.1 Introduction

This chapter presents how the public were informed of the public consultation events, how the options identified were presented, the responses received from members of the public, statutory stakeholders and other bodies, as well as a consideration of the consultation responses.

These responses assisted in identifying the Preferred Option as well as design requirements as the scheme approaches statutory consultation and Development Consent Order application.

10.2 Presented options

The two options which this consultation sought views on were:

- Option 9 - retaining the existing roundabout but adding a fourth level layout to provide free-flowing right turns from the A3 to the M25 whilst also providing dedicated free-flowing left turns.
- Option 14 - involving modifying the existing roundabout by elongation, with additional lanes to provide more circulatory capacity and enable more traffic to discharge the roundabout whilst also providing dedicated free-flowing left turns

Views were also sought on the proposal to widen the A3 between Ockham and Painshill to 4 lanes (currently 3 lanes), creating an extra dedicated lane for vehicles turning left onto the A245 at the Painshill roundabout, and changing local accesses to make these safer and cause fewer delays on the A3. Views were also sought on the decision to reject Option 16.

10.3 Consultation arrangements

The public consultation period ran from 5 December 2016 to 6 February 2017, a period of 8 weeks. During this time, seven events open to the public were held across the M25 J10 area in addition to an event directed at Local Authorities, Parishes and key stakeholders. These events were held to both the north and south of M25 J10, in Cobham and Ripley respectively.

A letter of invitation to the exhibitions was sent to 36,500 households within the locality. Information was also available via the Highways England website and posters advertised that hard copy brochures and questionnaires were available from six libraries across the area. Advertising in the local media was also undertaken, both in hard copy and online.

The scheme and public consultation were announced in October 2016 via a DfT press release which covered several South East RIS schemes. Local media were also alerted by the Highways England press office and invited to attend a dedicated briefing session on Monday 5 December when the consultation opened.

The consultation material consisted of a consultation brochure and questionnaire, exhibition boards available to view at the events, and two key technical reports, the Technical Appraisal Report and the Environmental Study Report, available in hard copy at exhibitions and in PDF format on the Highways England scheme webpage.

A 3D visual representation of what each option could look like in 2037 was displayed at the exhibitions, as well as being available online https://youtu.be/R8Xt2QE-_4E

10.4 Effectiveness of the public consultation

The public consultation exhibitions received 758 visitors over the seven events, with 49% of attendees coming from KT11 and GU23 post codes. The Highways England M25 J10/A3 Wisley interchange improvement website recorded 6,210 unique page views.

Questionnaire responses for the consultation were received either in hard copy (i.e. a paper consultation survey or letter relating to the consultation) or electronic form (online consultation survey or email relating to the consultation). Both hard copy and electronic responses were then collated into a single data source, which was then analysed to provide the charts, tables and text found in this report.

A total of 722 questionnaire responses were received during the consultation period, comprising 486 online questionnaires, 145 hard copy questionnaires and 90 responses via the Highways England Customer Contact Centre. In addition, 39 long form letter responses were received from stakeholders including local authorities, parish councils, environmental groups, local residents and landowners.

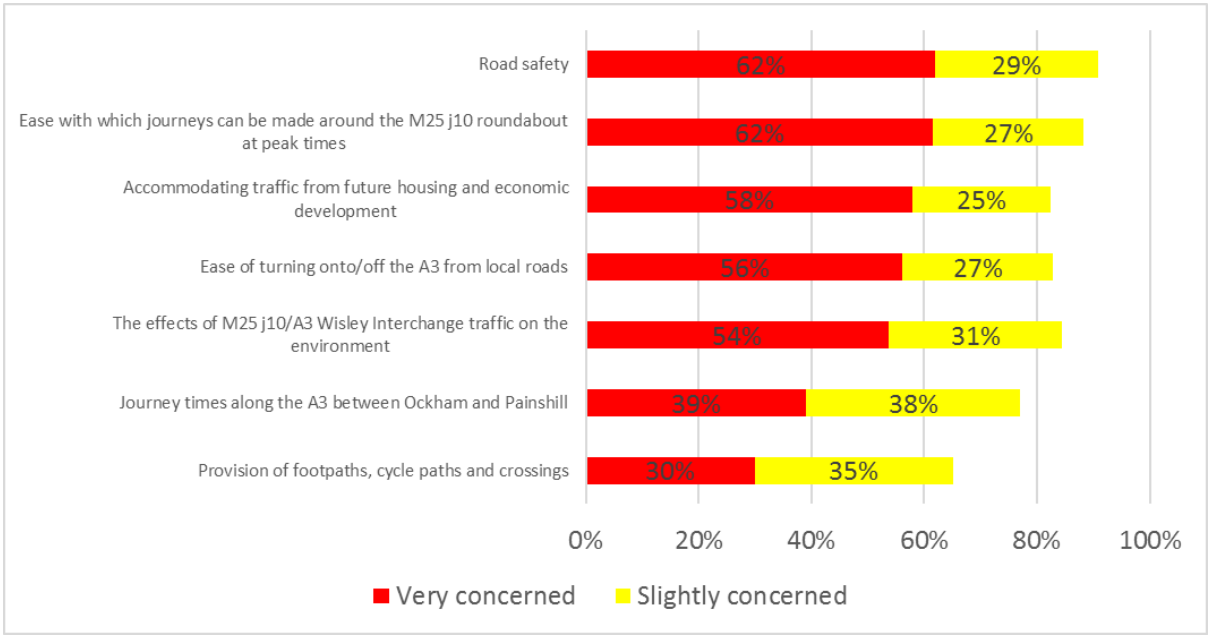
In terms of the age of respondents, over 55s formed the largest age group, with 53% falling into the category. Just over 1/3 of questionnaire respondents were aged 25-54, while only 3% we aged 24 or under. The advertising campaign and media activity about the public consultation did not target any particular age groups, suggesting that under 24s represent a 'hard to reach' group for future consultation.

There is an opportunity to use additional communications channels such as social media in future consultations as well as different locations to publicise the consultation such as schools, colleges and businesses.

10.5 Questionnaire response analysis

The questionnaire responses show that an overwhelming majority of respondents are concerned about issues connected with the junction, with congestion and road safety having the highest levels of concern. This supports the need for the scheme, and its core objectives.

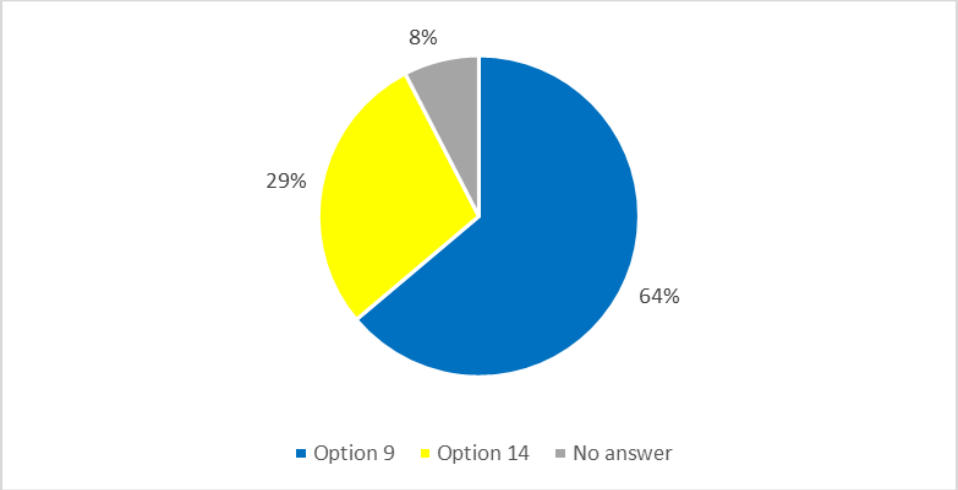
Figure 10-1 How concerned are you about the following issues?



10.5.1 Option preferences

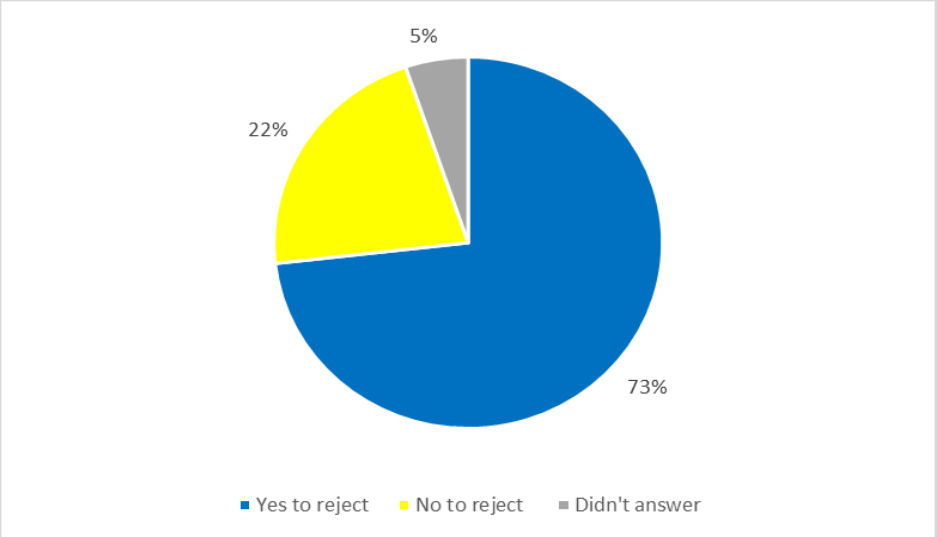
Over 60% of the respondents preferred Option 9, the four-level flyover, compared to Option 14, the enlarged roundabout.

Figure 10-2 Preferred Option from questionnaire



Both the questionnaire respondents and the stakeholders strongly supported the decision by Highways England to reject Option 16, the option providing full free flow access for all movements at the junction. One stakeholder suggested that Option 16 should be revisited, although concerns were still raised over its environmental impact.

Figure 10-3 Right to reject Option 16?



10.5.2 Option outcomes

Respondents were asked to indicate for each option whether they thought it would deliver against several specific outcomes. Option 9 was deemed to deliver better against these outcomes than Option 14.

The same question was asked about the outcomes of the proposed widening of the A3 between Ockham and Painshill. A3 widening from 3 lanes to 4 lanes, forms part of both Options 9 and 14. A total of 78% of respondents agree that A3 widening would improve conditions for through traffic. However, the scheme's ability to provide access to public transport, regarding the provision of bus stops currently located on the A3, was less well supported, with only 35% agreeing it would achieve this outcome.

Figure 10-4 Percentage agreeing option will achieve outcomes

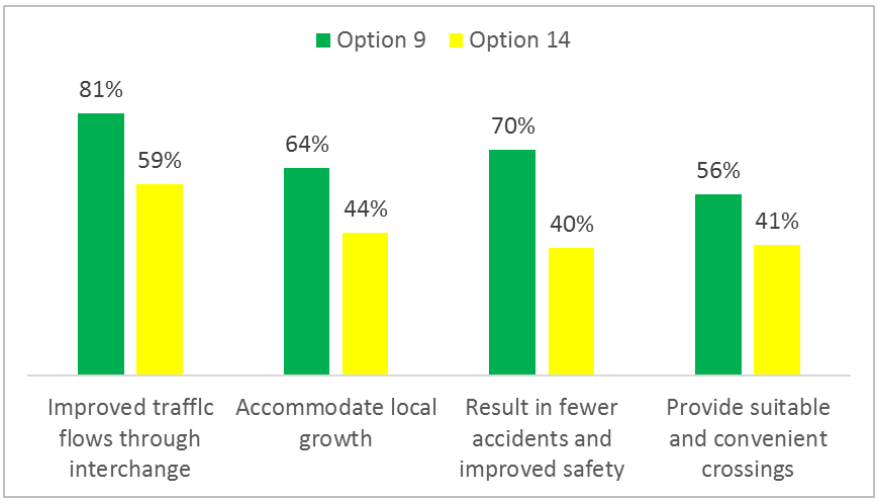


Figure 10-5 Percentage agreeing that A3 widening will achieve outcomes

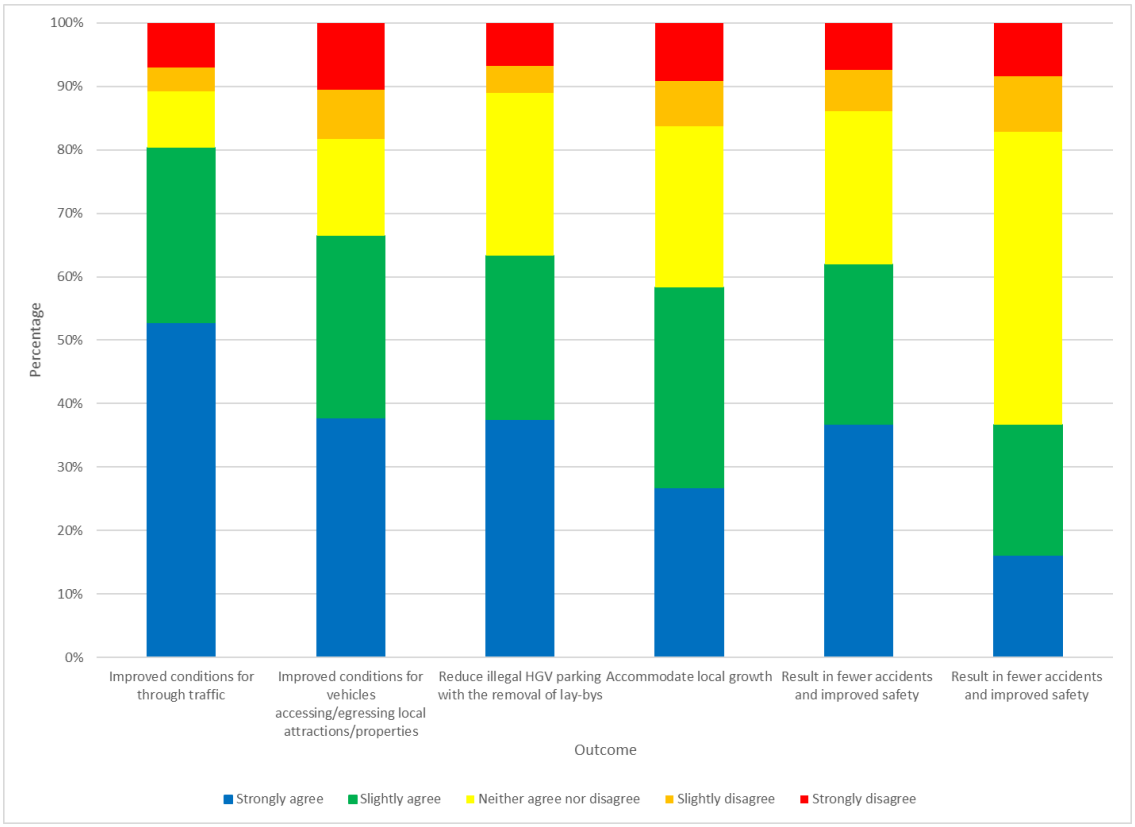
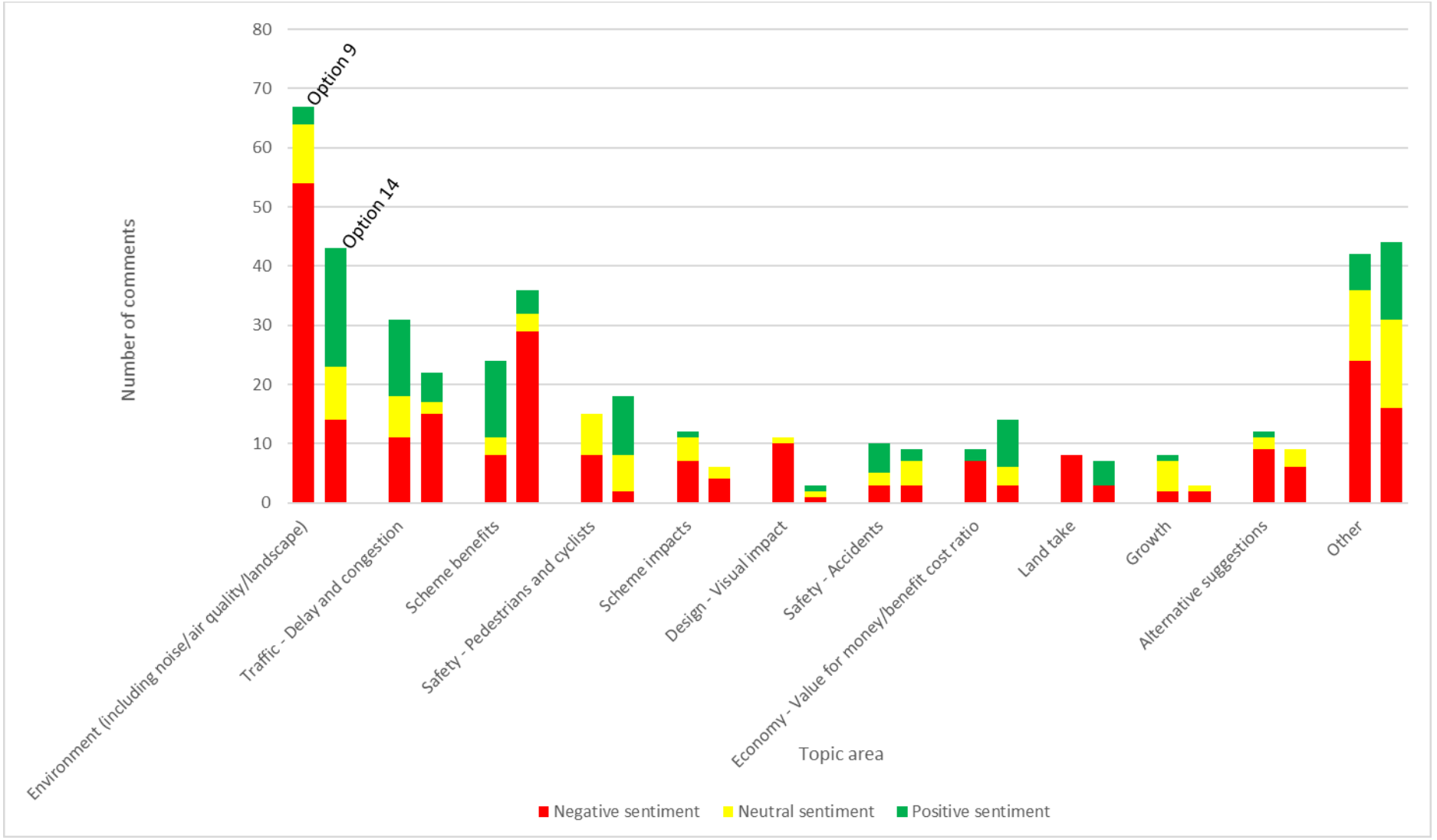


Figure 10-6 analyses the sentiment topics areas for the comment text box responses for both Options 9 and 14 and compares them side by side. The notable differences are the sentiment of responses around the environment for Option 9, where over 50 comments are negative, compared to 14 for Option 14. Comments about the scheme benefits were much more positive for Option 9 compared Option 14 however.

Figure 10-6 Sentiment analysis of free text responses by topic



10.5.3 Open text responses

In total 792 unique comments were received across questions A2, A3, A4 and the final open comment box. These have been analysed to pick out more specific (and in particular location based) key topics which recurred throughout the consultation responses.

The table below (Table 10-1) outlines the number of unique comments by topic area from the questionnaire. This highlights some of the key issues that people outlined in their survey responses that are not necessarily addressed by the survey questions – notably access arrangements total 155 (almost 20%) of all comments received.

Table 10-1 Theme analysis of comments from all open text box questions

Topic area	Number of responses
Environmental concerns	214
RHS Wisley access/impact	76
Walking/cycling/equestrian	66
Side road access	40
Painshill/A245 access/impact	39
Wisley Airfield/local development	33
Congestion on the M25	29
Ockham South facing slips	26
Ripley congestion	25

In relation to the specific scheme components, the following comments were received:

Environment

- *Option 9 would be visually intrusive, increase noise levels (due to vehicles being elevated) and take additional land. In addition, the land use on the SE side is unacceptably near the boundary of Painshill Park, and the noise and pollution will impact on the amenity there.*
- *Option 14 appears to involve less damage to the landscape, will be less intrusive, and probably require considerably less archaeological mitigation work.*
- *I am totally opposed to both proposed schemes. This is an area with unique environments, listed buildings, rare plants, insects, birds and animals and should be protected.*
- *A much needed and vital improvement to the road infrastructure of the M25 Motorway and A3 Trunk Road interchange, to alleviate current congestion and delays and provide capacity for future road usage growth, with negligible impact on the local environment, both in terms of human and wildlife habitat.*

Walking, cycling, equestrian

- *We require a Cycle Super Highway from the Ockham junction to the Cobham junction including access to RHS Wisley and Pyrford. We understand that the road is to be constructed to Expressway standards and therefore that a segregated two-way cycle lane must be provided.*
- *Option 9 gives poor cycle/pedestrian crossings over the shared roundabout.*
- *Option 14 provides better cycle/pedestrian crossings as it dedicates the old roundabout for this purpose. With the cost saving for this Option however it should be possible to construct a dedicated cycle/pedestrian bridge over the M25 to avoid cyclists having to stop at traffic light crossings on the slip roads.*

- *I think as you are building this road suitable provision is made for bikes. This should include a proper segregated cycle way.*
- *It's really important to provide good segregated cycling facilities that are enjoyable to use so that people are encouraged away from their cars*
- *I have had to cross both the M25 and A3 on horse although no longer do this. It is important that this facility is maintained and if possible improved otherwise horse riders will be confined to the very congested roads to the north west of this junction.*

Elm Lane

- *Elm lane and Wisley access vital for Pyrford residents as a245 too congested to use most of the time.*

Painshill Southbound / Seven Hills Road

- *If adopting either of these schemes, unless Byfleet Road, Seven Hills Road and A3 through Guildford are widened, traffic jams will increase*
- *The Seven Hills junction is a major root cause of current Painshill traffic issues and is not subject to improvement making this proposal a waste of good resource. There is no point in spending millions on creating capacity for cars on the A3 for cars exiting at Painshill - (effectively you are proposing a car park).*
- *I don't feel the information available at this time is overly clear to understand the impact on the local areas. Consideration needs to be given to the impact on the local area such as the Byfleet Road, which is already very busy.*
- *Widening of the A3 does NOT help local/or any traffic since the problem/bottlenecks lie within the Byfleet Road (beyond the junction with Seven Hills Road) and within Cobham Village High Street. Both are narrow/single lane in each direction. Traffic will just back up along slip roads at Painshill Junction. Also Ockham junction is surrounded by similar situation through Ripley village and narrow local roads. We need more local access to A3, not less e.g. access to A3 southbound at Ockham and along A3 between Ockham and Painshill north and southbound. And compared with Option 14 too much land required and HUGE impact on local environment (visually and physically) plus would add distance to some journeys onto/off M25*

Wisley

- I *am most concerned that the changes to the A3 between Ockham and Painshill do not increase the level of traffic through Ripley and Send and along other roads any more than organic growth implies. There must be two-way access from the Ockham Interchange Jn to Wisley Village and Gardens otherwise there will be unacceptable levels of traffic among many local roads as visitors try to access Wisley Gardens.*
- *Access to Wisley Gardens & Wisley Lane off A3 travelling north cumbersome. Can a slip road off A3 to Ockham junction be decided? And a safety link to A3 south at same junction*
- *Important to improve access and exit from RHS Wisley which is presently 'less than safe' An access road on the RHS west side will be safer at the Ockham roundabout and cheaper.*
- *For many years I have thought that when travelling north on the A3 after it's junction with the Ockham roundabout that there should be a dedicated lane for Wisley traffic. Since apart from traffic from Wisley itself, ALL traffic has to approach from the south, and those not already travelling north on the A3, have to use the Ockham roundabout and join the A3 for a VERY short distance, therefore disrupting the flow.*

10.6 Stakeholder responses

Highways England identifies stakeholders as *those which may have an interest in or are otherwise affected by the work we do*. Stakeholders (local authorities, parish councils, environmental bodies and landowners) were informed of the Public Consultation in advance and invited to a briefing session on the opening day of the public exhibitions. Some of these stakeholders chose to send in long form letter responses to raise their thoughts or concerns rather than completing the questionnaire.

It is important to note that the majority of these respondents (26 out of 39) expressed no preference for an option for the junction design itself. Of those that did state a preference, there was an almost even split of support for Option 9 and 14.

Regarding Option 16, again most respondents did not express a view about the rejection of Option 16. Only one (Surrey County Council) suggested that Highways England had been wrong to reject this larger scheme, although they did raise concern about its potential environmental impact. Ripley Parish Council also noted that they would have supported Option 16 if it had been part of the consultation, but as it had been rejected stated a preference for Option 9.

A summary of the key findings from the stakeholder long form responses is as follows:

- Number of responses: 39
- Option 9 preference: 7
- Option 14 preference: 6
- No Option preference stated: 26
- Support rejection of Option 16: 6
- No comment given on Option 16 rejection: 32
- Wrong to rejection Option 16: 1

10.7 Side roads

The first question asked people to rate how concerned they are about several issues, including the ease of turning on/off the A3 from local roads. 56% of respondents said they were very concerned about this issue.

With regards to whether the widening of the A3 would achieve a range of outcomes, over 66% of respondents slightly or strongly agreed that widening would improve conditions for vehicles accessing/egressing local attractions and properties.

There were no questions that specifically asked about the impacts on side roads from the widening of the A3 because this was the first opportunity to understand who the users were, what their access issues might be and how they could be addressed as we developed the design.

In addition, meetings were held with residents and landowners to ascertain what needs and issues they had. This was beneficial in that it gave the project team the opportunity to go on site with these key stakeholders to understand how their current access arrangements worked and what they would like to achieve from any changes to that access. As a result of these discussions a range of design options have been developed, but it is clear that they need to be more thoroughly assessed and discussed before any preferred options can be chosen – particularly where access arrangements could impact on a number of properties/sites.

10.8 Conclusion

Of the two options presented during the public consultation, Option 9 gained the most support (64% vs. 29% for Option 14). However, concerns were raised about its scale and the impact it would have on the land around the junction, which is environmentally sensitive.

Stakeholders had a more mixed view, with the majority (26 of 39) preferring to give no preference at this stage.

Key concerns across both the questionnaire respondents and those who submitted letters (long form responses) include:

- the potential environmental impacts of the scheme (air, noise and visual) – particularly for Option 9;
- the potential loss of habitat and Special Protection Area (SPA)/common land;
- the longevity of Option 14 in delivering benefits to congestion;
- local roads and driveways that have direct access to the A3
- concern whether the scheme could deliver significant benefits without any further action being taken on the M25 itself.

In terms of local accesses, considerable effort during and following the public consultation period has been invested in developing and improving design ideas to meet local stakeholder needs and views. At the time of writing, discussions with stakeholders regarding several local access options are on-going and consensus is yet to be reached regarding a preferred option for these.

Regarding the M25 it is important to consider Highways England's current development of a separate scheme to upgrade M25 junction 10-16 to Smart Motorway, which would provide additional capacity during peak periods.

Other key topic areas that arose from the both the public exhibitions and open text comments in the questionnaire responses include: congestion in Cobham and Ripley, introducing south facing slip roads at Ockham Interchange junction, and the potential development at Wisley Airfield.

11 Appraisal Summary Table

The ASTs for Option 9 (Scheme 1) and Option 14 (Scheme 5) are included in Appendix C.

12 Conclusions and the recommended route

12.1 Value in achieving project objectives

The Value Management Workshop focused on ensuring that value would be achieved by ensuring compliance with the National Policy Statement for National Networks and other key legal tests that might otherwise cause a Development Consent Order application to fail. A key feature of this being:

- Highly sensitive local environment, therefore a need to ensure sufficient weight in both setting scheme objectives and embedding in the assessment process
- A robust & objective VWM process which gives sufficient weight to legal and policy tests and Development Consent Order outcomes rather than simple scoring
- Feasible operational alternatives as the starting point
- Focus on “show-stopper” policies at this stage
- Need for benefits to outweigh impacts – an NSIP legal requirement.

The starting point of the assessment was to determine that the options were feasible operationally. The analysis presented at the Value Management Workshop demonstrated that each of the two options for M25 J10 are well aligned to meeting scheme requirements (route operation, capacity, safety and social objectives). Analysis was also presented that demonstrated that Ockham interchange could perform operationally with either Wisley Lane option and that Painshill interchange and Seven Hills Road provided reduced delays compared to no intervention.

The key findings drawn from the value management workshop are presented in Table 12-1.

Table 12-1 – Key findings from the value management workshop

Component	Option		Comment
J10	Option 9	Option 14	Recognised that Option 14 carried a lower risk of compliance with the key legal and policy tests, but that, a compelling case must be made regarding its performance.
A3	D4AP		Accepted that this is needed.
Wisley Lane	WIS01	WIS10	Whilst there was a greater accumulation of impacts associated with WIS10, WIS01 also entails significant risks which need further, assessment.
Elm Lane	ELM05		Accepted that this is needed.
Camp site	CAMP02		Accepted that this is needed but to discuss further with SWT.
J10 – Painshill	SAN02		Accepted that this is needed.
Painshill – J10	PAIN04	PAIN05	Given the nature of the potential impacts to a Registered Park and Garden as well as to residents and other heritage sites, consult further on these and potentially new options.

12.2 Recommended preferred option for M25 J10 improvements

Table 12-2 summarises how Option 9 and Option 14 perform against the scheme objectives

Table 12-2 – Summarised performance of scheme options against objectives

Objective		Without intervention	Option 9	Option 14
Route Operation	Support any projected traffic increases from other committed schemes on the strategic road network.[1]	860	4062	4062
Capacity	Reduce the average delay (time lost per vehicle per mile) on the mainline A3.[2]	Northbound 47.3 s/v/m	Northbound 21.9 s/v/m	Northbound 21.7 s/v/m
Safety	Reduce annual collision frequency [3] and KSI ratio on the mainline A3 and slip roads and M25 J10 gyratory [4].	4055	3493	3671
		145 KSI	116 KSI	120 KSI
Social	Support the projected population and economic growth in the area.[5]	-	£338 million PV	£303 million PV
Environment	Ensure through good design, that an appropriate balance is achieved between functionality and the scheme's contribution to the quality of the surrounding environment, addressing existing problems wherever feasible, avoiding, mitigating or compensating for significant adverse impacts and promoting opportunities to deliver positive environmental outcomes.	-	Overall, Option 9 has the potential to achieve the project objectives.	Option 14 is preferred to Option 9 because of its significantly smaller effect on the following topics: Cultural Heritage, Landscape and Visual, Nature Conservation and People and Communities
1 – Trips associated with demand from new development demand that pass through J10; 2 - Delay in seconds per vehicle per mile for 08:00 to 09:00 (AM2 - 2037); 3 – COBA-LT total predicted accidents on Affected Route Network over 60 years; 4 - KSIs between 2022 and 2037; 5 - Net Present Value of the scheme options (Present Value Benefit – Present Value Costs)				

The PCF Stage 2 Option Selection process has identified the following for M25 J10:

- Option 14 should be pursued as it provides significant traffic and safety benefits up to 2037.
- The benefits associated with Option 14 would be achieved at a lower environmental impact than Option 9.
- However, there is still an environmental impact with Option 14, not least 3ha of Habitats/Birds Directive: Special Protection Area land, although the impact on the integrity of this land is to be determined. Furthermore, Option 14 also

covers land with the following designations: SSSI, Ancient, woodland, Green Belt, Open Space/Common Land and Habitat of Principal Importance.

- This should be accompanied with widening of the A3 between Ockham Interchange and Painshill Interchange from D3AP to D4AP. The A3 within M25 J10 is to remain D2AP.

The widening of the A3 will necessitate providing alternative access for the business and residents that presently have direct access to the A3. Throughout this report these components have been presented and assessed and during the Value Management Workshop the following recommendations are made:

A3 Ockham to M25 J10 (including Wisley Lane) access:

- Wisley Lane

  Further assessment of the impacts and benefits of the two proposed options (WIS-01 and WIS-10) to be undertaken.

  Further options developed in collaboration with RHS Garden Wisley to be considered.

- Pond Farm

  Access to Pond Farm and the campsite to be provided from Wisley Lane, although further discussion with stakeholders is required to ensure that option CAMP-02 meets all stakeholder needs.

A3 M25 J10 to Ockham access:

- Elm Corner

  To provide access as presented in the ELM-05 option – eastwards towards Old Lane via upgrades to the BOAT 525 part of Elm Lane.

A3 M25 J10 to Painshill access:

- M25 J10 to Painshill

  To provide access as presented in the SAN-02 option, with access to/from the San Domenico site and Long Orchard House and Farm to be via Seven Hills Road South.

A3 Painshill to M25 J10 access:

- Painshill to M25 J10

  Further assessment of the impact of the two proposed options (PAIN-04 and PAIN-05) to be undertaken.

  Further options developed following agreement with Painshill Park and English Heritage.

Appendices

Appendix A
Environmental constraints plan

- Grade I listed building
- Grade II listed building
- Grade II* listed building
- PCM Links
- Detailed River Network (DRN)
- Land Fill Site (Authorised)
- Land Fill Site (Historic)
- Scheduled Monument
- Important Areas for Noise
- Local Nature Reserve (LNR)
- Common Land
- Special Protection Area (SPA)
- Site of Special Scientific Interest (SSSI)
- Ancient Woodland
- Parks & Gardens
- Flood Zone 3
- Flood Zone 2

Meters

0 150 300 600 900

Rev.	Date	Description	By	Chk'd	App'd
P01	24.09.15	ISSUED FOR INFORMATION	AT	HM	NW

Drawing Status: FOR INFORMATION

Suitability: S2

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Client: highways england

Project Title: ROAD INVESTMENT STRATEGY M25 J10

Drawing Title: ENVIRONMENT CONSTRAINTS MAP Page 1 of 1

Scale	Designed	Drawn	Checked	Authorised
1:18000	AT	AT	HM	NW
Original Size	Date	Date	Date	Date
A3	24/09/15	24/09/15	24/09/15	24/09/15

Drawing Number: Project HE551522 - Originator ATK - Volume EGN - Location M25J10 - Type DR - Role EN - Number 0001

Project Ref. No. 5141148

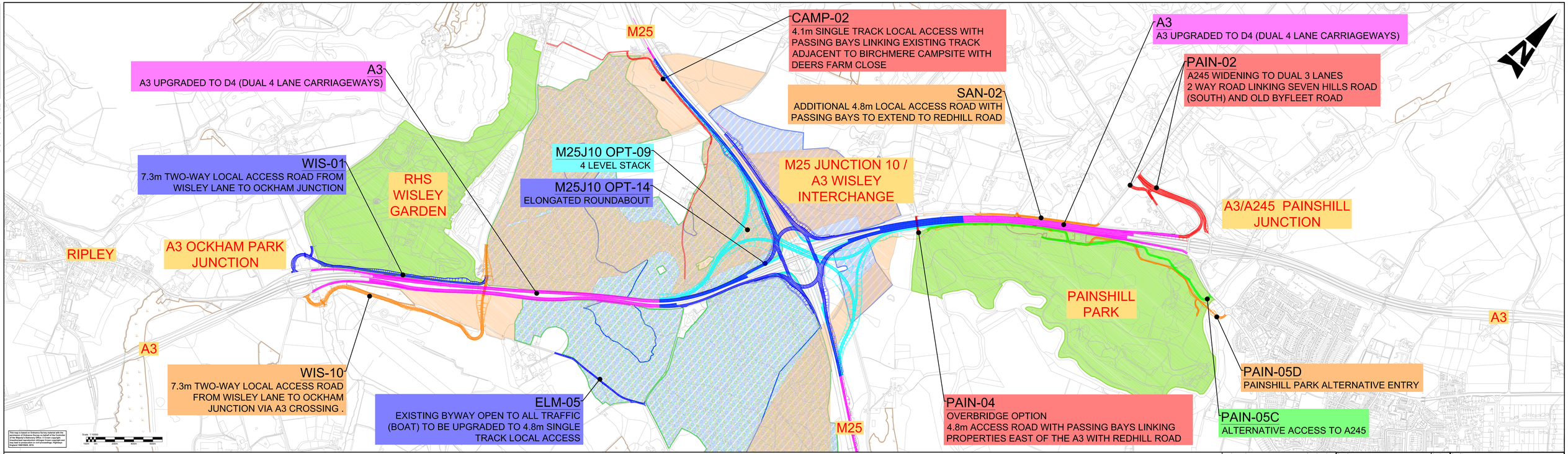
Revision P01

Appendix B
Long list of side road options

Option	M25 J10 Option	Consideration in Stage 1	Consideration in Stage 2
WIS-01 Northern two-way link road between Ockham Junction and Wisley Lane parallel to A3.	9 and 14	Taken forward to next stage	Rejected
WIS- 01a As Option WIS 01 with realigned A3 into central reserve and link road to reduce landtake.	9 and 14	Not taken forward to next stage	
WIS- 01Alternative Alternative northern two-way link road between Ockham Junction and Wisley Lane running parallel to A3 mainline option with a retaining wall adjacent to RHS Wisley Gardens, combined with a bridleway bridge linking Wisley Lane and Elm Lane.	14		Rejected
WIS- 02 Northern one-way link road from Ockham Junction to Wisley Lane and to Junction 10 parallel to A3 northbound carriageway.	9	Not taken forward to next stage	
WIS- 02a Northern two way link road from Wisley Lane to Junction 10 slip road parallel to A3 carriageway.	9	Not taken forward to next stage	
WIS-03 to 08 Southern two way link road from Wisley Lane routed under or over the A3 carriageways to Ockham Junction.	9 and 14	Not taken forward to next stage	
WIS-09 Local access road between Wisley Lane and Hutt Hill Cottage/ Scout Camp	14	Taken forward to next stage	Rejected
WIS-10 Southern two way link road from Wisley Lane routed under or over the A3 carriageways to Ockham Junction running outside the Ancient Woodland and Common Land.	9 and 14		Rejected
WIS- 11 This option entails an overbridge from Wisley Lane to the southeast side of the A3 with a two-way link road broadly parallel to the A3 southbound carriageway, similar to WIS-10, but with the overbridge moved southwards to avoid land take in the Special Protection Area (SPA) and allow Wisley Lane to remain open during construction, without the need for a temporary diversion	9 and 14		Rejected
WIS-11A	9 and 14		Rejected
WIS-11B	9 and 14		Adopted
WIS-12 RHS Gardens Wisley proposal for a direct access slip road from Wisley Lane to the A3 northbound. The proposal also includes a southern two-way link road with bridge over the A3 (similar to WIS-11) and south-facing slip roads at Ockham Junction.	9 and 14		Rejected
CAMP 01 Connections from WIS-02	9	Not taken forward to next stage	
CAMP-02 Single track local access road from Wisley Lane to existing track by Bichmere Scout Camp. Link road carriageway 4.1m wide approx 750m long with passing places	9 and 14	Taken forward to next stage	Rejected
CAMP-03	14		Rejected
CAMP-03A	14		Rejected
CAMP-03B	14		Adopted
CAMP-03C	14		Rejected
Elm 01 & 02 Northern two-way link Elm Lane rerouted via Old Lane and lanes to south to Clandon Road. Access Southbound via Old Lane, Ockham Lane, Guileshill Lane and Hungry Hill Lane to Clandon Road Junction.	16	Not taken forward to next stage	
Elm 03 Two way link road between Elm Lane Ockham Junction parallel to A3. Access road carriageway 4.8m wide 1050m long with passing places.	9 and 14	Not taken forward to next stage	
Elm 04 Two way link road between Elm Lane and Ockham Junction via Wisley Airfield	9 and 14	Not taken forward to next stage	
Elm 05- (BOAT) Elm Lane to Old Lane and J10 slip road to access onto A3 Access road 4.8m wide 530m long (no verge)	9 and 14	Taken forward to next stage	Adopted
Elm 06 Two way link road between Elm Lane and Ockham Junction running outside the Ancient Woodland and Common Land	9	Taken forward to next stage	Rejected
Elm 07 Elm Lane connecting to WIS-10	9 and 14		Rejected
9B/14A Service road on south of A3 from Gas compound to Pointers Lane. Route to Ockham/Plough Lane to south to get access to A3 via Cobham or Ockham. Pointers Lane to be improved	9 and 14	Not taken forward to next stage	
9A One way service road on south of A3 from Gas compound tie in to J10 Slip Road.	9 and 14	Taken forward to next stage	Rejected
PAIN-03-(9C/14B) Service road on south of A3 from Gas compound to Gothic Tower with Link road over A3 to A245 via Redhill Road or Seven Hills Road south. Service road 4.8m wide with passing bays(1.05km) and A3 overbridge.	9 and 14	Not taken forward to next stage	
PAIN-04 Service road on south of A3 from Gas compound to Gothic Tower with Bridge over A3 to Redhill Road and A245. Service road 4.8m wide with passing bays (0.85km) and A3 overbridge.	9 and 14	Taken forward to next stage	Rejected
PAIN-04A Service road on south of A3 from Gas compound to Gothic Tower with Bridge over A3 to Redhill Road and A245. Service road 4.8m wide with passing bays (0.85km) and A3 overbridge. Amended alignment.	9 and 14		Rejected
PAIN-04B Service road on south of A3 from Gas compound to Gothic Tower with Bridge over A3 to Redhill Road and A245. Service road 4.8m wide with passing bays (0.85km) and A3 overbridge. Amended alignment.	9 and 14		Rejected
PAIN-04C Service road on south of A3 from Gas compound to Gothic Tower with Bridge over A3 to Redhill Road and A245. Service road 4.8m wide with passing bays (0.85km) and A3 overbridge. Amended alignment.	9 and 14		Adopted

Option	M25 J10 Option	Consideration in Stage 1	Consideration in Stage 2
PAIN-5a Service road on south of A3 from Painshill to Gothic Tower with alternative entry onto Painshill sliproad. Service road 4.2m/4.8m wide with passing bays. (1.3km)	9 and 14	Not taken forward to next stage	
PAIN-5b Service road on south of A3 from Painshill to Gothic Tower with alternative entry to A245 roundabout. Service road 4.2m/4.8m wide with passing bays. (1.45km)	9 and 14	Not taken forward to next stage	
PAIN-5c- Service road on south of A3 from Painshill to Gothic Tower with alternative entry onto A245 Portsmouth Road. Service road 4.2m/4.8m wide with passing bays. (1.65km) A245 Junction modified for no right turns	9 and 14	Taken forward to next stage	Rejected
PAIN-5d Service road on south of A3 from Painshill to Gothic Tower with alternative entry to A245 roundabout. Service road 4.2m/4.8m wide with passing bays (1.8km) and River Mole bridge	9 and 14	Taken forward to next stage	Rejected
PAIN-06 One way service road on south of A3 from Painshill to Gothic Tower and with alternative exit from sliproad and egress to J10 sliproad	9 and 14	Not taken forward to next stage	
PAIN-10 Bridge from San Domenico Site towards Girl Guides site. Landing in ancient woodland.	9 and 14		Rejected
SAN-01 Local Access Road from Long Orchard to Seven Hills road south Local access 4.8m with passing bays (420m)	9 and 14	Not taken forward to next stage	
SAN-02 Local Access Road from Long Orchard to Redhill Road. and LAR from San Domenico to Seven Hills Road Local access 4.8m with passing bays (180m+290m)	9 and 14	Taken forward to next stage	Adopted
PAIN-01 Widening of A245 to Seven Hills Road to dual 3 lanes. Retaing the existing juciton with Old Byfleet Road and Felton Fleet School	9 and 14	Not taken forward to next stage	
PAIN-02 Widening of A245 to Seven Hills Road to dual 3 lanes. Felton Fleet School Link Road Two way Road link 7.3m between Seven Hills Road (south) and Old Byfleet Road (120m). Right turn and exit into A245 to be closed	9 and 14	Taken forward to next stage	Adopted
OCK-01 Northern two way link road from Wisley Lane to Mill Lane using existing junction arrangment	9 and 14	Not taken forward to next stage	
OCK-02 Wisley Lane routed to Mill Lane within RHS gardens. Mill lane realigned with a junction at Ockham roundabout.	9 and 14	Not taken forward to next stage	
OCK-03 Southbound entry slip road at Ockham Junction	9 and 14		Rejected
OCK-04 Northbound exit slip road at Ockham Junction	9 and 14		Rejected
OCK-05 Northbound exit slip road at Ockham Junction	9 and 14		Rejected

Appendix C
Scheme drawings



KEY

- COMMON LAND
- ANCIENT WOODLAND
- SITE OF SPECIAL SCIENTIFIC INTEREST (SSSI)
- PARKS & GARDENS
- SPECIAL PROTECTION AREA (SPA)

PROPOSALS - FOR INFORMATION ONLY

Rev.	Date	Description	By	Chkd	Appd
P01	07/03/17	ISSUED TO HIGHWAYS ENGLAND	SA	RM	PJ

Drawing Status: FOR INFORMATION
Suitability: S2

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Client: Working on behalf of highways england

Project Title: REGIONAL INVESTMENT PROGRAMME M25 J10 IMPROVEMENT

Drawing Title: SCHEME OPTIONS OVERVIEW

Scale	Drawn	Checked	Approved	Authorised
1:5000	SA	RM	PJ	KB
Original Size	Date	Date	Date	Date
A1	07/03/17	07/03/17	07/03/17	07/03/17

Drawing Number: Project | Originator | Volume | Project (Ref. No.): 5145620
HE551522 - ATK - HGN - M25J10 - SK - D - 1001
Location | Type | Role | Number | Revision: P01

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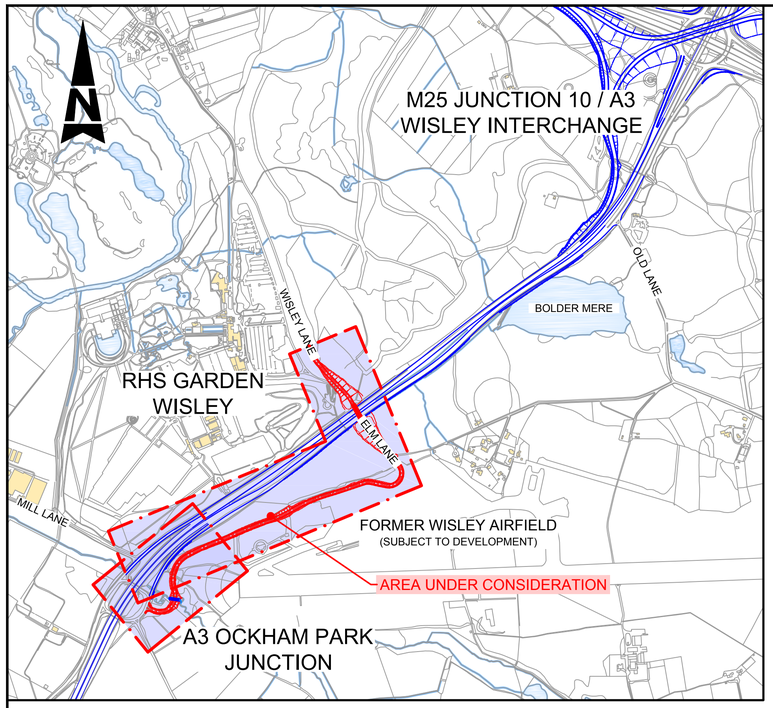
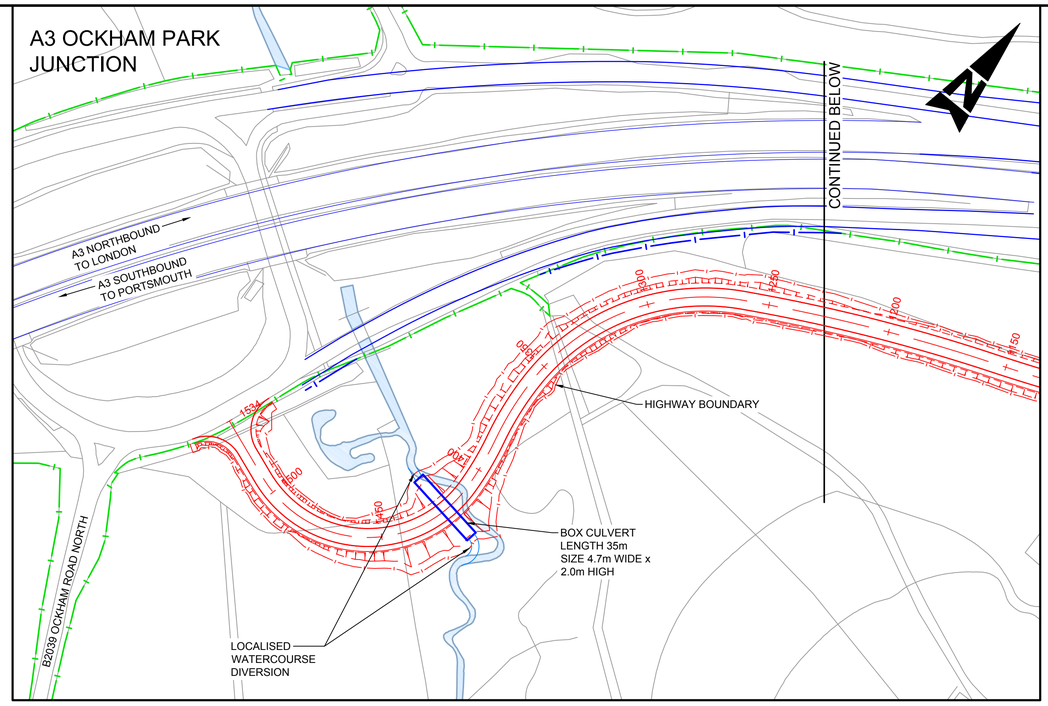
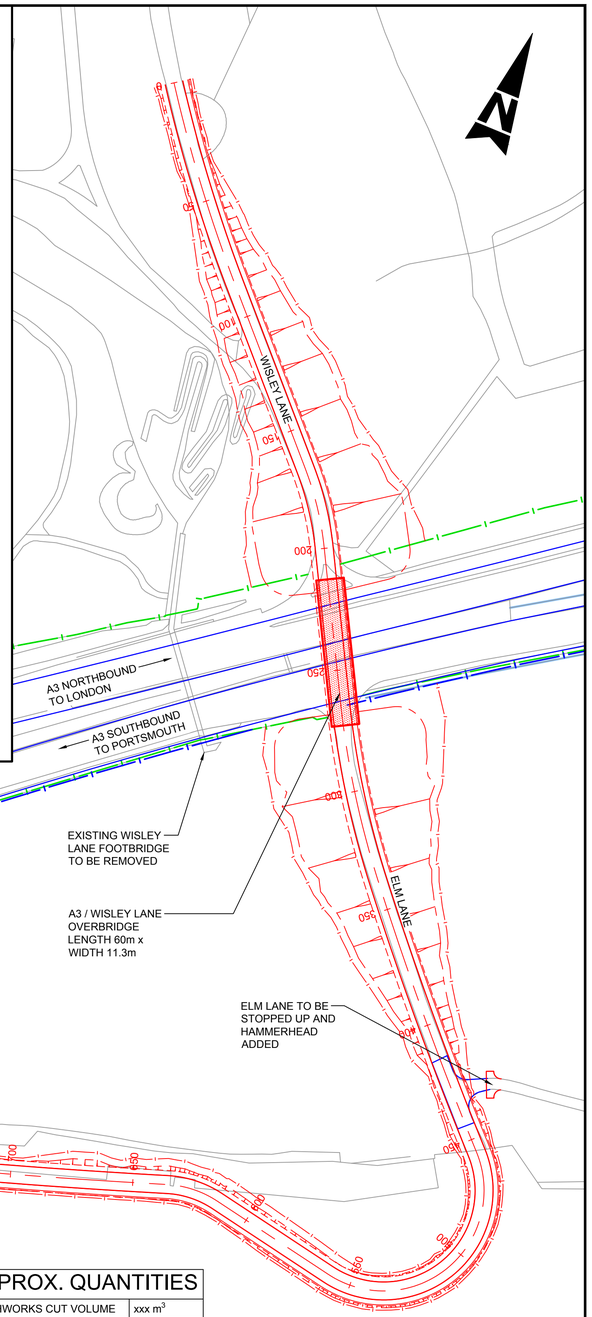
Millimetres 0 10 100

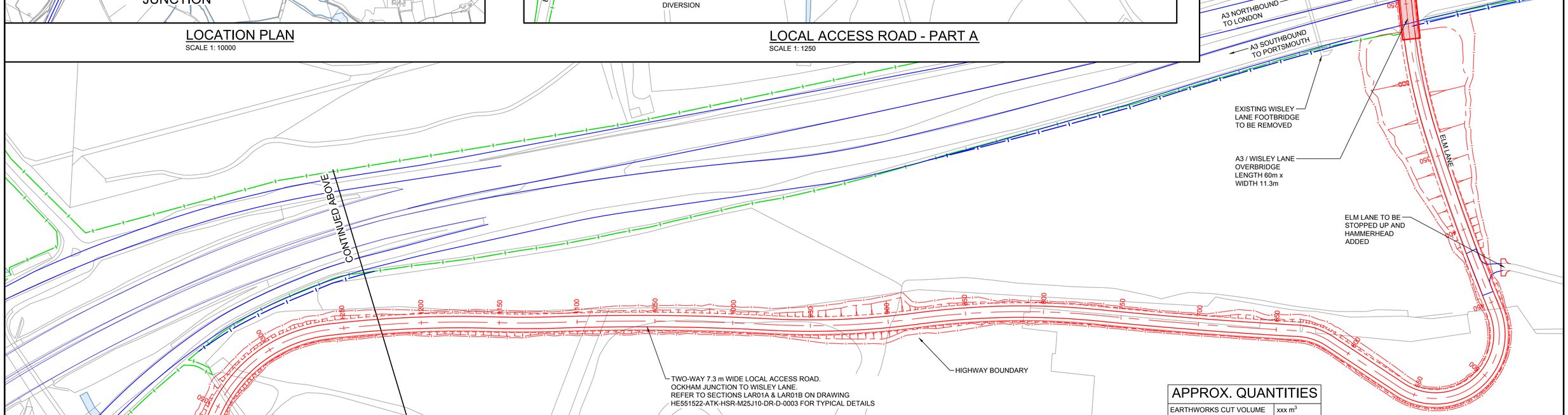


LOCATION PLAN
SCALE 1: 10000



LOCAL ACCESS ROAD - PART A
SCALE 1: 1250





APPROX. QUANTITIES	
EARTHWORKS CUT VOLUME	xxx m^3
EARTHWORKS FILL VOLUME	xxx m^3
PAVEMENT AREA	12250 m^2

LOCAL ACCESS ROAD - PART B
SCALE 1: 1250

Scale 1:1250
10m 0m 10m 30m 50m 70m 90m

NOTES:

1. THE A3 WIDENING SHOWN IS INDICATIVE ONLY, AND SUBJECT TO DESIGN DEVELOPMENT.
2. EARTHWORK SLOPES 1(V):4(H).
3. REFER TO GENERAL ARRANGEMENT A3 CORRIDOR DRG'S FOR MAINLINE PAVEMENT QUANTITY.

LEGEND:

- A3 WIDENING WORKS (ROAD MARKINGS NOT SHOWN)
- LOCAL ACCESS ROADS (ROAD MARKINGS NOT SHOWN)
- EXISTING HIGHWAY BOUNDARY
- PROPOSED HIGHWAY BOUNDARY (SUBJECT TO DESIGN DEVELOPMENT)

Rev.	Date	Description	By	Chk'd	App'd
P01	06/03/17	ISSUED TO HIGHWAYS ENGLAND	NK	NK	RM
P02	07/03/17	ISSUED TO HIGHWAYS ENGLAND	SA	RM	PJ

Drawing Status: WORK IN PROGRESS
Suitability: S0

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Client: Working on behalf of highways england

Project Title: REGIONAL INVESTMENT PROGRAMME
M25 J10 IMPROVEMENT

Drawing Title: GENERAL ARRANGEMENT
LOCAL ACCESS ROAD
WISELY LANE TO OCKHAM JUNCTION
OPTION WIS-10

Scale	Drawn	Checked	Approved	Authorised
AS SHOWN	SA	RM	PJ	KB
Original Size: A1	Date: 07/03/17	Date: 07/03/17	Date: 07/03/17	Date: 07/03/17

Drawing Number: Project | Originator | Volume | Location | Type | Role | Number
HE551522 - ATK - HSR - WIS10 - DR - D - 0001

Project Ref. No.: 5145620
Revision: P02

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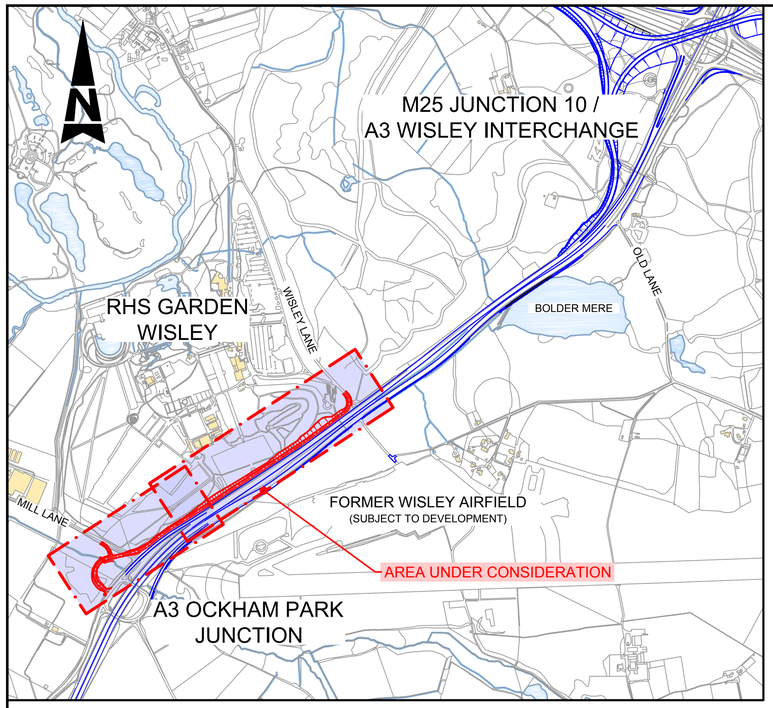
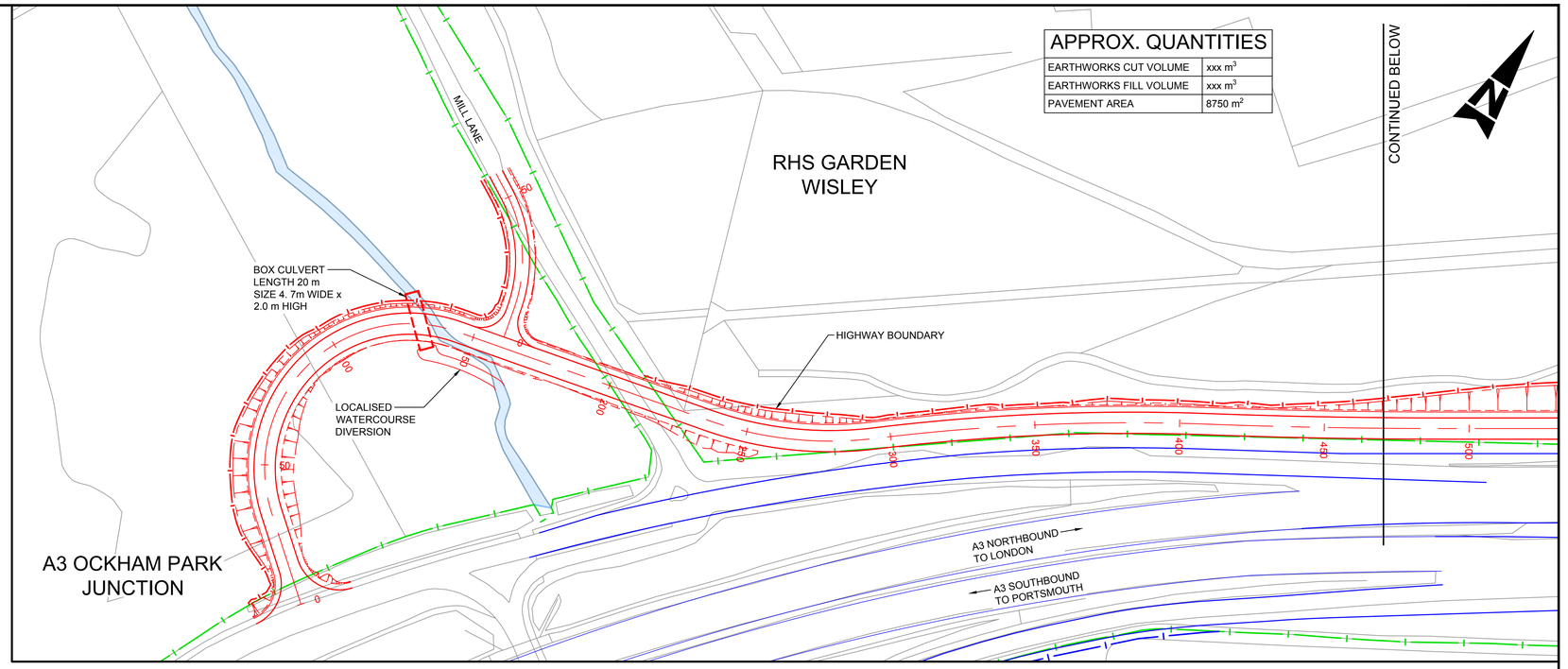
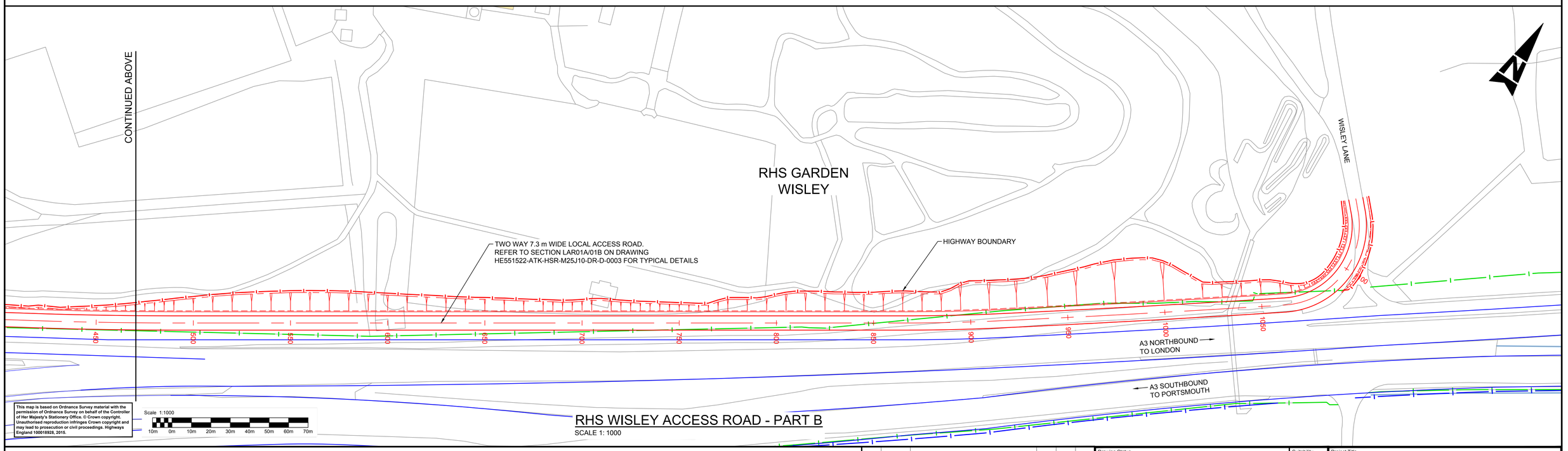


LOCATION PLAN
SCALE 1: 10000



RHS WISLEY ACCESS ROAD - PART A
SCALE 1: 1000



Scale 1:1000
10m 0m 10m 20m 30m 40m 50m 60m 70m

RHS WISLEY ACCESS ROAD - PART B
SCALE 1: 1000

NOTES:

1. THE A3 WIDENING SHOWN IS INDICATIVE ONLY, AND SUBJECT TO DESIGN DEVELOPMENT.
2. EARTHWORK SLOPES 1(V):4(H).
3. REFER TO GENERAL ARRANGEMENT A3 CORRIDOR DRG'S FOR MAINLINE PAVEMENT QUANTITY.

LEGEND:

- A3 WIDENING WORKS (ROAD MARKINGS NOT SHOWN)
- LOCAL ACCESS ROADS (ROAD MARKINGS NOT SHOWN)
- EXISTING HIGHWAY BOUNDARY
- PROPOSED HIGHWAY BOUNDARY (SUBJECT TO DESIGN DEVELOPMENT)

Rev.	Date	Description	By	Chk'd	App'd
P01	06/03/17	ISSUED TO HIGHWAYS ENGLAND	PH	NK	RM
P02	07/03/17	ISSUED TO HIGHWAYS ENGLAND	SA	RM	PJ

Drawing Status: WORK IN PROGRESS
Suitability: S0

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Client: Working on behalf of highways england

Project Title: REGIONAL INVESTMENT PROGRAMME
M25 J10 IMPROVEMENT

Drawing Title: GENERAL ARRANGEMENT
LOCAL ACCESS ROAD
WISLEY LANE TO OCKHAM JUNCTION
OPTION WIS-01

Scale	Drawn	Checked	Approved	Authorised
AS SHOWN	SA	RM	PJ	KB
Original Size: A1	Date 07/03/17	Date 07/03/17	Date 07/03/17	Date 07/03/17

Drawing Number
Project | Originator | Volume
HE551522 - ATK - HSR -
WIS01 - DR - D - 0001
Location | Type | Role | Number

Project Ref. No. 5145620
Revision P02

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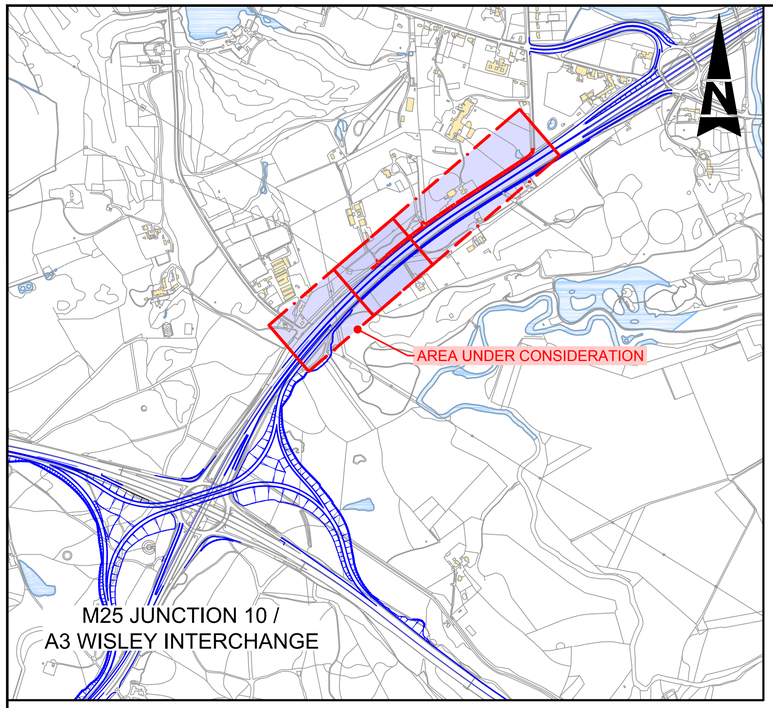
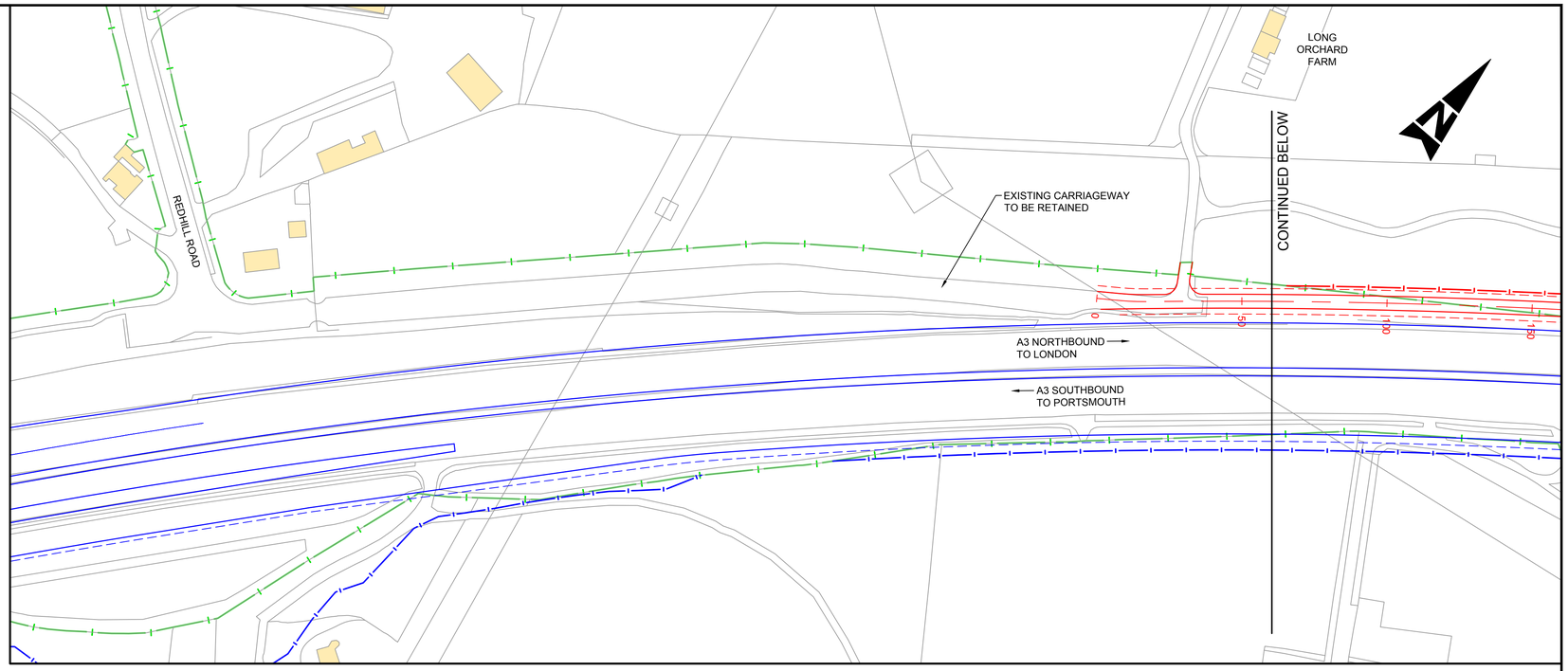
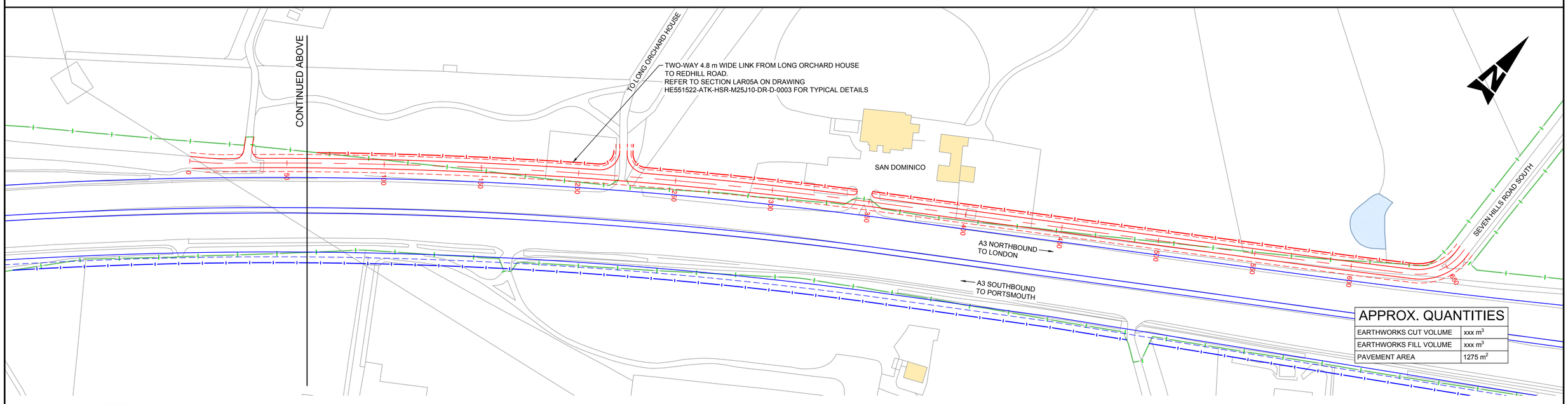


LOCATION PLAN
SCALE 1: 10000



LONG ORCHARD ACCESS ROAD - PART A
SCALE 1: 1000



APPROX. QUANTITIES	
EARTHWORKS CUT VOLUME	xxx m^3
EARTHWORKS FILL VOLUME	xxx m^3
PAVEMENT AREA	1275 m^2

Scale 1:1000
10m 0m 10m 20m 30m 40m 50m 60m 70m

LONG ORCHARD ACCESS ROAD - PART B
SCALE 1: 1000

NOTES:

1. THE A3 WIDENING SHOWN IS INDICATIVE ONLY, AND SUBJECT TO DESIGN DEVELOPMENT.
2. EARTHWORK SLOPES 1(V):4(H).
3. REFER TO GENERAL ARRANGEMENT A3 CORRIDOR DRG'S FOR MAINLINE PAVEMENT QUANTITY.

LEGEND:

- A3 WIDENING WORKS (ROAD MARKINGS NOT SHOWN)
- LOCAL ACCESS ROADS (ROAD MARKINGS NOT SHOWN)
- EXISTING HIGHWAY BOUNDARY
- PROPOSED HIGHWAY BOUNDARY (SUBJECT TO DESIGN DEVELOPMENT)

Rev.	Date	Description	By	Chk'd	App'd
P01	06/03/17	ISSUED TO HIGHWAYS ENGLAND	PH	NK	RM
P02	07/03/17	ISSUED TO HIGHWAYS ENGLAND	SA	RM	PJ

Drawing Status: WORK IN PROGRESS
Suitability: S0

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Client: Working on behalf of highways england

Project Title: REGIONAL INVESTMENT PROGRAMME
M25 J10 IMPROVEMENT

Drawing Title: GENERAL ARRANGEMENT
LOCAL ACCESS ROAD
LONG ORCHARD FARM TO
LONG ORCHARD HOUSE - OPTION SAN-02

Scale	Drawn	Checked	Approved	Authorised
AS SHOWN	SA	RM	PJ	KB
Original Size	Date	Date	Date	Date
A1	07/03/17	07/03/17	07/03/17	07/03/17

Drawing Number: HE551522 - ATK - HSR - SAN02 - DR - D - 0001
Project | Originator | Volume | Location | Type | Role | Number

Project Ref. No.: 5145620
Revision: P02

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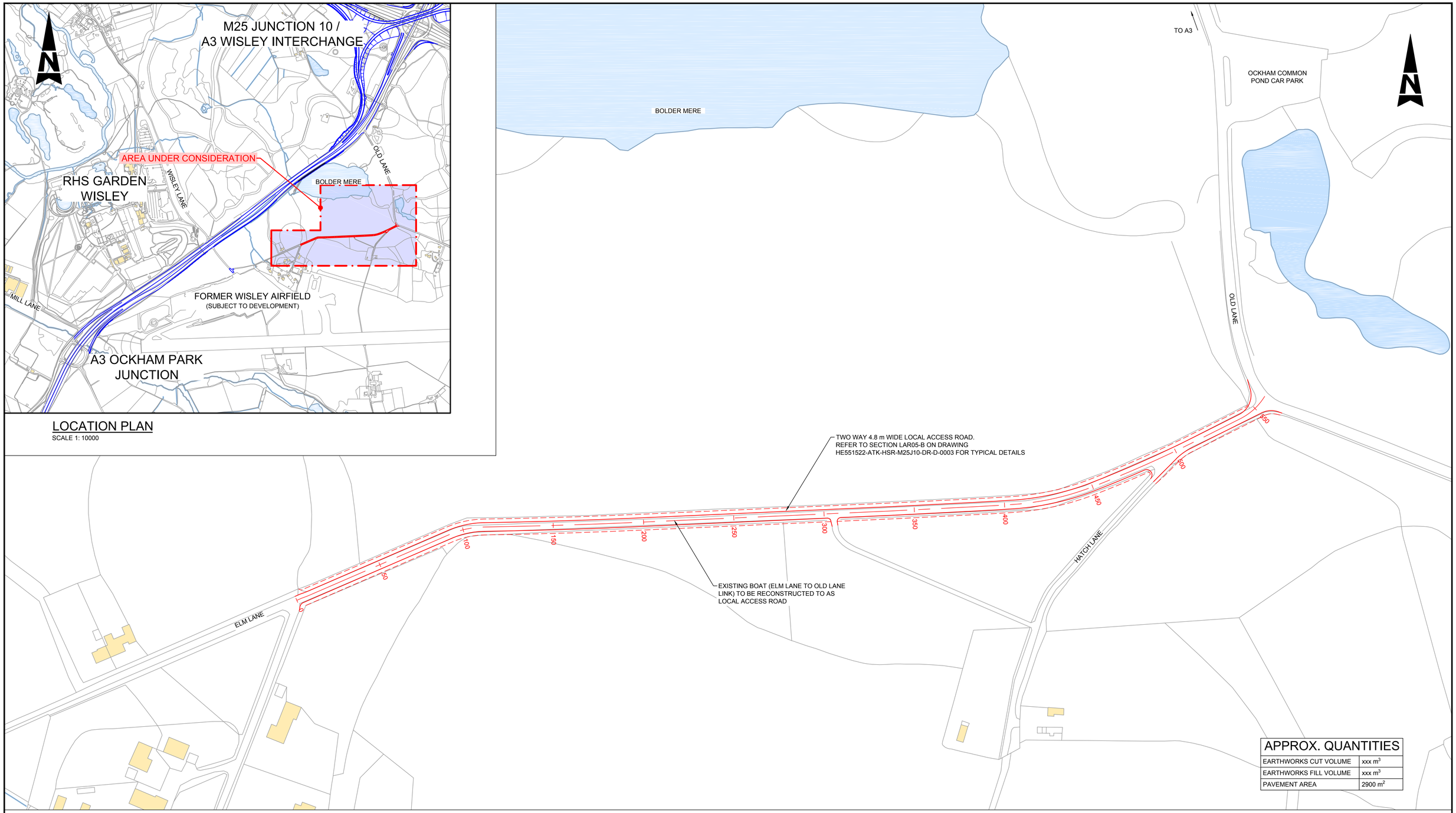
LOCATION PLAN
SCALE 1: 10000



APPROX. QUANTITIES	
EARTHWORKS CUT VOLUME	xxx m^3
EARTHWORKS FILL VOLUME	xxx m^3
PAVEMENT AREA	2900 m^2

Scale 1:1000
10m 0m 10m 20m 30m 40m 50m 60m 70m

LOCAL ACCESS ROAD
SCALE 1: 1000

NOTES:

1. THE A3 WIDENING SHOWN IS INDICATIVE ONLY, AND SUBJECT TO DESIGN DEVELOPMENT.
2. EARTHWORK SLOPES 1(V):4(H).
3. REFER TO GENERAL ARRANGEMENT A3 CORRIDOR DRG'S FOR MAINLINE PAVEMENT QUANTITY.

LEGEND:

- A3 WIDENING WORKS (ROAD MARKINGS NOT SHOWN)
- LOCAL ACCESS ROADS (ROAD MARKINGS NOT SHOWN)
- EXISTING HIGHWAY BOUNDARY
- PROPOSED HIGHWAY BOUNDARY (SUBJECT TO DESIGN DEVELOPMENT)

Rev.	Date	Description	By	Chk'd	App'd
P01	06/03/17	ISSUED TO HIGHWAYS ENGLAND	PH	NK	RM
P02	07/03/17	ISSUED TO HIGHWAYS ENGLAND	SA	RM	PJ

Drawing Status: WORK IN PROGRESS
Suitability: S0

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Client: Working on behalf of highways england

Project Title: REGIONAL INVESTMENT PROGRAMME
M25 J10 IMPROVEMENT

Drawing Title: GENERAL ARRANGEMENT
LOCAL ACCESS ROAD
ELM LANE TO OLD LANE
OPTION ELM-05

Scale	Drawn	Checked	Approved	Authorised
AS SHOWN	SA	RM	PJ	KB
Original Size	**Date**	**Date**	**Date**	**Date**
A1	07/03/17	07/03/17	07/03/17	07/03/17

Drawing Number: Project | Originator | Volume
HE551522 - ATK - HSR -
ELM05 - DR - D - 0001
Location | Type | Role | Number

Project Ref. No.: 5145620
Revision: P02

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DO NOT SCALE

Millimetres 100 10 0

RIPLEY

B2215 PORTSMOUTH ROAD

A3

LONDON

GUILDFORD & PORTSMOUTH

ROSE LANE

ROSE LANE OVERBRIDGE

LOCAL ACCESS WIS-01
REFER TO DRG. NO.
HE551522-ATK-HSR-WIS01-DR-D-0001

A3 OCKHAM PARK JUNCTION

EXTENT OF SCHEME

6079 OCKHAM PARK SOUTH UNDERBRIDGE

6078 OCKHAM PARK NORTH UNDERBRIDGE

SEGREGATED SOUTHBOUND DIRECTION CLOSED OFF

6089 STRATFORD BROOK CULVERT SOUTH

B2039 OCKHAM ROAD NORTH

EXISTING OCKHAM RETAINING WALL

MILL LANE

MAINLINE AS EXISTING THREE LANE LAYOUT

SLIP ROAD AS EXISTING TWO LANES

SLIP ROAD AS EXISTING TWO LANE LAYOUT

SLIP ROAD UPGRADED FROM ONE TO TWO LANES

MAINLINE AS EXISTING THREE LANE LAYOUT

FOR CONTINUATION REFER TO SHEET 2

RHS GARDEN WISLEY

0 100 200 300 400 500 600 700 800 900 1000 1040

Scale 1:2500

50m 0m 50m 100m 150m

FOR CONSIDERATION OF A3 MAINLINE ONLY.
FOR LOCAL ACCESS ROADS, REFER TO HSR SERIES DRAWINGS.

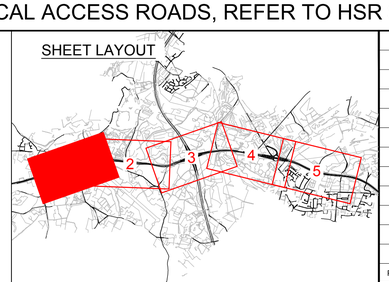
NOTES

1. LINK ROADS SHOWN AS IL1A ARE DETERMINED FROM TD 22/08. IT WOULD BE PROPOSED TO PROVIDE ALL LINK ROADS WITH AN IL2A CROSS-SECTION IN ORDER TO FUTURE PROOF AND MAXIMISE FLEXIBILITY.
2. FOR CROSS-SECTIONS IL1A & IL2A REFER TO TD 27/05, FIGURE 4-16.
3. UNLESS SPECIFIED OTHERWISE, MERGE AND DIVERGE TYPES ARE AS PER TD 22/06.
4. UNLESS SPECIFIED OTHERWISE, EARTHWORKS SLOPES TO BE 1(V) : 4(H)

KEY

- EXISTING OVERBRIDGE STRUCTURES
- EXISTING UNDERBRIDGE STRUCTURES
- EXISTING RETAINING WALLS
- EXISTING HIGHWAY BOUNDARY (INDICATIVE ONLY)
- PROPOSED HIGHWAY BOUNDARY
- PROPOSED HIGHWAY WORKS
- EXISTING WATERWAYS
- EXISTING BUILDINGS

SHEET LAYOUT



Rev.	Date	Description	By	Chk'd	App'd
P01	28/02/17	First Issue	GS	NK	RM

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following significant residual risks (Reference shall also be made to the design hazard log).

Construction
(Enter "None" if applicable)

Maintenance / Cleaning
(Enter "None" if applicable)

Use
(Enter "None" if applicable)

Decommissioning / Demolition
(Enter "None" if applicable)

Drawing Status: FOR COSTING
Suitability: D1

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Client: Working on behalf of highways england

Project Title: REGIONAL INVESTMENT PROGRAMME
M25 J10 IMPROVEMENT

Drawing Title: GENERAL ARRANGEMENT
A3 CORRIDOR
OPTION A
SHEET 1 OF 5

Scale	Drawn	Checked	Approved	Authorised
1:2500	GS	NK	RM	KB
Original Size	**Date**	**Date**	**Date**	**Date**
A1	27/02/17	28/02/17	28/02/17	28/02/17

Drawing Number
Project | Originator | Volume | Location | Type | Role | Number
HE551522 - ATK - HGN - A3A - DR - D - 0001

Project Ref. No.: 5145620

Revision: P01

Plotted by: SMIT3524 Date: Feb 28, 2017 - 3:54pm

DO NOT SCALE

Millimetres 0 10 100

RHS GARDEN WISLEY

FOR CONTINUATION REFER TO SHEET 1

A3 CARRIAGEWAY UPGRADED TO D4AP. FOR CROSS SECTION SEE DRG. NO. HE551522-ATK-HGN-M25J10-DR-D-1001

MERGE UPGRADED TO TD 27 TYPE F MERGE

WISLEY LANE

LOCAL ACCESS WIS-01
REFER TO DRG. NO.
HE5551522-ATK-HSR-WIS01-DR-D-0001

A3 DIRECT ACCESS / EGRESS TO WISLEY LANE AND LAYBY CLOSED

A3

600 700 800 900 1000 1100 1200 1300 1400 1500 1600 1700 1800 1900 2000 2100 2200 2300 2400 2500

PROPOSED RETAINING WALL
LENGTH 180m

FOR CONTINUATION REFER TO SHEET 3

DIVERGE UPGRADED TO
TD 27 TYPE D DIVERGE

6050 WISLEY FOOTBRIDGE.
EXISTING FOOTBRIDGE TO BE
REPLACED.
NEW SPAN 65m

ELM LANE

ACCESS / EGRESS TO ELM LANE TO BE
CLOSED AND DIVERTED TO OLD LANE

ELM LANE TO BE CLOSED.
TURNING HEAD PROVIDED.

MERGE UPGRADED TO TD 27 TYPE F MERGE

BOLDER MERE

A3 CARRIAGEWAY UPGRADED TO D4AP. FOR CROSS SECTION SEE DRG. NO. HE551522-ATK-HGN-M25J10-DR-D-1001

OLD LANE

FORMER WISLEY AIRFIELD
(SUBJECT TO DEVELOPMENT)

ELM LANE

LOCAL ACCESS ELM-05
REFER TO DRG. NO.
HE5551522-ATK-HSR-ELM05-DR-D-0001

HATCH LANE

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

FOR CONSIDERATION OF A3 MAINLINE ONLY.
FOR LOCAL ACCESS ROADS, REFER TO HSR SERIES DRAWINGS.

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following significant residual risks (Reference shall also be made to the design hazard log).

Construction
(Enter "None" if applicable)

Maintenance / Cleaning
(Enter "None" if applicable)

Use
(Enter "None" if applicable)

Decommissioning / Demolition
(Enter "None" if applicable)

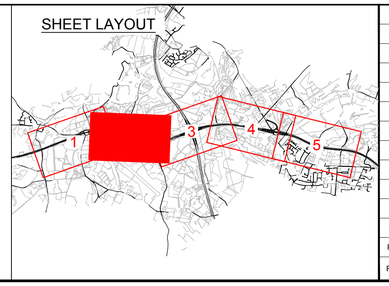
NOTES

1. LINK ROADS SHOWN AS IL1A ARE DETERMINED FROM TD 22/08. IT WOULD BE PROPOSED TO PROVIDE ALL LINK ROADS WITH AN IL2A CROSS-SECTION IN ORDER TO FUTURE PROOF AND MAXIMISE FLEXIBILITY.
2. FOR CROSS-SECTIONS IL1A & IL2A REFER TO TD 27/05, FIGURE 4-16.
3. UNLESS SPECIFIED OTHERWISE, MERGE AND DIVERGE TYPES ARE AS PER TD 22/06.
4. UNLESS SPECIFIED OTHERWISE, EARTHWORKS SLOPES TO BE 1(V) : 4(H)

KEY

- EXISTING OVERBRIDGE STRUCTURES
- EXISTING UNDERBRIDGE STRUCTURES
- EXISTING RETAINING WALLS
- EXISTING HIGHWAY BOUNDARY (INDICATIVE ONLY)
- PROPOSED HIGHWAY BOUNDARY
- PROPOSED HIGHWAY WORKS
- EXISTING WATERWAYS
- EXISTING BUILDINGS

SHEET LAYOUT



Rev.	Date	Description	By	Chk'd	App'd
P01	28/02/17	First Issue	GS	NK	RM

Drawing Status: FOR COSTING
Suitability: D1

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www.atkinsglobal.com

Client: Working on behalf of highways england

Project Title: REGIONAL INVESTMENT PROGRAMME
M25 J10 IMPROVEMENT

Drawing Title: GENERAL ARRANGEMENT
A3 CORRIDOR
OPTION A
SHEET 2 OF 5

Scale	Drawn	Checked	Approved	Authorised
1:2500	GS	NK	RM	KB
Original Size	**Date**	**Date**	**Date**	**Date**
A1	27/02/17	28/02/17	28/02/17	28/02/17

Drawing Number: Project | Originator | Volume | Location | Type | Role | Number
HE551522 - ATK - HGN - A3A - DR - D - 0002

Project Ref. No.: 5145620
Revision: P01

Plotted by: SMIT3524 Date: Feb 28, 2017 - 3:55pm

DO NOT SCALE

Millimetres 0 10 100

HEATHROW

M25

M25 JUNCTION 10 / A3 WISLEY INTERCHANGE

FOR CONTINUATION REFER TO SHEET 2

LOCAL ACCESS CAMP-02
REFER TO DRG. NO.
HE5551522-ATK-HSR-CAMP02-DR-D-0001

TUMULUS: ANCIENT MONUMENT

6152 WISLEY INTERCHANGE
SOUTH UNDERBRIDGE
(LEVEL 2)

ACCESS / EGRESS TO TO BE STOPPED UP

3533 WISLEY INTERCHANGE
WEST UNDERBRIDGE
(LEVEL 2)

FOR M25J10 REFER TO OPTIONS 9 AND 14 ON
DRG. NO.'S HE5551522-ATK-HGN-M25J10-DR-D-0091 & 0141
NOTE: EXACT TIE-IN LOCATION VARIES WITH DIFFERING OPTIONS

NEW OVERBRIDGE.
TOTAL LENGTH 50m.
WIDTH APPROX. 11.5m.

A3

2100 2200 2300 2400 2500 2600 2700 2800 2800 2800 3000 3100 3200 3300 3400 3500 3600 3700 3800 3900 4000 4100

BOLDER MERE

6156 COCKROW FOOTBRIDGE.

6100 WISLEY INTERCHANGE
NORTH UNDERBRIDGE
(LEVEL 2)

3514 WISLEY INTERCHANGE
A3 UNDERBRIDGE
(LEVEL 3)

LOCAL ACCESS PAIN-04
REFER TO DRG. NO.
HE5551522-ATK-HSR-PAIN04-DR-D-0001

OLD LANE

ACCESS / EGRESS TO OLD LANE TO BE RETAINED

3512 WISLEY INTERCHANGE
EAST UNDERBRIDGE
(LEVEL 2)

FOR M25J10 REFER TO OPTIONS 9 AND 14 ON
DRG. NO.'S HE5551522-ATK-HGN-M25J10-DR-D-0091 & 0141
NOTE: EXACT TIE-IN LOCATION VARIES WITH DIFFERING OPTIONS

FOR CONTINUATION REFER TO SHEET 4

M25

GATWICK

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

NOTES

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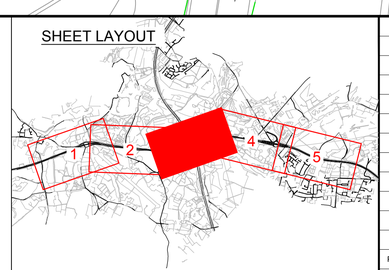
3. UNLESS SPECIFIED OTHERWISE, MERGE AND DIVERGE TYPES ARE AS PER TD 22/06.
4. UNLESS SPECIFIED OTHERWISE, EARTHWORKS SLOPES TO BE 1(V) : 4(H)

KEY

- EXISTING OVERBRIDGE STRUCTURES
- EXISTING UNDERBRIDGE STRUCTURES
- EXISTING RETAINING WALLS
- EXISTING HIGHWAY BOUNDARY (INDICATIVE ONLY)
- PROPOSED HIGHWAY BOUNDARY
- PROPOSED HIGHWAY WORKS
- EXISTING WATERWAYS
- EXISTING BUILDINGS

SHEET LAYOUT



SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following significant residual risks (Reference shall also be made to the design hazard log).

Construction
(Enter "None" if applicable)

Maintenance / Cleaning
(Enter "None" if applicable)

Use
(Enter "None" if applicable)

Decommissioning / Demolition
(Enter "None" if applicable)

Rev.	Date	Description	By	Chk'd	App'd
P01	28/02/17	First Issue	GS	NK	RM

Drawing Status: FOR COSTING
Suitability: D1

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Client: Working on behalf of highways england

Project Title: REGIONAL INVESTMENT PROGRAMME
M25 J10 IMPROVEMENT

Drawing Title: GENERAL ARRANGEMENT
A3 CORRIDOR
OPTION A
SHEET 3 OF 5

Scale	Drawn	Checked	Approved	Authorised
1:2500	GS	NK	RM	KB
Original Size: A1	Date: 27/02/17	Date: 28/02/17	Date: 28/02/17	Date: 28/02/17

Drawing Number
Project | Originator | Volume
HE551522 - ATK - HGN -
A3A - DR - D - 0003
Location | Type | Role | Number

Project Ref. No.: 5145620
Revision: P01

Plotted by: SMIT3524 Date: Feb 28, 2017 - 3:56pm

DO NOT SCALE

Millimetres 0 10 100

A3/A245 PAINSHILL JUNCTION

A245 UPGRADED WITH 3 LANES IN EACH DIRECTION

MAINLINE AS EXISTING THREE LANE LAYOUT THROUGH JUNCTION

A245 BYFLEET ROAD

SEVEN HILLS ROAD

NEW TRAFFIC SIGNALS AND ASSOCIATED EQUIPMENT TO ALLOW FOR ADDITIONAL LANE FROM SEVEN HILLS JUNCTION TO PAINSHILL JUNCTION ROUNDABOUT

EXISTING ACCESS TO OLD BYFLEET ROAD TO BE STOPPED UP

LOCAL ACCESS PAIN-02 REFER TO DRG. NO. HE5551522-ATK-HSR-PAIN02-DR-D-0001

NEW TRAFFIC SIGNALS AND ASSOCIATED EQUIPMENT TO ENABLE DEDICATED LEFT TURN LANE

NEW TRAFFIC SIGNALS AND ASSOCIATED EQUIPMENT TO ENABLE POTENTIAL DEDICATED LEFT TURN LANE

FOR CONTINUATION REFER TO SHEET 5

6073 PAINSHILL INTERCHANGE WEST OVERBRIDGE

6075 PAINSHILL NORTH-WEST RETAINING WALL

FELTON FLEET SCHOOL

6070 CONVENT LANE UNDERBRIDGE

MERGE UPGRADED TO TYPE G TWO LANE GAIN

MAINLINE AS EXISTING TWO LANE LAYOUT THROUGH JUNCTION

A3 CARRIAGEWAY UPGRADED TO D4AP. FOR CROSS SECTION SEE DRG. NO. HE551522-ATK-HGN-M25J10-DR-D-1001

DIVERGE UPGRADED TO TYPE D

FOR CONTINUATION REFER TO SHEET 3

LOCAL ACCESS SAN-02 REFER TO DRG. NO. HE5551522-ATK-HSR-SAN02-DR-D-0001

A3

6072 PAINSHILL INTERCHANGE EAST OVERBRIDGE

EXTENT OF SCHEME

RIVER MOLE

6074 PAINSHILL SOUTH-WEST RETAINING WALL

10m OF EXISTING RETAINING WALL TO BE RENEWED

OFFSIDE SLIP ROAD WIDENING, EARTHWORKS TO BE MODIFIED WITH GEOTECHNICAL REINFORCED EARTHWORKS SOLUTION

A245 PORTSMOUTH ROAD

LOCAL ACCESS PAIN-04 REFER TO DRG. NO. HE5551522-ATK-HSR-PAIN04-DR-D-0001

A3 CARRIAGEWAY UPGRADED TO D4AP. FOR CROSS SECTION SEE DRG. NO. HE551522-ATK-HGN-M25J10-DR-D-1001

AS EXISTING THREE LANE LAYOUT THROUGH JUNCTION

MERGE UPGRADED TO TYPE F

PAINSHILL PARK

Scale 1:2500

50m 0m 50m 100m 150m

FOR CONSIDERATION OF A3 MAINLINE ONLY.
FOR LOCAL ACCESS ROADS, REFER TO HSR SERIES DRAWINGS.

NOTES

1. LINK ROADS SHOWN AS IL1A ARE DETERMINED FROM TD 22/08. IT WOULD BE PROPOSED TO PROVIDE ALL LINK ROADS WITH AN IL2A CROSS-SECTION IN ORDER TO FUTURE PROOF AND MAXIMISE FLEXIBILITY.
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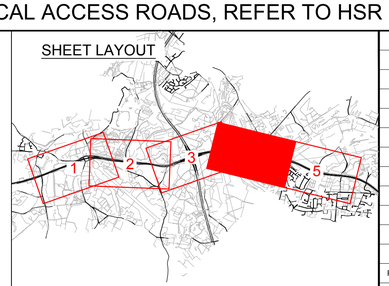
4. UNLESS SPECIFIED OTHERWISE, EARTHWORKS SLOPES TO BE 1(V) : 4(H)

KEY

- EXISTING OVERBRIDGE STRUCTURES
- EXISTING UNDERBRIDGE STRUCTURES
- EXISTING RETAINING WALLS
- EXISTING HIGHWAY BOUNDARY (INDICATIVE ONLY)
- PROPOSED HIGHWAY BOUNDARY
- PROPOSED HIGHWAY WORKS
- EXISTING WATERWAYS
- EXISTING BUILDINGS

SHEET LAYOUT



Rev.	Date	Description	By	Chk'd	App'd
P01	28/02/17	First Issue	GS	NK	RM

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following significant residual risks (Reference shall also be made to the design hazard log).

Construction
(Enter "None" if applicable)

Maintenance / Cleaning
(Enter "None" if applicable)

Use
(Enter "None" if applicable)

Decommissioning / Demolition
(Enter "None" if applicable)

Drawing Status: FOR COSTING
Suitability: D1

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Client: Working on behalf of highways england

Project Title: REGIONAL INVESTMENT PROGRAMME M25 J10 IMPROVEMENT

Drawing Title: GENERAL ARRANGEMENT A3 CORRIDOR OPTION A SHEET 4 OF 5

Scale	Drawn	Checked	Approved	Authorised
1:2500	GS	NK	RM	KB
Original Size	**Date**	**Date**	**Date**	**Date**
A1	28/02/17	28/02/17	28/02/17	28/02/17

Drawing Number: Project | Originator | Volume | Location | Type | Role | Number
HE551522 - ATK - HGN - A3A - DR - D - 0004

Project Ref. No.: 5145620

Revision: P01

Plotted by: SMIT3524 Date: Feb 28, 2017 - 3:57pm

FOR CONSIDERATION OF A3 MAINLINE ONLY.
FOR LOCAL ACCESS ROADS, REFER TO HSR SERIES DRAWINGS.

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

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Construction
(Enter "None" if applicable)

Maintenance / Cleaning
(Enter "None" if applicable)

Use
(Enter "None" if applicable)

Decommissioning / Demolition
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NOTES

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KEY

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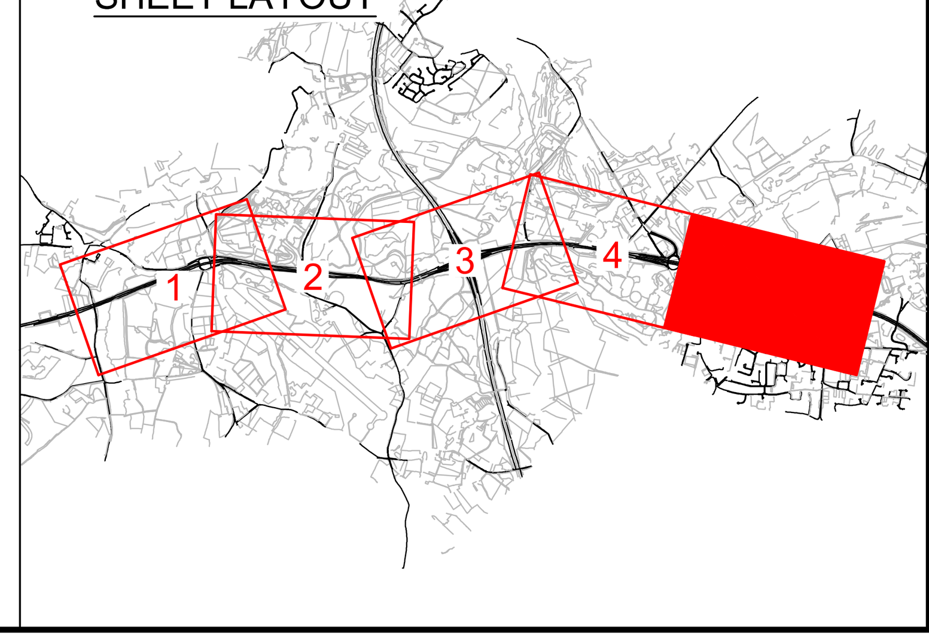
- EXISTING HIGHWAY BOUNDARY (INDICATIVE ONLY)
- PROPOSED HIGHWAY BOUNDARY
- PROPOSED HIGHWAY WORKS
- EXISTING WATERWAYS
- EXISTING BUILDINGS

SHEET LAYOUT



Rev.	Date	Description	By	Chk'd	App'd
P01	28/02/17	First Issue	GS	NK	RM

Drawing Status: FOR COSTING
Suitability: D1

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www.atkinsglobal.com

Client: Working on behalf of highways england

Project Title: REGIONAL INVESTMENT PROGRAMME
M25 J10 IMPROVEMENT

Drawing Title: GENERAL ARRANGEMENT
A3 CORRIDOR
OPTION A
SHEET 5 OF 5

Scale	Drawn	Checked	Approved	Authorised
1:2500	GS	NK	RM	KB
Original Size: A1	Date: 27/02/17	Date: 28/02/17	Date: 28/02/17	Date: 28/02/17

Drawing Number (Project | Originator | Volume | Location | Type | Role | Number): HE551522 - ATK - HGN - A3A - DR - D - 0005

Project Ref. No.: 5145620

Revision: P01

DO NOT SCALE

Millimetres 100 0 10

RIPLEY

B2215 PORTSMOUTH ROAD

A3 OCKHAM PARK JUNCTION

EXTENT OF SCHEME

6079 OCKHAM PARK SOUTH UNDERBRIDGE

6078 OCKHAM PARK NORTH UNDERBRIDGE

SEGREGATED SOUTHBOUND DIRECTION CLOSED OFF

6089 STRATFORD BROOK CULVERT SOUTH

EXISTING OCKHAM RETAINING WALL

B2039 OCKHAM ROAD NORTH

MILL LANE

MAINLINE AS EXISTING THREE LANE LAYOUT

SLIP ROAD AS EXISTING TWO LANES

SLIP ROAD UPGRADED FROM ONE TO TWO LANES

SLIP ROAD AS EXISTING TWO LANE LAYOUT

MAINLINE AS EXISTING THREE LANE LAYOUT

A3

LONDON

GUILDFORD & PORTSMOUTH

ROSE LANE

ROSE LANE OVERBRIDGE

RHS GARDEN WISLEY

FOR CONTINUATION REFER TO SHEET 2

Scale 1:2500

50m 0m 50m 100m 150m

FOR CONSIDERATION OF A3 MAINLINE ONLY.
FOR LOCAL ACCESS ROADS, REFER TO HSR SERIES DRAWINGS.

NOTES

1. LINK ROADS SHOWN AS IL1A ARE DETERMINED FROM TD 22/08. IT WOULD BE PROPOSED TO PROVIDE ALL LINK ROADS WITH AN IL2A CROSS-SECTION IN ORDER TO FUTURE PROOF AND MAXIMISE FLEXIBILITY.
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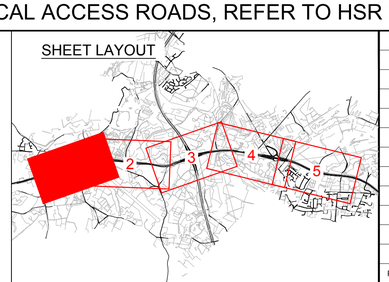
4. UNLESS SPECIFIED OTHERWISE, EARTHWORKS SLOPES TO BE 1(V) : 4(H)

KEY

- EXISTING OVERBRIDGE STRUCTURES
- EXISTING UNDERBRIDGE STRUCTURES
- EXISTING RETAINING WALLS
- EXISTING HIGHWAY BOUNDARY (INDICATIVE ONLY)
- PROPOSED HIGHWAY BOUNDARY
- PROPOSED HIGHWAY WORKS
- EXISTING WATERWAYS
- EXISTING BUILDINGS

SHEET LAYOUT



Rev.	Date	Description	By	Chk'd	App'd
P01	28/02/17	First Issue	GS	NK	RM

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following significant residual risks (Reference shall also be made to the design hazard log).

Construction
(Enter "None" if applicable)

Maintenance / Cleaning
(Enter "None" if applicable)

Use
(Enter "None" if applicable)

Decommissioning / Demolition
(Enter "None" if applicable)

Drawing Status: FOR COSTING
Suitability: D1

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Client: Working on behalf of highways england

Project Title: REGIONAL INVESTMENT PROGRAMME
M25 J10 IMPROVEMENT

Drawing Title: GENERAL ARRANGEMENT
A3 CORRIDOR
OPTION B
SHEET 1 OF 5

Scale	Drawn	Checked	Approved	Authorised
1:2500	GS	NK	RM	KB
Original Size	**Date**	**Date**	**Date**	**Date**
A1	28/02/17	28/02/17	28/02/17	28/02/17

Drawing Number: Project | Originator | Volume | Location | Type | Role | Number
HE551522 - ATK - HGN - A3B - DR - D - 0001

Project Ref. No.: 5145620

Revision: P01

Plotted by: SMIT3524 Date: Feb 28, 2017 - 3:58pm

DO NOT SCALE

Millimetres 0 10 100

RHS GARDEN WISLEY

FOR CONTINUATION REFER TO SHEET 1

A3 CARRIAGEWAY UPGRADED TO D4AP. FOR CROSS SECTION SEE DRG. NO. HE551522-ATK-HGN-M25J10-DR-D-1001

MERGE UPGRADED TO TD 27 TYPE F MERGE

WISLEY LANE

A3 DIRECT ACCESS / EGRESS TO WISLEY LANE AND LAYBY CLOSED

A3

600 700 800 900 1000 1100 1200 1300 1400 1500 1600 1700 1800 1900 2000 2100 2200 2300 2400 2500

PROPOSED RETAINING WALL LENGTH 180m

FOR CONTINUATION REFER TO SHEET 3

DIVERGE UPGRADED TO TD 27 TYPE D DIVERGE

6050 WISLEY FOOTBRIDGE. EXISTING FOOTBRIDGE TO BE REPLACED. NEW SPAN 65m

ELM LANE

ACCESS / EGRESS TO ELM LANE TO BE CLOSED AND DIVERTED TO OLD LANE

LOCAL ACCESS WIS-10 REFER TO DRG. NO. HE5551522-ATK-HSR-WIS10-DR-D-0001

A3 CARRIAGEWAY UPGRADED TO D4AP. FOR CROSS SECTION SEE DRG. NO. HE551522-ATK-HGN-M25J10-DR-D-1001

MERGE UPGRADED TO TD 27 TYPE F MERGE

BOLDER MERE

OLD LANE

ELM LANE TO BE CLOSED. TURNING HEAD PROVIDED.

FORMER WISLEY AIRFIELD
(SUBJECT TO DEVELOPMENT)

ELM LANE

LOCAL ACCESS ELM-05 REFER TO DRG. NO. HE5551522-ATK-HSR-ELM05-DR-D-0001

HATCH LANE

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

FOR CONSIDERATION OF A3 MAINLINE ONLY.
FOR LOCAL ACCESS ROADS, REFER TO HSR SERIES DRAWINGS.

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

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Construction
(Enter "None" if applicable)

Maintenance / Cleaning
(Enter "None" if applicable)

Use
(Enter "None" if applicable)

Decommissioning / Demolition
(Enter "None" if applicable)

NOTES

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4. UNLESS SPECIFIED OTHERWISE, EARTHWORKS SLOPES TO BE 1(V) : 4(H)

KEY

- EXISTING OVERBRIDGE STRUCTURES
- EXISTING UNDERBRIDGE STRUCTURES
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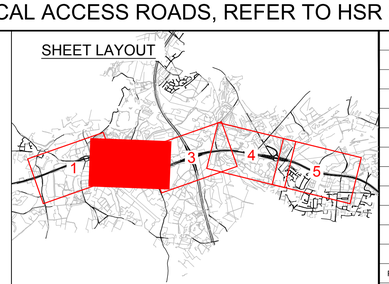
- EXISTING HIGHWAY BOUNDARY (INDICATIVE ONLY)
- PROPOSED HIGHWAY BOUNDARY
- PROPOSED HIGHWAY WORKS
- EXISTING WATERWAYS
- EXISTING BUILDINGS

SHEET LAYOUT



Rev.	Date	Description	By	Chk'd	App'd
P01	28/02/17	First Issue	GS	NK	RM

Drawing Status: FOR COSTING
Suitability: D1

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Client: Working on behalf of highways england

Project Title: REGIONAL INVESTMENT PROGRAMME
M25 J10 IMPROVEMENT

Drawing Title: GENERAL ARRANGEMENT
A3 CORRIDOR
OPTION B
SHEET 2 OF 5

Scale	Drawn	Checked	Approved	Authorised
1:2500	GS	NK	RM	KB
Original Size: A1	Date: 27/02/17	Date: 28/02/17	Date: 28/02/17	Date: 28/02/17

Drawing Number: Project | Originator | Volume | Location | Type | Role | Number
HE551522 - ATK - HGN - A3B - DR - D - 0002

Project Ref. No.: 5145620
Revision: P01

Plotted by: SMIT3524 Date: Feb 28, 2017 - 3:59pm

DO NOT SCALE

Millimetres 0 10 100

HEATHROW

M25

M25 JUNCTION 10 / A3 WISLEY INTERCHANGE

FOR CONTINUATION REFER TO SHEET 2

LOCAL ACCESS CAMP-02
REFER TO DRG. NO.
HE5551522-ATK-HSR-CAMP02-DR-D-0001

TUMULUS: ANCIENT MONUMENT

6152 WISLEY INTERCHANGE
SOUTH UNDERBRIDGE
(LEVEL 2)

ACCESS / EGRESS TO TO BE STOPPED UP

3533 WISLEY INTERCHANGE
WEST UNDERBRIDGE
(LEVEL 2)

FOR M25J10 REFER TO OPTIONS 9 AND 14 ON
DRG. NO.'S HE5551522-ATK-HGN-M25J10-DR-D-0091 & 0141
NOTE: EXACT TIE-IN LOCATION VARIES WITH DIFFERING OPTIONS

LOCAL ACCESS PAIN-05D
REFER TO DRG. NO.
HE5551522-ATK-HSR-PAIN05D-DR-D-0001

LOCAL ACCESS SAN-02
REFER TO DRG. NO.
HE5551522-ATK-HSR-SAN02-DR-D-0001

15186 REDHILL
RETAINING WALL

A3

BOLDER MERE

OLD LANE

6156 COCKROW FOOTBRIDGE.

ACCESS / EGRESS TO OLD LANE TO BE RETAINED

6100 WISLEY INTERCHANGE
NORTH UNDERBRIDGE
(LEVEL 2)

3514 WISLEY INTERCHANGE
A3 UNDERBRIDGE
(LEVEL 3)

3512 WISLEY INTERCHANGE
EAST UNDERBRIDGE
(LEVEL 2)

FOR CONTINUATION REFER TO SHEET 4

FOR M25J10 REFER TO OPTIONS 9 AND 14 ON
DRG. NO.'S HE5551522-ATK-HGN-M25J10-DR-D-0091 & 0141
NOTE: EXACT TIE-IN LOCATION VARIES WITH DIFFERING OPTIONS

M25

GATWICK

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

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following significant residual risks (Reference shall also be made to the design hazard log).

Construction
(Enter "None" if applicable)

Maintenance / Cleaning
(Enter "None" if applicable)

Use
(Enter "None" if applicable)

Decommissioning / Demolition
(Enter "None" if applicable)

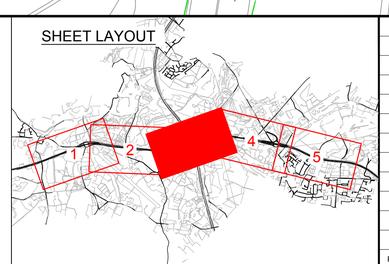
NOTES

1. LINK ROADS SHOWN AS IL1A ARE DETERMINED FROM TD 22/08. IT WOULD BE PROPOSED TO PROVIDE ALL LINK ROADS WITH AN IL2A CROSS-SECTION IN ORDER TO FUTURE PROOF AND MAXIMISE FLEXIBILITY.
2. FOR CROSS-SECTIONS IL1A & IL2A REFER TO TD 27/05, FIGURE 4-16.
3. UNLESS SPECIFIED OTHERWISE, MERGE AND DIVERGE TYPES ARE AS PER TD 22/06.
4. UNLESS SPECIFIED OTHERWISE, EARTHWORKS SLOPES TO BE 1(V) : 4(H)

KEY

- EXISTING OVERBRIDGE STRUCTURES
- EXISTING UNDERBRIDGE STRUCTURES
- EXISTING RETAINING WALLS
- EXISTING HIGHWAY BOUNDARY (INDICATIVE ONLY)
- PROPOSED HIGHWAY BOUNDARY
- PROPOSED HIGHWAY WORKS
- EXISTING WATERWAYS
- EXISTING BUILDINGS

SHEET LAYOUT



Rev.	Date	Description	By	Chk'd	App'd
P01	28/02/17	First Issue	GS	NK	RM

Drawing Status: FOR COSTING
Suitability: D1

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Client: Working on behalf of highways england

Project Title: REGIONAL INVESTMENT PROGRAMME
M25 J10 IMPROVEMENT

Drawing Title: GENERAL ARRANGEMENT
A3 CORRIDOR
OPTION B
SHEET 3 OF 5

Scale	Drawn	Checked	Approved	Authorised
1:2500	GS	NK	RM	KB
Original Size: A1	Date: 27/02/17	Date: 28/02/17	Date: 28/02/17	Date: 28/02/17

Drawing Number
Project | Originator | Volume
HE551522 - ATK - HGN -
Location | Type | Role | Number
A3B - DR - D - 0003

Project Ref. No.: 5145620
Revision: P01

Plotted by: SMIT3524 Date: Feb 28, 2017 - 4:00pm

DO NOT SCALE

Millimetres 0 10 100

A3/A245 PAINSHILL JUNCTION

A245 UPGRADED WITH 3 LANES IN EACH DIRECTION

MAINLINE AS EXISTING THREE LANE LAYOUT THROUGH JUNCTION

A245 BYFLEET ROAD

SEVEN HILLS ROAD

NEW TRAFFIC SIGNALS AND ASSOCIATED EQUIPMENT TO ALLOW FOR ADDITIONAL LANE FROM SEVEN HILLS JUNCTION TO PAINSHILL JUNCTION ROUNDABOUT

EXISTING ACCESS TO OLD BYFLEET ROAD TO BE STOPPED UP

LOCAL ACCESS PAIN-02 REFER TO DRG. NO. HE5551522-ATK-HSR-PAIN02-DR-D-0001

NEW TRAFFIC SIGNALS AND ASSOCIATED EQUIPMENT TO ENABLE DEDICATED LEFT TURN LANE

NEW TRAFFIC SIGNALS AND ASSOCIATED EQUIPMENT TO ENABLE POTENTIAL DEDICATED LEFT TURN LANE

FOR CONTINUATION REFER TO SHEET 5

6073 PAINSHILL INTERCHANGE WEST OVERBRIDGE

6075 PAINSHILL NORTH-WEST RETAINING WALL

FELTON FLEET SCHOOL

6070 CONVENT LANE UNDERBRIDGE

A3

6072 PAINSHILL INTERCHANGE EAST OVERBRIDGE

EXTENT OF SCHEME

RIVER MOLE

A245 PORTSMOUTH ROAD

MERGE UPGRADED TO TYPE G TWO LANE GAIN

MAINLINE AS EXISTING TWO LANE LAYOUT THROUGH JUNCTION

MAINLINE UPGRADED TO D4AP FOR CROSS SECTION SEE IAN 149 TABLE 4-1 PRIORITY 9 WITH 0.7m HARDSTRIP

DIVERGE UPGRADED TO TYPE D

FOR CONTINUATION REFER TO SHEET 3

LOCAL ACCESS SAN-02 REFER TO DRG. NO. HE5551522-ATK-HSR-SAN02-DR-D-0001

6074 PAINSHILL SOUTH-WEST RETAINING WALL

10m OF EXISTING RETAINING WALL TO BE RENEWED

OFFSIDE SLIP ROAD WIDENING, EARTHWORKS TO BE MODIFIED WITH GEOTECHNICAL REINFORCED EARTHWORKS SOLUTION

MAINLINE UPGRADED TO D4AP FOR CROSS SECTION SEE IAN 149 TABLE 4-1 PRIORITY 9 WITH 0.7m HARDSTRIP

AS EXISTING THREE LANE LAYOUT THROUGH JUNCTION

MERGE UPGRADED TO TYPE F

PAINSHILL PARK

LOCAL ACCESS PAIN-05D REFER TO DRG. NO. HE5551522-ATK-HSR-PAIN05D-DR-D-0001

NEW OVERBRIDGE STRUCTURE. TOTAL LENGTH 70m. WIDTH APPROX. 10m.

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

FOR CONSIDERATION OF A3 MAINLINE ONLY.
FOR LOCAL ACCESS ROADS, REFER TO HSR SERIES DRAWINGS.

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following significant residual risks (Reference shall also be made to the design hazard log).

Construction
(Enter "None" if applicable)

Maintenance / Cleaning
(Enter "None" if applicable)

Use
(Enter "None" if applicable)

Decommissioning / Demolition
(Enter "None" if applicable)

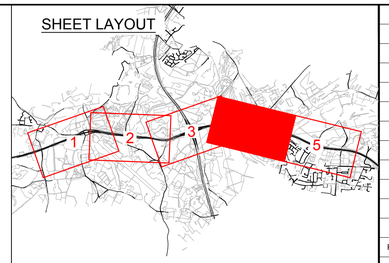
NOTES

1. LINK ROADS SHOWN AS IL1A ARE DETERMINED FROM TD 22/08. IT WOULD BE PROPOSED TO PROVIDE ALL LINK ROADS WITH AN IL2A CROSS-SECTION IN ORDER TO FUTURE PROOF AND MAXIMISE FLEXIBILITY.
2. FOR CROSS-SECTIONS IL1A & IL2A REFER TO TD 27/05, FIGURE 4-16.
3. UNLESS SPECIFIED OTHERWISE, MERGE AND DIVERGE TYPES ARE AS PER TD 22/06.
4. UNLESS SPECIFIED OTHERWISE, EARTHWORKS SLOPES TO BE 1(V) : 4(H)

KEY

- EXISTING OVERBRIDGE STRUCTURES
- EXISTING UNDERBRIDGE STRUCTURES
- EXISTING RETAINING WALLS
- EXISTING HIGHWAY BOUNDARY (INDICATIVE ONLY)
- PROPOSED HIGHWAY BOUNDARY
- PROPOSED HIGHWAY WORKS
- EXISTING WATERWAYS
- EXISTING BUILDINGS

SHEET LAYOUT



Rev.	Date	Description	By	Chk'd	App'd
P01	28/02/17	First Issue	GS	NK	RM

Drawing Status: FOR COSTING
Suitability: D1

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Client: Working on behalf of highways england

Project Title: REGIONAL INVESTMENT PROGRAMME M25 J10 IMPROVEMENT

Drawing Title: GENERAL ARRANGEMENT A3 CORRIDOR OPTION B SHEET 4 OF 5

Scale	Drawn	Checked	Approved	Authorised
1:2500	GS	NK	RM	KB
Original Size	**Date**	**Date**	**Date**	**Date**
A1	27/02/17	28/02/17	28/02/17	28/02/17

Drawing Number: Project | Originator | Volume | Location | Type | Role | Number
HE551522 - ATK - HGN - A3B - DR - D - 0004

Project Ref. No.: 5145620
Revision: P01

Plotted by: SMIT3524 Date: Feb 28, 2017 - 4:01pm

DO NOT SCALE

FOR CONSIDERATION OF A3 MAINLINE ONLY.
FOR LOCAL ACCESS ROADS, REFER TO HSR SERIES DRAWINGS.

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following significant residual risks (Reference shall also be made to the design hazard log).

Construction
(Enter "None" if applicable)

Maintenance / Cleaning
(Enter "None" if applicable)

Use
(Enter "None" if applicable)

Decommissioning / Demolition
(Enter "None" if applicable)

NOTES

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4. UNLESS SPECIFIED OTHERWISE, EARTHWORKS SLOPES TO BE 1(V) : 4(H)

KEY

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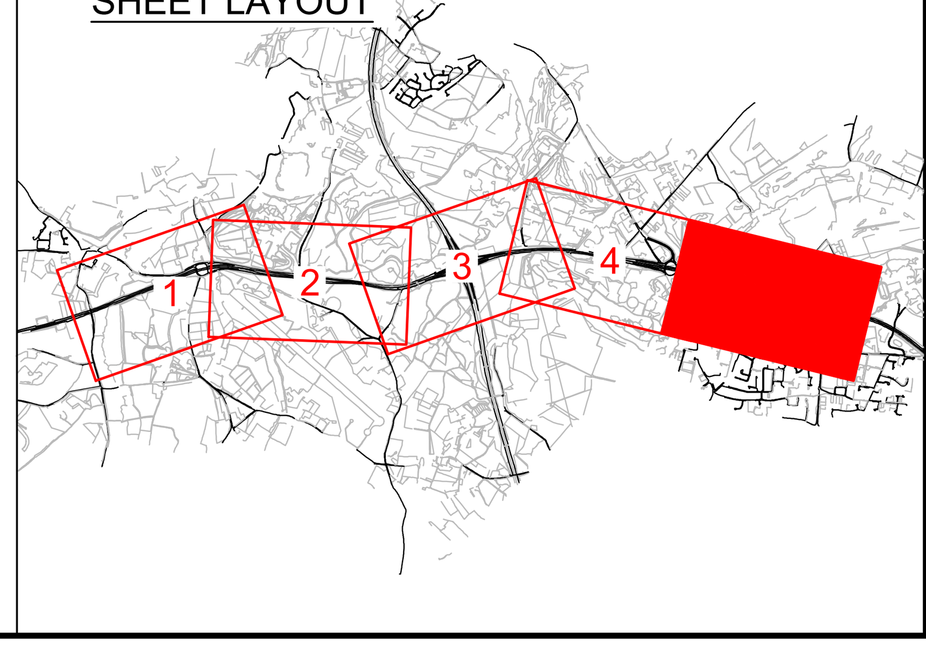
- PROPOSED HIGHWAY BOUNDARY
- PROPOSED HIGHWAY WORKS
- EXISTING WATERWAYS
- EXISTING BUILDINGS

SHEET LAYOUT



Rev.	Date	Description	By	Chk'd	App'd
P01	28/02/17	First Issue	GS	NK	RM

Drawing Status: FOR COSTING
Suitability: D1

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Client: Working on behalf of highways england

Project Title: REGIONAL INVESTMENT PROGRAMME
M25 J10 IMPROVEMENT

Drawing Title: GENERAL ARRANGEMENT
A3 CORRIDOR
OPTION B
SHEET 5 OF 5

Scale	Drawn	Checked	Approved	Authorised
1:2500	GS	NK	RM	KB

Original Size	Date	Date	Date	Date
A1	27/02/17	28/02/17	28/02/17	28/02/17

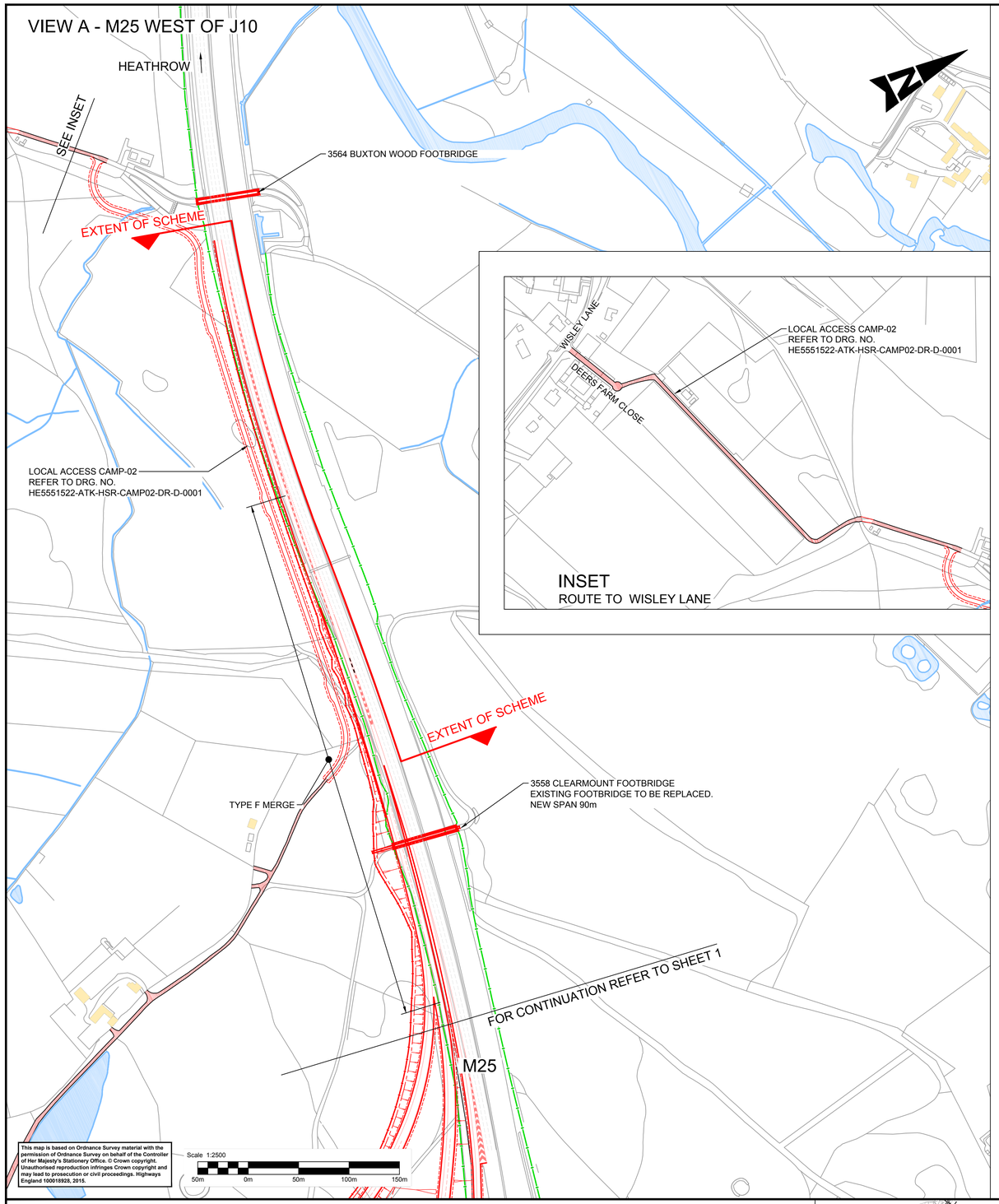
Drawing Number: HE551522 - ATK - HGN - A3B - DR - D - 0005
Project Ref. No.: 5145620
Revision: P01

Plotted by: SMIT3524 Date: Feb 28, 2017 - 4:01pm

DO NOT SCALE

Millimetres 0 10 100

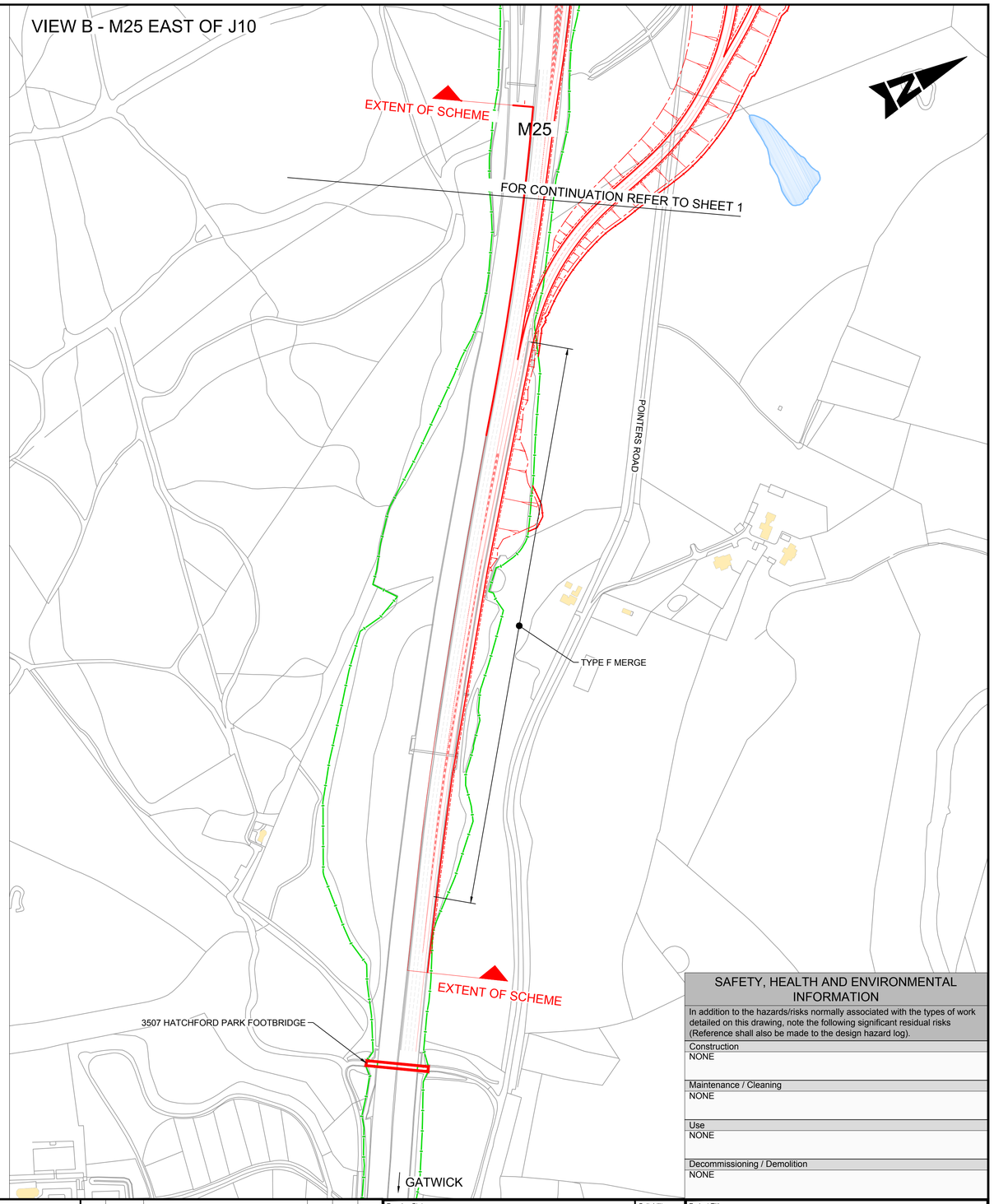
VIEW A - M25 WEST OF J10



Scale 1:2500

50m 0m 50m 100m 150m

VIEW B - M25 EAST OF J10



NOTES

1. LINK ROADS SHOWN AS IL1A ARE DETERMINED FROM TD 22/08. IT WOULD BE PROPOSED TO PROVIDE ALL LINK ROADS WITH AN IL2A CROSS-SECTION IN ORDER TO FUTURE PROOF AND MAXIMISE FLEXIBILITY.
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4. UNLESS SPECIFIED OTHERWISE, EARTHWORKS SLOPES TO BE 1(V) : 4(H)

KEY

- EXISTING OVERBRIDGE STRUCTURES
- EXISTING UNDERBRIDGE STRUCTURES
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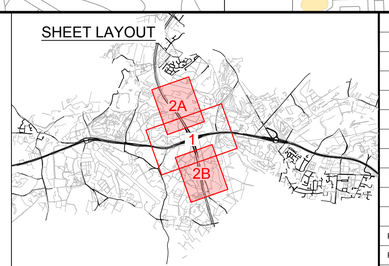
- EXISTING HIGHWAY BOUNDARY (INDICATIVE ONLY)
- PROPOSED HIGHWAY BOUNDARY
- PROPOSED HIGHWAY WORKS
- EXISTING WATERWAYS
- EXISTING BUILDINGS

SHEET LAYOUT



Rev.	Date	Description	By	Chk'd	App'd
P01	20/09/16	ISSUED FOR STAGE 1 T.A.R	SA	RM	PJ
P02	28/02/17	ISSUED FOR STAGE 1 T.A.R	GS	NK	RM

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following significant residual risks (Reference shall also be made to the design hazard log).

Construction
NONE

Maintenance / Cleaning
NONE

Use
NONE

Decommissioning / Demolition
NONE

Drawing Status: FOR COSTING
Suitability: D1

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www.atkinsglobal.com

Client: Working on behalf of highways england

Project Title: REGIONAL INVESTMENT PROGRAMME
M25 J10 IMPROVEMENT

Drawing Title: GENERAL ARRANGEMENT
OPTION 9
4 LEVEL, FREEFLOW IN 2 DIRECTIONS
SHEET 2 OF 2

Scale	Drawn	Checked	Approved	Authorised
1:2500	GS	NK	RM	KB
Original Size	**Date**	**Date**	**Date**	**Date**
A1	27/02/17	28/02/17	28/02/17	28/02/17

Drawing Number: Project | Originator | Volume
HE551522 - ATK - HGN -
M25J10 - DR - D - 0092
Location | Type | Role | Number

Project Ref. No.: 5145620
Revision: P02

D:\d0156474\HE551522-ATK-HGN-M25J10-DR-D-0092.dwg: Plotted by: SMIT3524 Date: Feb 28, 2017 - 4:03pm

DO NOT SCALE

Millimetres 100 0 10

M25 JUNCTION 10 / A3 WISLEY INTERCHANGE

HEATHROW

M25

FOR CONTINUATION REFER TO SHEET 2 - VIEW A

N

POSSIBLE NEW CULVERT RE□UIRED.

LOCAL ACCESS CAMP-02
REFER TO DRG. NO.
HE5551522-ATK-HSR-CAMP02-DR-D-0001

IL2A

TYPE E DIVERGE

NEW FOOTBRIDGE.
SPAN 40m

TUMULUS: ANCIENT MONUMENT

ACCESS / EGRESS TO TO BE STOPPED UP

A3

BOLDER MERE

FOR A3 CORRIDOR UPGRADE SEE Drg. No.
HE551522-ATK-HGN-A3A-DR-D-0002 OR
HE551522-ATK-HGN-A3B-DR-D-0002
NOTE: EXACT TIE-IN LOCATION VARIES WITH DIFFERING OPTIONS

OLD LANE

ACCESS / EGRESS TO OLD LANE TO BE RETAINED

6156 COCKROW FOOTBRIDGE
TO BE REPLACED.
SPAN 50m

3533 WISLEY INTERCHANGE
WEST UNDERBRIDGE
(LEVEL 2)

6100 WISLEY INTERCHANGE
NORTH UNDERBRIDGE
(LEVEL 2)

BRIDGE STRUCTURE.
TOTAL LENGTH 310m.

BRIDGE STRUCTURE.
TOTAL LENGTH 310m.

6152 WISLEY INTERCHANGE
SOUTH UNDERBRIDGE
(LEVEL 2)

3514 WISLEY INTERCHANGE
A3 UNDERBRIDGE
(LEVEL 3)

3512 WISLEY INTERCHANGE
EAST UNDERBRIDGE
(LEVEL 2)

15186 REDHILL
RETAINING WALL

TYPE E DIVERGE

IL1A

POSSIBLE NEW CULVERT RE□UIRED.

FOR CONTINUATION REFER TO SHEET 2 - VIEW B

M25

GATWICK

POINTERS ROAD

FOR A3 CORRIDOR UPGRADE SEE Drg. No.
HE551522-ATK-HGN-A3A-DR-D-0004 OR
HE551522-ATK-HGN-A3B-DR-D-0004
NOTE: EXACT TIE-IN LOCATION VARIES WITH DIFFERING OPTIONS

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

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following significant residual risks (Reference shall also be made to the design hazard log).

Construction
NONE

Maintenance / Cleaning
NONE

Use
NONE

Decommissioning / Demolition
NONE

NOTES

1. LINK ROADS SHOWN AS IL1A ARE DETERMINED FROM TD 22/08. IT WOULD BE PROPOSED TO PROVIDE ALL LINK ROADS WITH AN IL2A CROSS-SECTION IN ORDER TO FUTURE PROOF AND MAXIMISE FLEXIBILITY.
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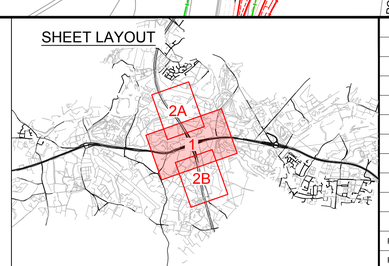
3. UNLESS SPECIFIED OTHERWISE, MERGE AND DIVERGE TYPES ARE AS PER TD 22/06.
4. UNLESS SPECIFIED OTHERWISE, EARTHWORKS SLOPES TO BE 1(V) : 4(H)

KEY

- EXISTING OVERBRIDGE STRUCTURES
- EXISTING UNDERBRIDGE STRUCTURES
- EXISTING RETAINING WALLS
- EXISTING HIGHWAY BOUNDARY (INDICATIVE ONLY)
- PROPOSED HIGHWAY BOUNDARY
- PROPOSED HIGHWAY WORKS
- EXISTING WATERWAYS
- EXISTING BUILDINGS

SHEET LAYOUT



Rev.	Date	Description	By	Chk'd	App'd
P01	20/09/16	ISSUED FOR STAGE 1 T.A.R	SA	RM	PJ
P02	28/02/17	ISSUED FOR STAGE 1 T.A.R	GS	NK	RM

Drawing Status: FOR COSTING
Suitability: D1

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www.atkinsglobal.com

Client: Working on behalf of highways england

Project Title: REGIONAL INVESTMENT PROGRAMME
M25 J10 IMPROVEMENT

Drawing Title: GENERAL ARRANGEMENT
OPTION 9
4 LEVEL, FREEFLOW IN 2 DIRECTIONS
SHEET 1 OF 2

Scale	Drawn	Checked	Approved	Authorised
1:2500	GS	NK	RM	KB
Original Size	Date	Date	Date	Date
A1	28/02/17	28/02/17	28/02/17	28/02/17

Drawing Number: HE551522 - ATK - HGN - M25J10 - DR - D - 0091
Project | Originator | Volume | Location | Type | Role | Number
Project Ref. No. 5145620
Revision P02

D:\d0156474\HE551522-ATK-HGN-M25J10-DR-D-0091.dwg: Plotted by: SMIT3524 Date: Feb 28, 2017 - 4:02pm

DO NOT SCALE

Millimetres 0 10 100

M25 JUNCTION 10 / A3 WISLEY INTERCHANGE

HEATHROW

M25

FOR CONTINUATION REFER TO SHEET 2 - VIEW A

LOCAL ACCESS CAMP-02
REFER TO DRG. NO.
HE5551522-ATK-HSR-CAMP02-DR-D-0001

BRIDGE STRUCTURE.
SPAN 45m

3533 WISLEY INTERCHANGE
WEST UNDERBRIDGE
(LEVEL 2)
TO REMAIN IN-SITU

5 LANES

TUMULUS: ANCIENT MONUMENT

4 LANES

REDUCTION OF HARDENED VERGES TO ENABLE 1 LANE CARRIAGEWAY WIDENING THROUGH EXISTING STRUCTURE

ACCESS / EGRESS TO
TO BE STOPPED UP

DIVERGE TYPE E

NEW FOOTBRIDGE/NMU
ROUTE.
SPAN 60m

MERGE SIMILAR TO
TYPE E

15186 REDHILL
RETAINING WALL

A3

BOLDER MERE

FOR A3 CORRIDOR UPGRADE SEE Drg. No.
HE551522-ATK-HGN-A3A-DR-D-0002 OR
HE551522-ATK-HGN-A3B-DR-D-0002
NOTE: EXACT TIE-IN LOCATION VARIES WITH DIFFERING OPTIONS

REDUCTION OF HARDENED VERGES
TO ENABLE 1 LANE CARRIAGEWAY
WIDENING THROUGH EXISTING
STRUCTURE

6156 COCKROW FOOTBRIDGE
TO BE REPLACED.
SPAN 50m

6152 WISLEY INTERCHANGE
SOUTH UNDERBRIDGE
(LEVEL 2)

5 LANES

4 LANES

DIVERGE TYPE E

6100 WISLEY INTERCHANGE
NORTH UNDERBRIDGE
(LEVEL 2)

5 LANES

3514 WISLEY INTERCHANGE
A3 UNDERBRIDGE
(LEVEL 3)

5 LANES

ACCESS / EGRESS TO OLD LANE TO BE RETAINED

OLD LANE

3512 WISLEY INTERCHANGE
EAST UNDERBRIDGE
(LEVEL 2)
TO REMAIN IN-SITU

BRIDGE STRUCTURE.
SPAN 45m

CROSS HATCH DENOTES
PAVEMENT TO BE BROKEN
OUT AND REMOVED.
APPROX. 16000 m²

EXTENT OF SCHEME

POINTERS ROAD

FOR CONTINUATION REFER TO SHEET 2 - VIEW B

M25

GATWICK

FOR A3 CORRIDOR UPGRADE SEE Drg. No.
HE551522-ATK-HGN-A3A-DR-D-0004 OR
HE551522-ATK-HGN-A3B-DR-D-0004
NOTE: EXACT TIE-IN LOCATION VARIES WITH DIFFERING OPTIONS

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

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following significant residual risks (Reference shall also be made to the design hazard log).

Construction
NONE

Maintenance / Cleaning
NONE

Use
NONE

Decommissioning / Demolition
NONE

NOTES

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KEY

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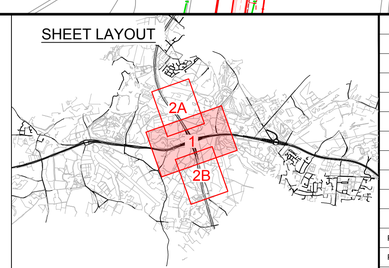
SHEET LAYOUT



Rev.	Date	Description	By	Chk'd	App'd
P01	20/09/16	ISSUED FOR STAGE 1 T.A.R	SA	RM	PJ
P02	28/02/17	ISSUED FOR STAGE 1 T.A.R	GS	NK	RM

Drawing Status: FOR COSTING
Suitability: D1

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www.atkinsglobal.com

Client: Working on behalf of highways england

Project Title: REGIONAL INVESTMENT PROGRAMME
M25 J10 IMPROVEMENT

Drawing Title: GENERAL ARRANGEMENT
OPTION 14 - ELONGATED ROUNDABOUT
WITH REALIGNED M25 SLIPS
SHEET 1 OF 2

Scale	Drawn	Checked	Approved	Authorised
1:2500	GS	NK	RM	KB
Original Size	Date	Date	Date	Date
A1	28/02/17	28/02/17	28/02/17	28/02/17

Drawing Number
Project | Originator | Volume
HE551522 - ATK - HGN -
M25J10 - DR - D - 0141
Location | Type | Role | Number

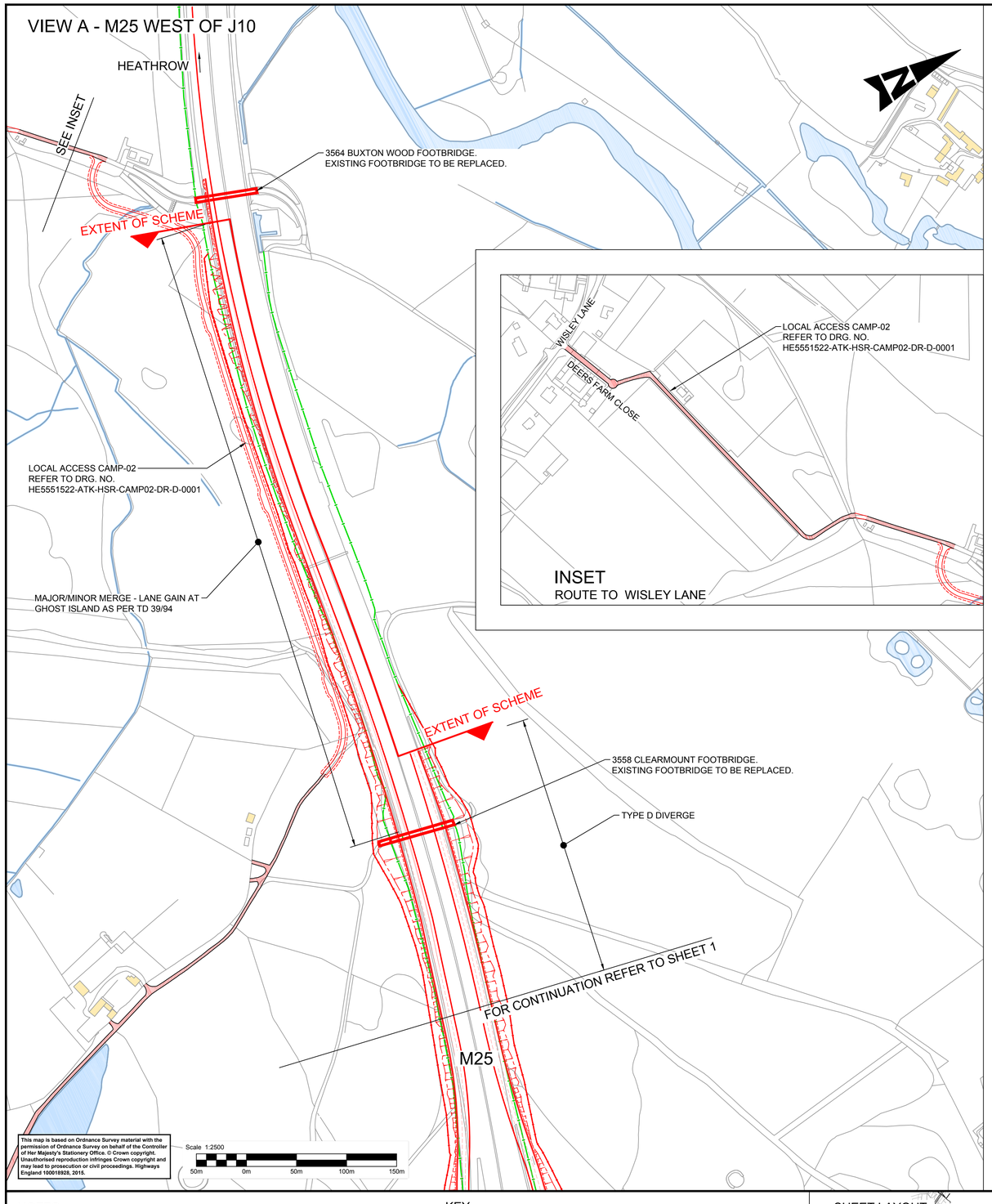
Project Ref. No.: 5145620
Revision: P02

D:\d0156474\HE551522-ATK-HGN-M25J10-DR-D-0141.dwg: Plotted by: SMIT3524 Date: Feb 28, 2017 - 4:04pm

DO NOT SCALE

Millimetres 0 10 100

VIEW A - M25 WEST OF J10



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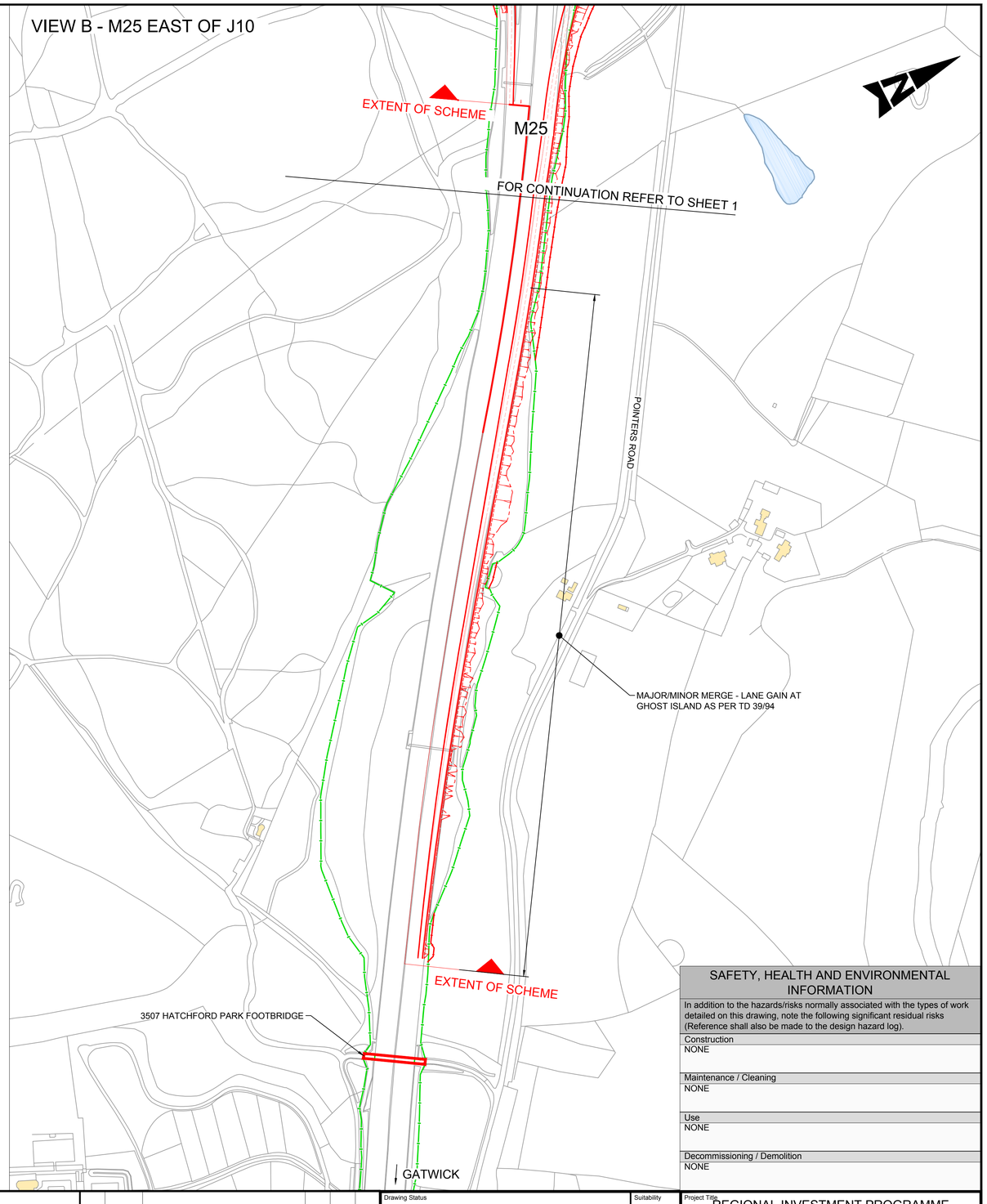
VIEW B - M25 EAST OF J10



SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following significant residual risks (Reference shall also be made to the design hazard log).

Construction
NONE

Maintenance / Cleaning
NONE

Use
NONE

Decommissioning / Demolition
NONE

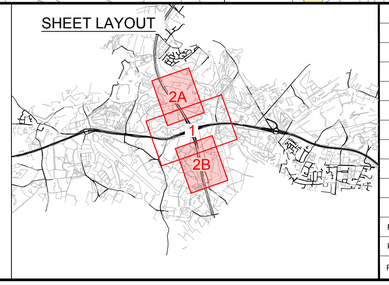
NOTES

1. LINK ROADS SHOWN AS IL1A ARE DETERMINED FROM TD 22/08. IT WOULD BE PROPOSED TO PROVIDE ALL LINK ROADS WITH AN IL2A CROSS-SECTION IN ORDER TO FUTURE PROOF AND MAXIMISE FLEXIBILITY.
2. FOR CROSS-SECTIONS IL1A & IL2A REFER TO TD 27/05, FIGURE 4-16.
3. UNLESS SPECIFIED OTHERWISE, MERGE AND DIVERGE TYPES ARE AS PER TD 22/06.
4. UNLESS SPECIFIED OTHERWISE, EARTHWORKS SLOPES TO BE 1(V) : 4(H)

KEY

- EXISTING OVERBRIDGE STRUCTURES
- EXISTING UNDERBRIDGE STRUCTURES
- EXISTING RETAINING WALLS
- EXISTING HIGHWAY BOUNDARY (INDICATIVE ONLY)
- PROPOSED HIGHWAY BOUNDARY
- PROPOSED HIGHWAY WORKS
- EXISTING WATERWAYS
- EXISTING BUILDINGS

SHEET LAYOUT



Rev.	Date	Description	By	Chk'd	App'd
P01	20/09/16	ISSUED FOR STAGE 1 T.A.R	SA	RM	PJ
P02	28/02/17	ISSUED FOR STAGE 1 T.A.R	GS	NK	RM

Drawing Status: FOR COSTING
Suitability: D1

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Client: Working on behalf of highways england

Project Title: REGIONAL INVESTMENT PROGRAMME
M25 J10 IMPROVEMENT

Drawing Title: GENERAL ARRANGEMENT
OPTION 14 - ELONGATED ROUNDABOUT
WITH REALIGNED M25 SLIPS
SHEET 2 OF 2

Scale	Drawn	Checked	Approved	Authorised
1:2500	GS	NK	RM	KB
Original Size	**Date**	**Date**	**Date**	**Date**
A1	27/02/17	28/02/17	28/02/17	28/02/17

Drawing Number
Project | Originator | Volume
HE551522 - ATK - HGN -
M25J10 - DR - D - 0142
Location | Type | Role | Number

Project Ref. No. 5145620
Revision P02

D:\d0156474\HE551522-ATK-HGN-M25J10-DR-D-0142.dwg: Plotted by: SMIT3524 Date: Feb 28, 2017 - 4:05pm

DO NOT SCALE

Millimetres 100 0 10

M25 CLOCKWISE TO HEATHROW

WOKING ARCHERY CLUB

WISLEY

DEERS FARM CLOSE

WISLEY LANE

BIRCHMERE SCOUT CAMPSITE

PARK BARN FARM

HUT HILL FARM

OLD LANE

CAMP-02
4.1m SINGLE TRACK LOCAL ACCESS WITH PASSING BAYS LINKING EXISTING TRACK ADJACENT TO BIRCHMERE CAMPSITE WITH DEERS FARM CLOSE

CAMP-02
EXISTING TRACK ALONG DEERS FARM CLOSE TO BE REFURBISHED TO 4.1m SINGLE TRCK ROAD WITH PASSING PLACES

REFER TO INSET

CAMP-02
EXISTING TRACK PAST PARK BARN FARM TO BE REFURBISHED TO 4.1m SINGLE TRCK ROAD WITH PASSING PLACES

EXISTING JUNCTION TO BE CLOSED OFF

A3 NORTHBOUND TO LONDON

A3 SOUTHBOUND TO PORTSMOUTH

M25 JUNCTION 10 / A3 WISLEY INTERCHANGE

(OPTION 14 SHOWN; CAMP-02 ALSO USED FOR OPTION 9)

INSET

SCALE 1:1000

WOKING ARCHERY CLUB

M25 CLOCKWISE TO HEATHROW

900 DIA. PIPE CULVERT x 8.1m LONG

CAMP-02
4.1m SINGLE TRACK LOCAL ACCESS WITH PASSING BAYS LINKING EXISTING TRACK ADJACENT TO BIRCHMERE CAMPSITE WITH DEERS FARM CLOSE

CAMP-02
EXISTING TRACK PAST PARK BARN FARM TO BE REFURBISHED TO 4.1m SINGLE TRCK ROAD WITH PASSING PLACES

APPROX. QUANTITIES	
EARTHWORKS CUT VOLUME	xxx m^3
EARTHWORKS FILL VOLUME	xxx m^3
PAVEMENT AREA	3100 m^2

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

NOTES:

1. THE A3 WIDENING SHOWN IS INDICATIVE ONLY, AND SUBJECT TO DESIGN DEVELOPMENT.
2. EARTHWORK SLOPES 1(V):4(H).
3. REFER TO GENERAL ARRANGEMENT A3 CORRIDOR DRG'S FOR MAINLINE PAVEMENT QUANTITY.

LEGEND:

- A3 WIDENING WORKS (ROAD MARKINGS NOT SHOWN)
- LOCAL ACCESS ROADS (ROAD MARKINGS NOT SHOWN)
- EXISTING HIGHWAY BOUNDARY
- PROPOSED HIGHWAY BOUNDARY (SUBJECT TO DESIGN DEVELOPMENT)

Rev.	Date	Description	By	Chk'd	App'd
P01	06/03/17	ISSUED TO HIGHWAYS ENGLAND	PH	NK	RM
P02	07/03/17	ISSUED TO HIGHWAYS ENGLAND	SA	RM	PJ

Drawing Status: WORK IN PROGRESS
Suitability: S0

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Client: Working on behalf of highways england

Project Title: REGIONAL INVESTMENT PROGRAMME
M25 J10 IMPROVEMENT

Drawing Title: GENERAL ARRANGEMENT
LOCAL ACCESS ROAD
BIRCHMERE SCOUT CAMP SITE
OPTION CAMP-02

Scale	Drawn	Checked	Approved	Authorised
1:2500	SA	RM	PJ	KB
Original Size: A1	Date: 07/03/17	Date: 07/03/17	Date: 07/03/17	Date: 07/03/17

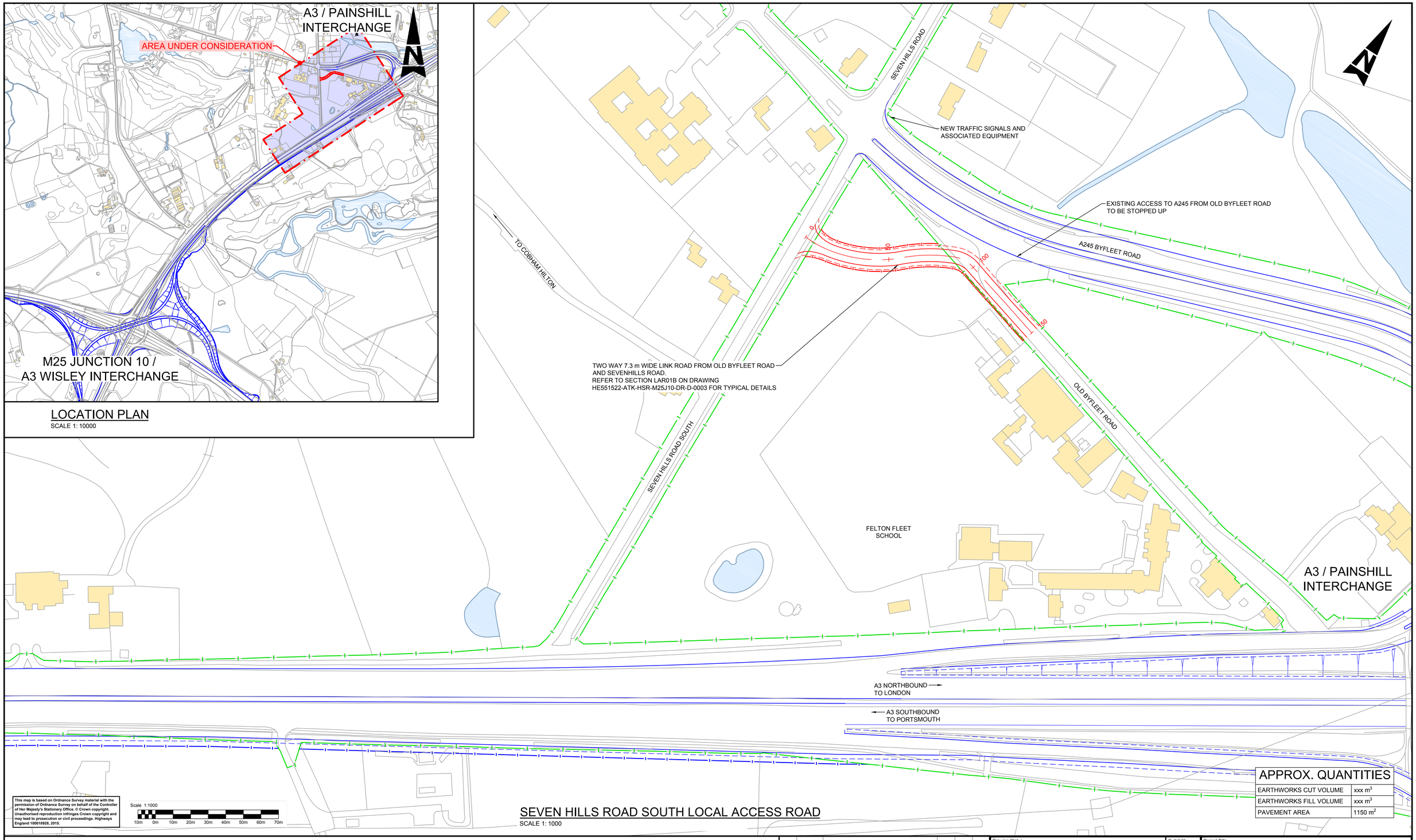
Drawing Number: Project | Originator | Volume | Location | Type | Role | Number
HE551522 - ATK - HSR - CAMP02 - DR - D - 0001

Project Ref. No.: 5145620
Revision: P02

DO NOT SCALE

Millimetres 100 0 10

LOCATION PLAN
SCALE 1: 10000



Scale 1:1000
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SEVEN HILLS ROAD SOUTH LOCAL ACCESS ROAD
SCALE 1: 1000

APPROX. QUANTITIES	
EARTHWORKS CUT VOLUME	xxx m^3
EARTHWORKS FILL VOLUME	xxx m^3
PAVEMENT AREA	1150 m^2

NOTES:

1. THE A3 WIDENING SHOWN IS INDICATIVE ONLY, AND SUBJECT TO DESIGN DEVELOPMENT.
2. EARTHWORK SLOPES 1(V):4(H).
3. REFER TO GENERAL ARRANGEMENT A3 CORRIDOR DRG'S FOR MAINLINE PAVEMENT QUANTITY.

LEGEND:

- A3 WIDENING WORKS (ROAD MARKINGS NOT SHOWN)
- LOCAL ACCESS ROADS (ROAD MARKINGS NOT SHOWN)
- EXISTING HIGHWAY BOUNDARY
- PROPOSED HIGHWAY BOUNDARY (SUBJECT TO DESIGN DEVELOPMENT)

Rev.	Date	Description	By	Chk'd	App'd
P01	06/03/17	ISSUED TO HIGHWAYS ENGLAND	PH	NK	RM
P02	07/03/17	ISSUED TO HIGHWAYS ENGLAND	SA	RM	PJ

Drawing Status: WORK IN PROGRESS
Suitability: S0

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Client: Working on behalf of highways england

Project Title: REGIONAL INVESTMENT PROGRAMME
M25 J10 IMPROVEMENT

Drawing Title: GENERAL ARRANGEMENT
LOCAL ACCESS ROAD
SEVENHILLS ROAD TO OLD BYFLEET ROAD
OPTION PAIN-02

Scale	Drawn	Checked	Approved	Authorised
AS SHOWN	SA	RM	PJ	KB
Original Size: A1	Date: 07/03/17	Date: 07/03/17	Date: 07/03/17	Date: 07/03/17

Drawing Number: Project | Originator | Volume | Location | Type | Role | Number
HE551522 - ATK - HSR - PAIN02 - DR - D - 0001

Project Ref. No.: 5145620
Revision: P02

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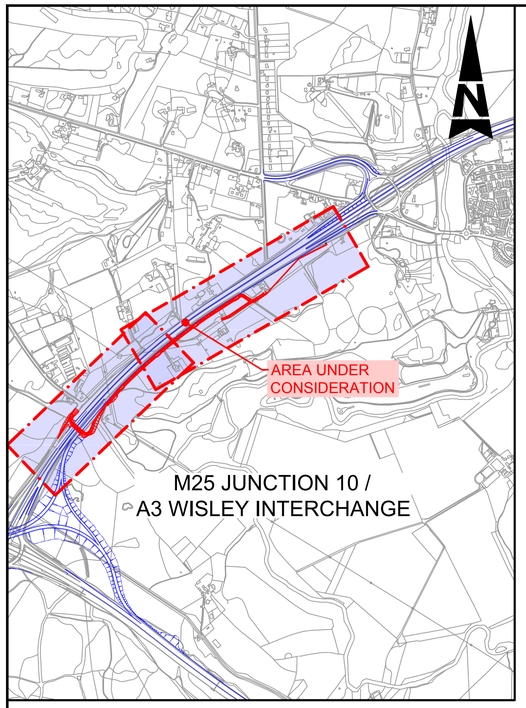
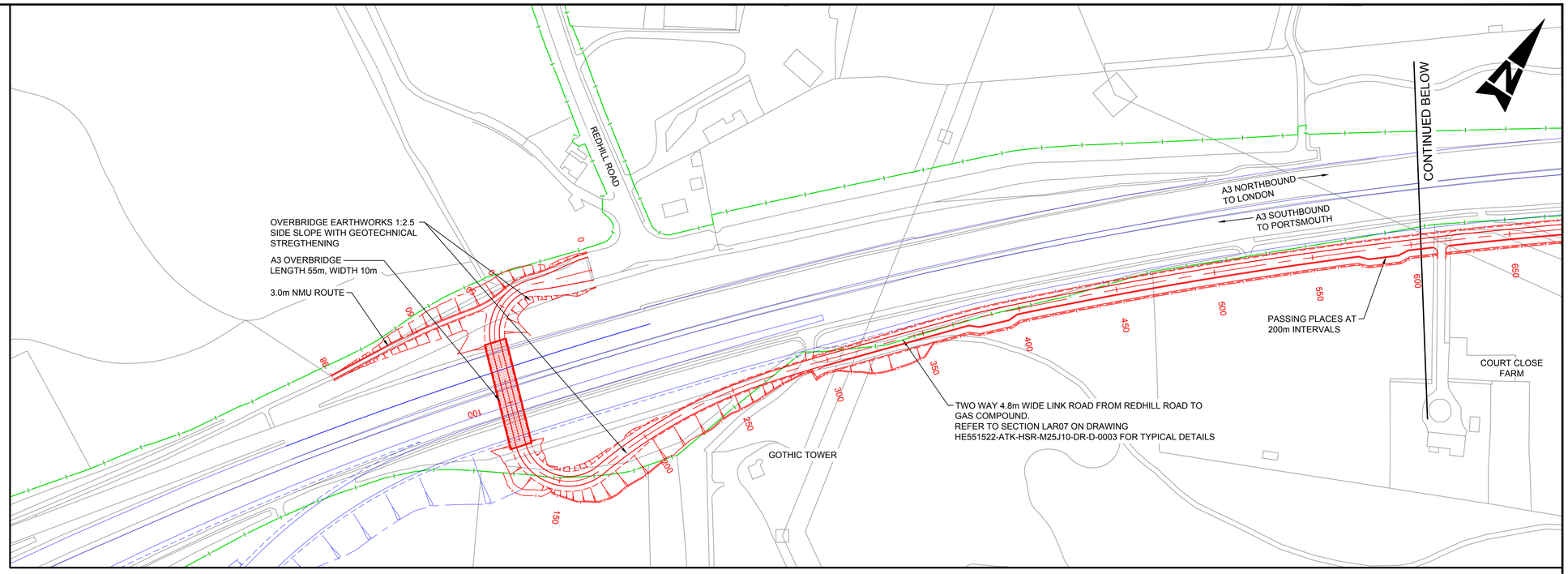
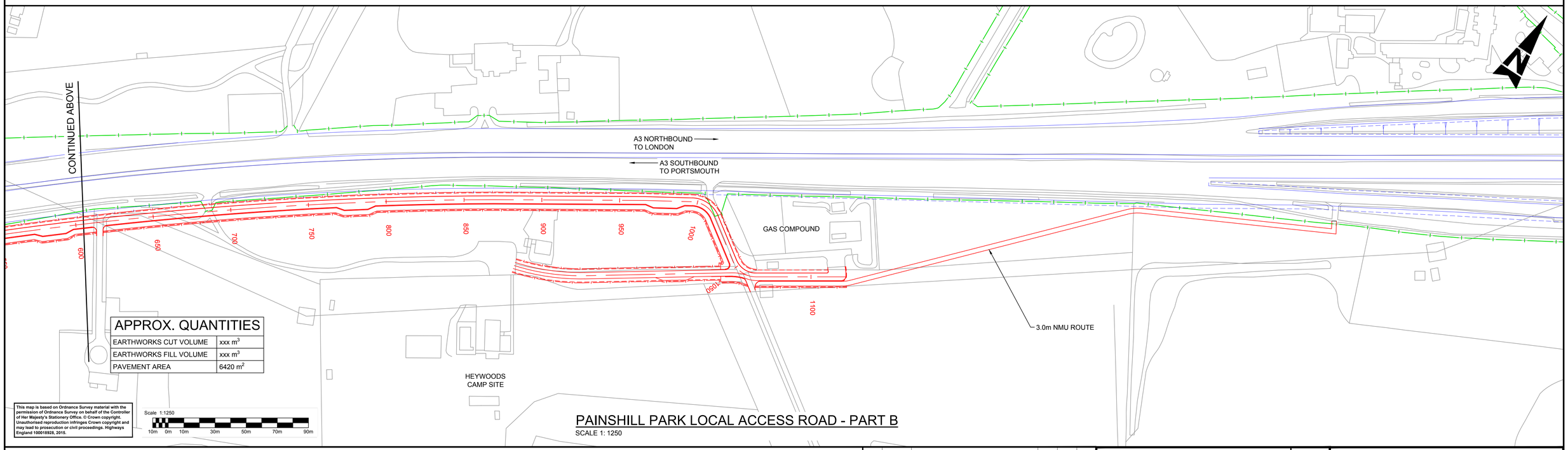


LOCATION PLAN
SCALE 1: 12500



PAINSHILL PARK LOCAL ACCESS ROAD - PART A
SCALE 1: 1250



APPROX. QUANTITIES

EARTHWORKS CUT VOLUME	xxx m^3
EARTHWORKS FILL VOLUME	xxx m^3
PAVEMENT AREA	6420 m^2

Scale 1:1250
10m 0m 10m 30m 50m 70m 90m

PAINSHILL PARK LOCAL ACCESS ROAD - PART B
SCALE 1: 1250

NOTES:

1. THE A3 WIDENING SHOWN IS INDICATIVE ONLY, AND SUBJECT TO DESIGN DEVELOPMENT.
2. EARTHWORK SLOPES 1(V):4(H) EXCEPT WHERE NOTED OTHERWISE.
3. REFER TO GENERAL ARRANGEMENT A3 CORRIDOR DRG'S FOR MAINLINE PAVEMENT QUANTITY.

LEGEND:

- A3 WIDENING WORKS (ROAD MARKINGS NOT SHOWN)
- LOCAL ACCESS ROADS (ROAD MARKINGS NOT SHOWN)
- EXISTING HIGHWAY BOUNDARY
- PROPOSED HIGHWAY BOUNDARY (SUBJECT TO DESIGN DEVELOPMENT)

Rev.	Date	Description	By	Chk'd	App'd
P01	06/03/17	First Issue	PH	NK	RM
P02	08/03/17	ISSUED TO HIGHWAYS ENGLAND	SA	RM	PJ

Drawing Status: FOR COSTING
Suitability: D1

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Client: Working on behalf of highways england

Project Title: REGIONAL INVESTMENT PROGRAMME M25 J10 IMPROVEMENT

Drawing Title: GENERAL ARRANGEMENT LOCAL ACCESS ROAD REDHILL ROAD TO GAS COMPOUND OPTION PAIN-4A

Scale	Drawn	Checked	Approved	Authorised
AS SHOWN	SA	RM	PJ	KB
Original Size: A1	Date: 08/03/17	Date: 08/03/17	Date: 08/03/17	Date: 08/03/17

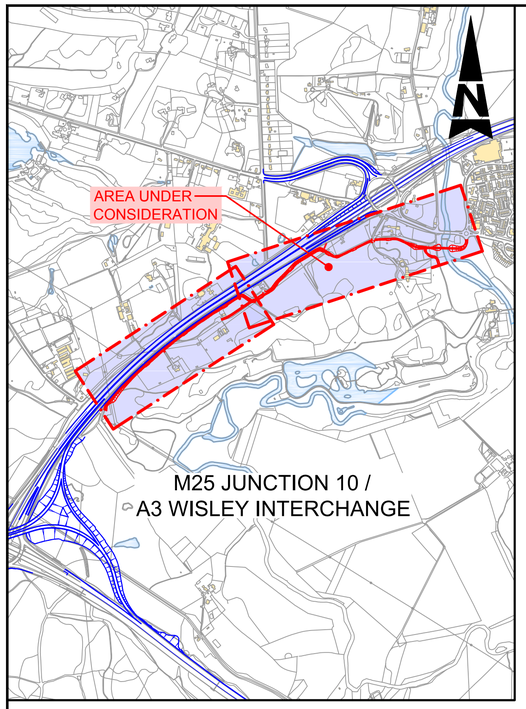
Drawing Number: Project | Originator | Volume | Location | Type | Role | Number
HE551522 - ATK - HSR - PAIN4A - DR - D - 0001

Project Ref. No.: 5145620
Revision: P02

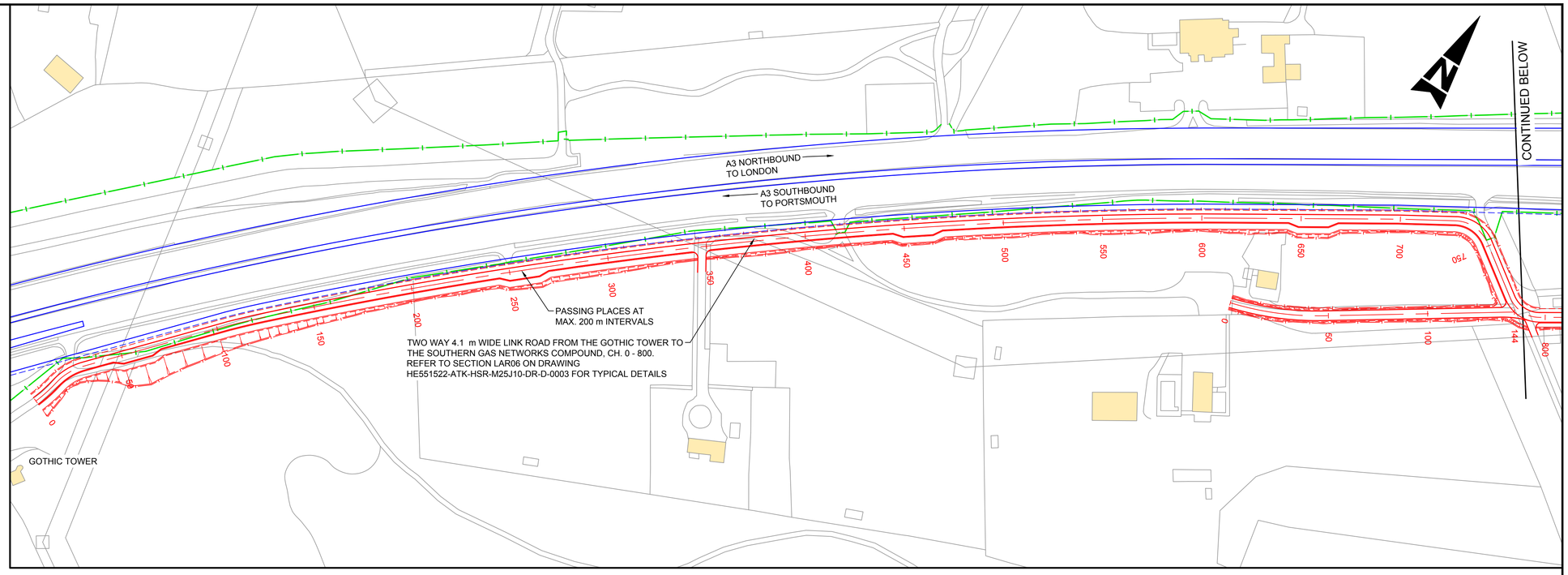
D:\projectwise\d0156474\HE551522-ATK-HSR-PAIN4A-DR-D-0001.dwg: Plotted by: arro9099 Date: Mar 08, 2017 - 4:57pm

DO NOT SCALE

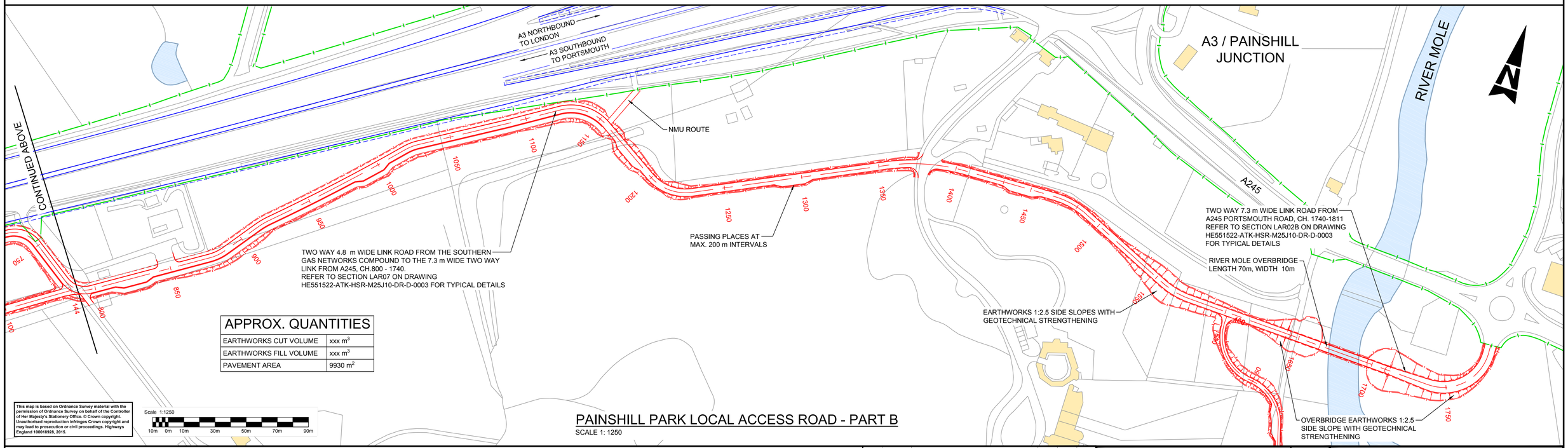
Millimetres 0 10 100



LOCATION PLAN
SCALE 1: 12500



PAINSHILL PARK LOCAL ACCESS ROAD - PART A
SCALE 1: 1250



APPROX. QUANTITIES

EARTHWORKS CUT VOLUME	xxx m^3
EARTHWORKS FILL VOLUME	xxx m^3
PAVEMENT AREA	9930 m^2

Scale 1:1250
10m 0m 10m 30m 50m 70m 90m

PAINSHILL PARK LOCAL ACCESS ROAD - PART B
SCALE 1: 1250

NOTES:

1. THE A3 WIDENING SHOWN IS INDICATIVE ONLY, AND SUBJECT TO DESIGN DEVELOPMENT.
2. EARTHWORK SLOPES 1(V):4(H) EXCEPT WHERE NOTED OTHERWISE.
3. REFER TO GENERAL ARRANGEMENT A3 CORRIDOR DRG'S FOR MAINLINE PAVEMENT QUANTITY.

LEGEND:

- A3 WIDENING WORKS (ROAD MARKINGS NOT SHOWN)
- LOCAL ACCESS ROADS (ROAD MARKINGS NOT SHOWN)
- EXISTING HIGHWAY BOUNDARY
- PROPOSED HIGHWAY BOUNDARY (SUBJECT TO DESIGN DEVELOPMENT)

Rev.	Date	Description	By	Chk'd	App'd
P01	06/03/17	First Issue	PH	NK	RM
P02	08/03/17	ISSUED TO HIGHWAYS ENGLAND	SA	RM	PJ

Drawing Status: FOR COSTING
Suitability: D1

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Client: Working on behalf of highways england

Project Title: REGIONAL INVESTMENT PROGRAMME M25 J10 IMPROVEMENT

Drawing Title: GENERAL ARRANGEMENT LOCAL ACCESS ROAD GOTHIC TOWER TO A245 OPTION PAIN-05D

Scale	Drawn	Checked	Approved	Authorised
AS SHOWN	SA	RM	PJ	KB
Original Size: A1	Date: 08/03/17	Date: 08/03/17	Date: 08/03/17	Date: 08/03/17

Drawing Number: Project | Originator | Volume | Location | Type | Role | Number
HE551522 - ATK - HSR - PAIN05D - DR - D - 0001

Project Ref. No.: 5145620
Revision: P02

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Appendix D
Appraisal Summary Tables

Appraisal Summary Table

Date produced:	03/08/2017

Contact:	
Name	T Chatziioannou
Organisation	Atkins
Role	Consultant

Name of scheme:	M25 Junction 10 / A3 Wisley Improvments - Option 9 (Scheme 1)
Description of scheme:	Option 9 consists of free flow right turns from the A3 Northbound to the M25 anticlockwise and from the A3 southbound to the M25 clockwise. Free flow left turns from the A3 northbound to the M25 clockwise and the A3 southbound to the M25 anticlockwise are also provided.

Impacts		Summary of key impacts	Assessment				
			Quantitative			Qualitative	Monetary £(NPV)	Distributional 7-pt scale/ vulnerable grp
Economy	Business users & transport providers	· The percentage of total TEE benefit during normal operation attributable to changes in consumers journey times and vehicle operating costs is 49%. · The total person hours saved by business users in opening year during normal operation is 0.4 million. For all vehicles and trip purposes combined: · See Tables 7.32-7.35 in the Traffic Forecasting Report for a summary of the opening year peak and inter-peak journey time changes in seconds by route.	Value of journey time changes(£) £230,713k Net journey time changes (£) 0 to 2min: £84,328k; 2 to 5min: £102,105k; > 5min: £44,280k			N/A	£233,857k	N/A
	Reliability impact on Business users	Currently there are high levels of congestion during peak hours at Junction 10, which causes delays on multiple links around the junction and on the mainline. Joruney times on certain movements can take twice as long as in freeflow conditions. By 2037 delays are expected to increase by over 30% (average of peak hours) further worsening journey tiime reliability. Option 14 is forecast to significantly reduce delays and queuing at the junction and on the A3 which is likely to improve reliability.	N/A			Beneficial	N/A	
	Regeneration	Not assessed.	Not assessed.			N/A	N/A	
	Wider Impacts	Not assessed.	Not assessed			N/A	N/A	
Environmental	Noise	Overall, the scheme was not shown to give rise to any "major" increases in noise level. The number of properties predicted a significant adverse effect decreased in the opening year and the design year compared with the Do Minimum scenario. The properties where significant adverse effects were predicted to occur were located close to Noise Important Areas, Wisley Lane, and the B2039 (Ockham). The WIS_01 variant was shown to cause "minor" noise increases in the design year. The effect of applying variant WIS_10 would reduce the number of properties with daytime noise increases in the forecast year by 23 and increase the number of properties with decreases to 430. The valuation of the scheme would improve to £378k. No non-negligible noise increases were predicted for this variant in the design year.	Assessment Score Households with increased daytime noise in forecast year: 280 Households with reduced daytime noise in forecast year: 333			N/A	Net present value of change in noise: £29k	Moderate beneficial
	Air Quality	Overall increase in NO2 and PM10 concentrations with the scheme. In addition regional Nox emissions increase in line with vehicle kilometres travelled. There are expected to be exceedances of the NO2 AQS objective with and without the scheme at three receptors, none of which are within an AQMA, but are located near main roads, or junctions. There are 4 AQMAs in the area which could be affected by the scheme: there is expected to be a small increase in concentrations at receptors within the M25 AQMA; a medium increase in concentrations at receptors in the Cobham AQMA, and a small decrease at receptors within the Esher AQMA and Addlestone AQMA. The effect of applying variant WIS_10 would result in very little variation with an increase in assessment scores of<20 and an increase in valution of less than £30,000	Assessment Score PM10:229 NO2:797 Emissions over 60 year appraisal period NOX: 936 tonnes			N/A	Value of change in PM10 concentration: NPV: £-446k Value of change in NOX emissions: NPV £-495k Total value of change in air quality: £-941k	Slight adverse
	Greenhouse gases	Full assessment of Greenhouse Gases has been undertaken in accordance with unit A3. Calculated using non-TUBA method utilising Defra vehicle emission factors from EFT v7.0 used in the Draft DMRB tool v5.0. Overall increase in CO2 emissions with Scheme option 9A over 60 year appraisal period as a result of an overall increase in annual vehicle km travelled compared with no scheme scenario. The change in non-traded carbon dioxide emissions in 2022 = 12 MtCO2e, indicating an increase in CO2 emissions in 2022, opening year. Change in emissions in MtCO2e for 2023-2027 = 64. The effect of applying variant WIS_10 would result in an increase in emissions as the variant takes a longer route.	Change in non-traded carbon over 60y (CO2e) 868,981 Change in traded carbon over 60y (CO2e) -			N/A	-£39,814k	
	Landscape	The proposed scheme would increase the presence of the existing road corridor through a combination of localised widening and introducing new intrusive elements. There would be a significant loss of existing screening vegetation and mature woodland across the Wisley and Ockham commons. Option 9 would result in a Moderate adverse impact on landscape character at the operation phase. WIS01 – Minor adverse impact at operation phase (summer year 15). WIS10 – Moderate adverse impact at operation phase (summer year 15) on landscape character. PAIN04 - Moderate adverse impact at operation phase (summer year 15) on landscape character. PAIN05 - Moderate adverse impact at operation phase (summer year 15) on landscape character.	N/A			Moderate Adverse	N/A	
	Townscape	Not assessed.	N/A			N/A	N/A	
	Historic Environment	Junction 10 Option 9 would result in Moderate Adverse impacts on two scheduled prehistoric barrows, resulting in Large Adverse effects. The scheme 9 would also result in Major Adverse impacts on three areas of non-designated archaeology, resulting in Moderate Adverse effects. The common elements would result in Minor Adverse impacts on non-designated archaeological remains, resulting in no more than Slight Adverse effects. WIS01 – Large Adverse effect in relation to Grade II* Wisley RHS Gardens WIS10 – No significant effects in relation to cultural heritage PAIN04 - Moderate Adverse effects on Grade I Painshill Park registered park and garden, Grade II* listed Gothic Tower, Grade II listed Foxwarren Cottage PAIN05 - Large Adverse (PAIN05C) or Very Large Adverse (PAIN05D) effect in relation to Painshill Park registered park and garden, Moderate Adverse effects on one Grade II* and three Grade II listed buildings	N/A			Large Adverse	N/A	
	Biodiversity	Based on the information available at this stage, it is considered that Option 9 is likely to have a large adverse effect on the Thames Basin Heaths SPA and the Ockham and Wisley Commons SSSI. The option is considered likely to have a moderate adverse effect on Ockham and Wisley LNR, ancient woodland and notable habitats. There may be up to a large adverse effect on notable species, although the effect on the qualifying species of the SPA is expected to be slight adverse. There is increased land take within the SPA (11.64 ha), SSSI (20.17 ha), and LNR (16.68 ha) than Option 14. It is possible that mitigation in the form of improved sound barriers around the scheme could actually reduce the noise disturbance of either option compared to existing noise levels, thus potentially improving the suitability of the existing heathland habitats for qualifying breeding bird species of the SPA, and allowing the potential clearance of conifer woodland between the heathland and the M25/A3 to increase the area of established heathland. Noise modelling to further understand the noise disturbance levels of these options and potential mitigation will be explored in Stage 3. The necessary mitigation and compensation required for the Scheme will improve the habitats surrounding Junction 10, thus leading to increased impacts on the SPA, SSSI and LNR should future improvement works be required. WIS01 - Based on the information available at this stage, there will be a moderate adverse effect from WIS01 on notable habitats, and may be up to a large adverse effect on notable species. WIS01 is considered to be the option with least impact of the Wisley options on biodiversity features. WIS10 - Based on the information available at this stage, there will be a moderate adverse effect of the WIS10 option on the Wisley Airfield SNCI and notable habitats, and a slight adverse effect on the SPA and its qualifying species, and Ockham and Wisley Commons SSSI. There may be up to a large adverse effect on notable species. Due to the potential for earthworks to be required within the outer edge of the SPA, SSSI and LNR in the south west section, WIS 10 i is considered to be the Wisley option with most impact on biodiversity features. PAIN04 - Based on the information available at this stage, it is considered that the PAIN04 option will have a moderate adverse effect on ancient woodland and notable habitats. There may be up to a large adverse effect on notable species. The PAIN04 option is also considered to have slight adverse effect on Ockham and Wisley LNR. Total permanent land take for PAIN 04 is anticipated to be 1.29 ha and this option is considered to be the Painshill option with the least land take and the least effect on biodiversity features. PAIN05 - Based on the information available at this stage, it is considered that both the PAIN05 option will have a moderate adverse effect on ancient woodland and notable habitats. There may be up to a large adverse effect on notable species. Total permanent land take for PAIN05 is anticipated to be 2.42 ha. In addition, this option is required to cross the River Mole. Therefore, PAIN05 is considered to be the Painshill option with the most effect on biodiversity features.	N/A			Large Adverse	N/A	

	Water Environment	The physical works will not fundamentally change the water chemistry of waterbodies. The option does, however, require culverting and realignment of minor watercourses and ditches which would generate some minor or localised adverse effects including loss of minor channel and riparian habitat Deep foundations may be necessary to support structures have potential to form barriers to groundwater flow. The A3 Widening is likely to reduce marginal lake habitat on the western shore of the Boldermere lake water body. Without mitigation, this loss of habitat could result in deterioration in the overall water body. PAIN 04 would have have neutral effects on the water environment. PAIN 05 does generate some minor or localised adverse effects. The most pronounced of these is the new single span bridge over the River Mole. The bridge minimises impact on channel form and process but the embankments may damage the riparian zone and are likely to restrict floodplain flows. WIS 01 does generate a minor or localised adverse effect caused by the culvert but are an opportunity to restore sections of channel to more natural form and function (WIS 01) WIS 10 does, generate a minor or localised adverse effect caused by a culvert which will result in the loss of one of the few more natural sections of planform on Stratford Brook but are an opportunity to restore sections of channel currently with poor morphological diversity to more natural form and function	N/A	Moderate Adverse	N/A	
Social	Commuting and Other users	The M25 at Junction 10 is one of the busiest roads in the country, and one of the aims of the scheme is to reduce congestion at the junction and improve journey times for all users. · The percentage of total TEE benefit during normal operation attributable to changes in commuter journey times and vehicle operating costs is 51% · The total person hours saved by commuters in opening year during normal operation is 1.2 million hours. For all vehicles and trip purposes combined: · See Tables 7.32-7.35 in the Traffic Forecasting Report for a summary of the opening year peak and inter-peak journey time changes in seconds by route.	**Value of journey time changes(£)** £318,682k **Net journey time changes (£)** 0 to 2min: £148,465k; 2 to 5min: £126,138k; > 5min: £44,080k	N/A	£245,992k	Moderate Beneficial
	Reliability impact on Commuting and Other users	Currently there are high levels of congestion during peak hours at Junction 10, which are expected to increase in the future years and are negatively affecting the journey time reliability. The scheme is forecast to significantly reduce delays and queuing at the junction, which is likely to improve reliability.	N/A	Beneficial	N/A	
	Physical activity	Not assessed.	N/A	N/A	N/A	
	Journey quality	Impact on motorised traveller's views from the road will depend on the design and landscaping mitigation but a loss of woodland screening would initially allow views out from the road. Driver stress and frustration is expected to reduce during operation through smoother traffic flows and a more efficient road network. PAIN 04 would give views of a new overbridge for drivers on the A3 and provide views of the boundary of Painshill Park for very few drivers. PAIN 05 would provide views into Painshill Park for very few drivers WIS 01 would significantly reduce driver stress for users of Wisley Lane WIS 10 would significantly reduce driver stress for users of Wisley Lane. It would give views of a new overbridge for drivers on the A3 and would provide views onto common land and the Wisley Airfield	N/A	Beneficial	N/A	
	Accidents	The junction has a high number of accidents currently, and reducing accidents is one of the key objectives of the scheme. The proposed left turn lanes and/or free flowing movements would reduce the potential for vehicle conflicts, and the additional lanes on the A3 would allow for safer merging. The proposed scheme is expected to result in a 14% reduction in accidents (9 accidents per year). A higher proportion of casualties have occurred on links that are forecast to have a decrease in accident levels as a result of the scheme. In particular, children, the elderly and young male drivers all have a higher proportion of casualties occurring on links forecast to have a decrease in accidents. Slightly more pedestrian and cyclist casualties have occurred in decrease links than increase. No links fall within the 20% most deprived LSOAs nationally.	N/A	N/A	£29,954k	Moderate Beneficial
	Security	Features of the new scheme that are likely to affect personal security have not been confirmed at this stage. However, it is likely that there will be a slight improvement for all options, including aspects such as lighting and carriageway/footway alignment changes, although this is unlikely to impact many people. It is unknown at this stage whether there will be any provision for personal security measures (such as CCTV). The scheme is predominantly aimed at improving driver experience and safety. Limited public transport uses the link, and while there are NMU users in the vicinity they will not be the primary beneficiaries. Therefore, personal security for Option 9 and 9B has been scored as neutral.	N/A	Neutral	N/A	Neutral
	Access to services	No public transport element to scheme	N/A	Neutral	N/A	N/A
	Affordability	For all the income quintiles the assessment is adverse. The least income quintile has a disproportionately high amount of disbenefits while quintile 2 and 3 have a disproportionately low amount of disbenefits. Quintile 1 (the most deprived) and quintile 4 have disbenefits in line with their proportion of the population. Therefore the overall assessment is moderate adverse.	N/A	N/A	N/A	Moderate Adverse
	Severance	These options are assessed as slight beneficial for this DI appraisal of severance. As while there are high concentrations of vulnerable groups in areas that are likely to benefit from reduced vehicle flow and hence reduction in both actual and perceived severance, certain vulnerable groups, namely children, are likely to see increased severance particularly south of Cobham.	N/A	Slight Beneficial	N/A	Slight Beneficial
	Option and non-use values	As no new transport options will be created by this scheme, option values have not been considered.	Not assessed	Not assessed (Unmonetised)	N/A (Unmonetised)	
Public Accounts	Cost to Broad Transport Budget	Highways England capital investment costs of £158 million (2010 prices, PV)	167,927	N/A	£157,972k	
	Indirect Tax Revenues	Scheme leads to increased vehicle operating costs. This feeds through to overall increased indirect tax revenues.	36,594	N/A	£36,594k	

Appraisal Summary Table

Date produced:	03/08/2017

Contact:	
Name	T Chatziioannou
Organisation	Atkins
Role	Consultant

Name of scheme:	M25 Junction 10 / A3 Wisley Improvments - Option 14 (Scheme 5)
Description of scheme:	Option 14 modifies the existing roundabout by creating new structures over the M25 and reusing the existing structures under the A3. The circulatory carriageway under the A3 would be widened to 4 lanes, 5 lanes of circulatory carriageway would be provided where unconstrained by the existing structures. Right turns would be carried out on the modified roundabout and left turns would use dedicated left filter lanes.

Impacts		Summary of key impacts	Assessment			
			Quantitative	Qualitative	Monetary £(NPV)	Distributional 7-pt scale/ vulnerable grp
Economy	Business users & transport providers	· The percentage of total TEE benefit during normal operation attributable to changes in consumers journey times and vehicle operating costs is 46%. · The total person hours saved by business users in opening year during normal operation is 0.3 million hours. For all vehicles and trip purposes combined: · See Tables 7.32-7.35 in the Traffic Forecasting Report for a summary of the opening year peak and inter-peak journey time changes in seconds by route.	**Value of journey time changes(£)** £194,500k **Net journey time changes (£)** 0 to 2min: £66,065k; 2 to 5min: £88,452k; > 5min: £39,984k	N/A	£187,806k	N/A
	Reliability impact on Business users	Currently there are high levels of congestion during peak hours at Junction 10, which causes delays on multiple links around the junction and on the mainline. Joruney times on certain movements can take twice as long as in freeflow conditions. By 2037 delays are expected to increase by over 30% (average of peak hours) further worsening journey tiime reliability. Option 14 is forecast to significantly reduce delays and queuing at the junction and on the A3 which is likely to improve reliability.	N/A	Beneficial	N/A	
	Regeneration	Not assessed.	Not assessed.	N/A	N/A	
	Wider Impacts	Not assessed.	Not assessed	N/A	N/A	
Environmental	Noise	Overall, the scheme was not shown to give rise to any "major" increases in noise level. The number of properties predicted a significant adverse effect decreased in the opening year compared with the Do Minimum scenario, but increased slightly in the design year. The properties where significant adverse effects were predicted to occur were located close to Noise Important Areas, Wisley Lane, and the B2039 (Ockham). The WIS_01 variant was shown to cause "minor" noise increases in the design year. The effect of applying variant WIS_10 would reduce the number of properties with daytime noise increases in the forecast year by 1 and increase the number of properties with decreases to 230. The valuation of the scheme would improve to -£92k. No non-negligible noise increases were predicted for this variant in the design year.	Assessment Score Households with increased daytime noise in forecast year: 275 Households with reduced daytime noise in forecast year: 141	N/A	Net present value of change in noise: £-377k	Moderate beneficial
	Air Quality	Overall increase in NO2 and PM10 concentrations with the scheme. In addition regional Nox emissions increase in line with vehicle kilometres travelled. There are expected to be exceedances of the NO2 AQS objective with and without the scheme at three receptors, none of which are within an AQMA, but are located near main roads, or junctions. There are 4 AQMAs in the area which could be affected by the scheme: there is expected to be a small increase in concentrations at receptors within the M25 AQMA; a small increase in concentrations at receptors in the Cobham AQMA, and an imperceptible change at receptors within the Esher AQMA and Addlestone AQMA. The effect of applying variant WIS_10 would result in an increase in assement score of <40 and an increase in valuation of <£40,000.	Assessment Score PM10:208 NO2:473 Emissions over 60 year appraisal period NOX: 733 tonnes	N/A	Value of change in PM10 concentration: NPV: £-369k Value of change in NOX emissions: NPV £-383k Total value of change in air quality: £-752k	Slight adverse
	Greenhouse gases	Full assessment of Greenhouse Gases has been undertaken in accordance with unit A3. Calculated using non-TUBA method utilising Defra vehicle emission factors from EFT v7.0 used in the Draft DMRB tool v5.0. Overall increase in CO2 emissions with Scheme option 14 A over 60 year appraisal period as a result of an overall increase in annual vehicle km travelled compared with no scheme scenario. The change in non-traded carbon dioxide emissions in 2022 = 4.2 MtCO2e, indicating an increase in CO2 emissions in 2022, opening year. Change in emissions in MtCO2e for 2023-2027 = 27.7. The effect of applying variant WIS_10 would result in an increase in emissions as the variant takes a longer route.	Change in non-traded carbon over 60y (CO2e) 594,470 Change in traded carbon over 60y (CO2e) -	N/A	-£27,455k	
	Landscape	The proposed scheme would increase the presence of the existing road corridor through a combination of widening and introducing new intrusive elements. There would be some loss of existing screening vegetation and mature woodland across the Wisley and Ockham commons. Option 14 would result in a Slight adverse impact on landscape character at the operation phase. WIS01 – Minor adverse impact at operation phase (summer year 15). WIS10 – Moderate adverse impact at operation phase (summer year 15) on landscape character. PAIN04 - Moderate adverse impact at operation phase (summer year 15) on landscape character. PAIN05 - Moderate adverse impact at operation phase (summer year 15) on landscape character.	N/A	Slight Adverse	N/A	
	Townscape	Not assessed.	N/A	N/A	N/A	
	Historic Environment	The Junction 10 Option 14 scheme would result in Minor Adverse impacts on non-designated archaeological remains, resulting in no more than Slight Adverse effects. The common elements would result in Minor Adverse impacts on non-designated archaeological remains, resulting in no more than Slight Adverse effects. No significant effects are anticipated in relation to designated heritage assets. WIS01 – Large Adverse effect in relation to Grade II* Wisley RHS Gardens WIS10 – No significant effects in relation to cultural heritage PAIN04 - Moderate Adverse effects on Grade I Painshill Park registered park and garden, Grade II* listed Gothic Tower, Grade II listed Foxwarren Cottage PAIN05 - Very Large Adverse (PAIN05D) effect in relation to Painshill Park registered park and garden, Moderate Adverse effects on one Grade II* and three Grade II listed buildings	N/A	Slight Adverse	N/A	
	Biodiversity	Based on the information available at this stage, Option 14 is likely to have an impact of large adverse effect on the Thames Basin Heaths SPA; and a moderate adverse effect on Ockham and Wisley Commons SSSI, Ockham and Wisley LNR, ancient woodland and notable habitats. There may be up to a large adverse effect on notable species, although the effect on the qualifying species of the SPA is expected to be slight adverse. The land take for Option 14 is less than for Option 9 - SPA (3.05 ha), SSSI (6.05 ha) and LNR (4.99 ha). It is possible that mitigation in the form of improved sound barriers around the scheme could actually reduce the noise disturbance of either option compared to existing noise levels, thus potentially improving the suitability of the existing heathland habitats for qualifying breeding bird species of the SPA, and allowing the potential clearance of conifer woodland between the heathland and the M25/A3 to increase the area of established heathland. Noise modelling to further understand the noise disturbance levels of these options and potential mitigation will be explored in Stage 3. Although Option 14 has the lesser impact on the SPA, SSSI and LNR, it is recommended that the longevity of the options is also considered. The necessary mitigation and compensation required for either Scheme will improve the habitats surrounding Junction 10, thus leading to increased impacts on the SPA, SSSI and LNR should future improvement works be required. WIS01 - Based on the information available at this stage, there will be a moderate adverse effect from WIS01 on notable habitats, and may be up to a large adverse effect on notable species. WIS01 is considered to be the option with least impact of the Wisley options on biodiversity features. WIS10 - Based on the information available at this stage, there will be a moderate adverse effect of the WIS10 option on the Wisley Airfield SNCI and notable habitats, and a slight adverse effect on the SPA and its qualifying species, and Ockham and Wisley Commons SSSI. There may be up to a large adverse effect on notable species. Due to the potential for earthworks to be required within the outer edge of the SPA, SSSI and LNR in the south west section, WIS 10 i is considered to be the Wisley option with most impact on biodiversity features. PAIN04 - Based on the information available at this stage, it is considered that the PAIN04 option will have a moderate adverse effect on ancient woodland and notable habitats. There may be up to a large adverse effect on notable species. The PAIN04 option is also considered to have slight adverse effect on Ockham and Wisley LNR. Total permanent land take for PAIN 04 is anticipated to be 1.29 ha and this option is considered to be the Painshill option with the least land take and the least effect on biodiversity features. PAIN05 - Based on the information available at this stage, it is considered that both the PAIN05 option will have a moderate adverse effect on ancient woodland and notable habitats. There may be up to a large adverse effect on notable species. Total permanent land take for PAIN05 is anticipated to be 2.42 ha. In addition, this option is required to cross the River Mole. Therefore, PAIN05 is considered to be the Painshill option with the most effect on biodiversity features.	N/A	Large Adverse	N/A	

	Water Environment	The physical works will not fundamentally change the water chemistry of waterbodies. The option does, however, require culverting and realignment of minor watercourses and ditches which would generate some minor or localised adverse effects including loss of minor channel and riparian habitat Deep foundations may be necessary to support structures have potential to form barriers to groundwater flow. The A3 Widening is likely to reduce marginal lake habitat on the western shore of the Boldermere lake water body. Without mitigation, this loss of habitat could result in deterioration in the overall water body. PAIN 04 would have have neutral effects on the water environment. PAIN 05 does generate some minor or localised adverse effects. The most pronounced of these is the new single span bridge over the River Mole. The bridge minimises impact on channel form and process but the embankments may damage the riparian zone and are likely to restrict floodplain flows. WIS 01 does generate a minor or localised adverse effect caused by the culvert but are an opportunity to restore sections of channel to more natural form and function (WIS 01) WIS 10 does, generate a minor or localised adverse effect caused by a culvert which will result in the loss of one of the few more natural sections of planform on Stratford Brook but are an opportunity to restore sections of channel currently with poor morphological diversity to more natural form and function	N/A	Moderate Adverse	N/A	
Social	Commuting and Other users	The M25 at Junction 10 is one of the busiest roads in the country, and one of the aims of the scheme is to reduce congestion at the junction and improve journey times for all users. · The percentage of total TEE benefit during normal operation attributable to changes in commuter journey times and vehicle operating costs is 54% · The total person hours saved by commuters in opening year during normal operation is 0.9 million hours. For all vehicles and trip purposes combined: · See Tables 7.32-7.35 in the Traffic Forecasting Report for a summary of the opening year peak and inter-peak journey time changes in seconds by route.	**Value of journey time changes(£)** £284,461k **Net journey time changes (£)** 0 to 2min: £127,095k; 2 to 5min: £123,099k; > 5min: £34,265k	N/A	£217,009k	Moderate Beneficial
	Reliability impact on Commuting and Other users	Currently there are high levels of congestion during peak hours at Junction 10, which causes delays on multiple links around the junction and on the mainline. Joruney times on certain movements can take twice as long as in freeflow conditions. By 2037 delays are expected to increase by over 30% (average of peak hours) further worsening journey tiime reliability. Option 14 is forecast to significantly reduce delays and queuing at the junction and on the A3 which is likely to improve reliability.	N/A	Beneficial	N/A	
	Physical activity	Not assessed.	N/A	N/A	N/A	
	Journey quality	Impact on motorised traveller's views from the road will depend on the design and landscaping mitigation but a loss of woodland screening would initially allow views out from the road. Driver stress and frustration is expected to reduce during operation through smoother traffic flows and a more efficient road network. PAIN 04 would give views of a new overbridge for drivers on the A3 and provide views of the boundary of Painshill Park for very few drivers. PAIN 05 would provide views into Painshill Park for very few drivers WIS 01 would significantly reduce driver stress for users of Wisley Lane WIS 10 would significantly reduce driver stress for users of Wisley Lane. It would give views of a new overbridge for drivers on the A3 and would provide views onto common land and the Wisley Airfield	N/A	Beneficial	N/A	
	Accidents	The junction has a high number of accidents currently (the area around M25 J10 has the highest recorded collision rate across the network nationally), and reducing accidents is one of the key objectives of the scheme. The proposed scheme is expected to result in a 9% reduction in accidents (6 accidents per year). A higher proportion of casualties have occurred on links that are forecast to have a decrease in accident levels as a result of the scheme. In particular, children, the elderly and young male drivers all have a higher proportion of casualties occurring on links forecast to have a decrease in accidents. Slightly more pedestrian, cyclist and motorcyclist accidents have occurred on links expecting an increase in accidents than decrease. No links fall within the 20% most deprived LSOAs nationally.	N/A	N/A	£22,853k	Slight Beneficial
	Security	Features of the new scheme that are likely to affect personal security have not been confirmed at this stage. However, it is likely that there will be a slight improvement for all options, including aspects such as lighting and carriageway/footway alignment changes, although this is unlikely to impact many people. It is unknown at this stage whether there will be any provision for personal security measures (such as CCTV). The scheme is predominantly aimed at improving driver experience and safety. Limited public transport uses the link, and while there are NMU users in the vicinity they will not be the primary beneficiaries. Therefore, personal security for Option 9 and 9B has been scored as neutral.	N/A	Neutral	N/A	Neutral
	Access to services	No public transport element to scheme	N/A	Neutral	N/A	N/A
	Affordability	For all the income quintiles the assessment is adverse. The least income quintile has a disproportionately high amount of disbenefits while quintile 2 and 3 have a disproportionately low amount of disbenefits. Quintile 1 (the most deprived) and quintile 4 have disbenefits in line with their proportion of the population. Therefore the overall assessment is moderate adverse.	N/A	N/A	N/A	Moderate Adverse
	Severance	These options are assessed as moderate beneficial for this DI appraisal of severance. As there are high concentrations of vulnerable groups in areas that are likely to benefit from reduced vehicle flow and hence reduction in both actual and perceived severance and there are no high concentrations of vulnerable groups in areas that are expected to suffer from particularly increased severance.	N/A	Moderate Beneficial	N/A	Moderate Beneficial
	Option and non-use values	As no new transport options will be created by this scheme, option values have not been considered.	Not assessed	Not assessed (Unmonetised)	N/A (Unmonetised)	
Public Accounts	Cost to Broad Transport Budget	Highways England capital investment costs of £122 million (2010 prices, PV)	122,125	N/A	£122,125	
	Indirect Tax Revenues	Scheme leads to increased vehicle operating costs. This feeds through to overall increased indirect tax revenues.	33,408	N/A	£33,408k	

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