M25 junction 10/A3 Wisley interchange
TR010030
7.4 Transport Assessment Report

Regulation 5(2)(q)
Planning Act 2008
Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

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The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 (as amended)

M25 junction 10/A3 Wisley interchange

The M25 junction 10/A3 Wisley interchange Development Consent Order 202[x]

7.4 TRANSPORT ASSESSMENT REPORT

Regulation Number:	Regulation 5(2)(q)
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1. Introduction

1.1 Purpose

1.1.1 The purpose of the Transport Assessment (TA) is to assess the impact of the proposed M25 junction 10/A3 Wisley interchange improvement scheme on the strategic and local highway network, road safety and local sustainable modes of transport.

1.2 Background

1.2.1 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.

1.2.2 The RIS identifies improvements to M25 junction 10/A3 Wisley interchange as one of the key investments in the Strategic Road Network (SRN) for the London and South East region. The proposed improvements being as follows:

> *"Improvements to the Wisley interchange to allow free-flowing movement, together with improvements to the neighbouring Painshill interchange on the A3 to improve safety and congestion across the two sites"*

1.2.3 The need for the scheme covers the following key objectives:

- Improve journey time reliability and reduce delay
- Improve safety and reduce both collision frequency and severity
- Improve crossing facilities for pedestrians, cyclists and horse riders and incorporate safe, convenient, accessible and attractive routes
- Minimise impacts on the surrounding local road network
- Support projected population and economic growth in the area

Option Selection

1.2.4 Several initial potential options that would increase the capacity of junction 10 have been considered. Twenty-one options were identified at the start of Project Control Framework (PCF) Stage 1, of which three were shortlisted for detailed assessment. These included:

- Option 9 – retention of existing roundabout but addition of fourth level layout to provide free-flowing right turns from the A3 to the M25 whilst also providing free-flowing left turns
- Option 14 – elongation of existing roundabout with additional lanes to provide more circulatory capacity and provision of free-flowing left turns
- Option 16 – provides free-flowing movement in all directions.

1.2.5 The Technical Assessment Report produced at the end of PCF Stage 1 recommended that whilst 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.

1.2.6 Following the end of the option identification stage, Option 9 and Option 14 were taken forward for further design and assessment in the preliminary design stage. Both schemes include the widening of the A3 to four lanes in both directions, from Ockham Park junction to M25 junction 10 and from M25 junction 10 to Painshill junction. This will necessitate the closure of existing accesses to the A3 and provision of alternative arrangements.

1.2.7 Option 9 included dedicated left turns plus two free flow links from the A3 to M25 in both directions. This is alongside widening the A3 to a four-lane dual carriageway.

1.2.8 Option 14 included an elongated roundabout at junction 10 along with dedicated left filters, improvements at Painshill junction and making the A3 a four-lane dual carriageway.

1.2.9 Both options are therefore feasible alternatives for the assessment and the degree to which Option 9 offers benefits over Option 14 is not considered significant. Option 14 was selected on the basis that it carries a lower risk of non-compliance with key legal and policy tests.

1.2.10 Atkins has been appointed by Highways England to undertake transport modelling and network assessment work to progress the preferred option (Option 14) through the Development Phase of the Highways England's PCF to submission of a draft Development Consent Order (DCO).

1.2.11 Option 14 provides increased capacity at the M25 junction 10 roundabout by elongating the existing roundabout, providing additional lanes to provide more circulatory capacity and enabling more traffic to traverse the roundabout whilst providing dedicated free-flowing left turns. A more detailed scheme description is provided in section 1.4.

1.2.12 The scheme also includes widening the A3 from Ockham to M25 junction 10 and M25 junction 10 to Painshill from three lanes to four lanes in both directions to improve safety and capacity of the A3. There would also be widening of the A245 to three lanes between the Painshill junction and the B365 Seven Hills Road junction.

1.2.13 As outlined in the DfT RIS Optimisation announcement in October 2017, the additional lane through junction 10, which is part of the M25 junction 10 to 16 Smart Motorway Project scheme, will be included in this scheme.

1.2.14 Highways England expects construction of the scheme to commence in winter 2020, with an opening year of 2023.

1.3 Existing road network

1.3.1 The M25 junction 10 lies in the south west quadrant of the M25 London Orbital Motorway and is a grade separated junction with the A3. The A3 is a key radial route from London to Portsmouth that crosses the M25 motorway. In addition to M25 junction 10 itself, it has been recognised that the adjacent junction on the A3, Painshill junction to the north, is also a pinch-point.

M25 junction 10 Interchange

1.3.2 The M25 junction 10 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.

1.3.3 In a broader context, the M25 junction 10/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. The M25 is a D4M motorway (dual carriageway with 4 lanes in each direction) either side of M25 junction 10, although the section of the motorway between the slip-roads through the junction is of D3M standard (3 lanes in each direction). The A3 is a D3 road (dual carriageway with 3 lanes in each direction) either side of the junction, but only D2 between the slip-roads of M25 junction 10.

1.3.4 The junction itself is a signal controlled roundabout junction with no free-flow left-turn lanes. The roundabout has 3 lanes on the circulatory carriageway. All slip-roads have two lanes; with the A3 northbound off-slip and M25 counter-clockwise off-slip having four lanes at the stop-line, and the A3 southbound off-slip and M25 clockwise off-slip having three lanes at the stop-line

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

Painshill junction

1.3.6 The Painshill interchange is approximately 2km to the north of M25 junction 10 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 carriageway with 3 lanes in each direction) either side of, and through, the junction. The A245 has a two-lane approach from the west and from the east. The junction consists of a signalised two-lane roundabout with two lanes at each stop line.

1.3.7 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.

Ockham Park junction

1.3.8 The Ockham interchange is approximately 2.5km to the south of M25 junction 10 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.

1.3.9 The A3 is a D3AP road (dual carriageway with 3 lanes in each direction) either side of, and through, the Ockham interchange. Between Ockham and M25 junction 10 the A3 is a D3 road (dual carriageway with 3 lanes in each direction).

Access roads

1.3.10 There are several minor junctions along the A3 between M25 junction 10 and Ockham interchange. Southbound from M25 junction 10, there is a junction with Old Lane on the A3 southbound on-slip. Just before the turn-off into Old Lane is

a layby. After merge of the on-slip onto the A3 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 715 between Kingston and Guildford.

1.3.11 On the northbound carriageway between Ockham interchange and M25 junction 10 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 A3 northbound off-slip to the M25 junction 10 there is an access road to Park Barn Farm.

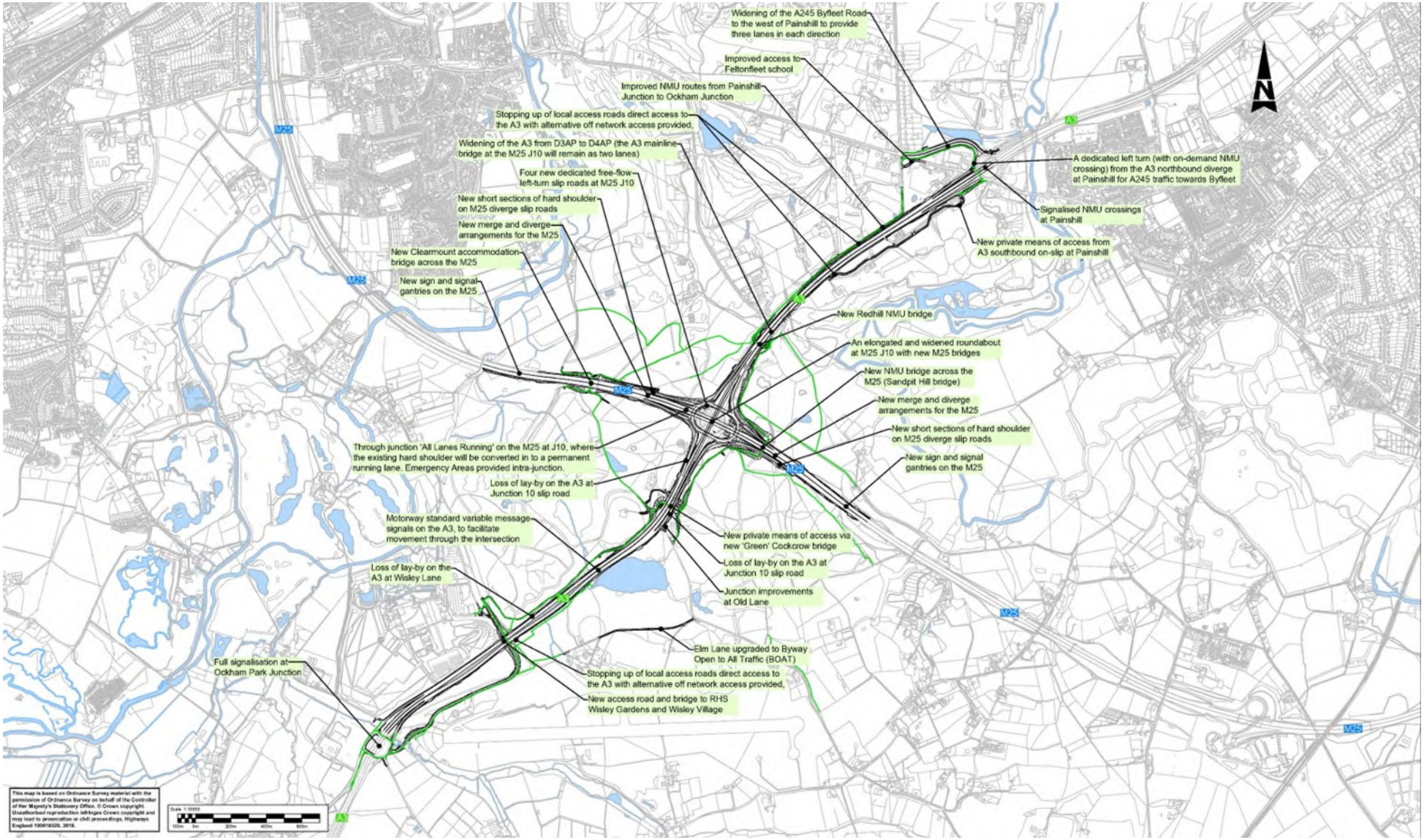
1.3.12 Between M25 junction 10 and Painshill junction there are several residential accesses on to the A3 on both north and southbound carriageways, in addition to access/egress from the San Domenico site.

1.4 Scheme description

1.4.1 The proposed scheme provides increased capacity at the M25 roundabout by elongating the existing roundabout, providing additional lanes and providing dedicated free-flowing/left turn filter lanes. The elongated roundabout would use the existing bridges under the A3 and new bridges over the M25.

1.4.2 The general outline of the scheme is shown in Figure 1.1.

Figure 1.1: General Outline of the Scheme



1.4.3 The main features of the scheme can be identified as:

- alteration and upgrading of the existing M25 junction 10 roundabout, including elongation and widening of the circulatory carriageway, realignment, lengthening and widening of the junction entry and exit slip roads and demolition of redundant bridge structures.
- provision of three new dedicated free-flow slip lanes and a left-turn filter lane at M25 junction 10, to enable left-turning traffic to pass through the junction unimpeded by traffic signals.
- conversion of the existing hard shoulders on the M25 through junction 10, to provide an additional running lane for traffic in both directions, including emergency refuge areas and associated modifications to M25 gantries, signage and road markings.
- widening of the A3 to dual four lanes between the Ockham Park junction and the Painshill junction, except where the A3 crosses over M25 junction 10, which will remain two lanes in each direction as at present.
- widening of the A245 Byfleet Road to dual three lanes between the Painshill junction and Seven Hills Road junction to the west.
- provision of two new dedicated slip lanes at the Painshill junction, to enable traffic leaving the A3 northbound carriageway to join the westbound A245 Byfleet Road and traffic on the A245 eastbound carriageway to join the A3 northbound, without having to enter the signalised roundabout.
- improvement of the Ockham Park junction, including installation of traffic signals on and at the entries to the junction's gyratory carriageway and new and improved facilities and crossings for pedestrians, cyclists and horse-riders.
- modification of A3 side road junctions, including improvement of the Old Lane junction, closure of the Wisley Lane junction and construction of a new road, bridging over the A3 to connect Wisley Lane with the A3 at the Ockham Park junction; and closure of the Elm Lane junction and provision of an alternative access to Elm Corner via Old Lane and an improved section of Byway Open to All Traffic.
- closure of private accesses from the A3 mainline carriageways and the provision of alternative local access arrangements, including a substitute access for properties on the west side of the A3 connecting to Redhill Road and Seven Hills Road, a substitute access for properties on the edge of Painshill Park via the A3 southbound on-slip and a substitute access for properties at Wisley Common from Old Lane and crossing the A3 via the replacement Cockcrow Overbridge.
- provision of new and improved facilities for pedestrians, cyclists and horse riders, including a new 5.5km long route between the Ockham Park and Painshill junctions, new and replacement bridges for the benefit of non-motorised users to cross both the M25 and the A3, and new and upgraded Public Rights of Way near the M25 junction 10.

- extensive areas of habitat creation and enhancement and other environmental mitigation works, including measures to compensate for the impacts of the scheme on the Thames Basin Heaths Special Protection Area and on Bolder Mere, the provision of replacement common land and public open space and the provision of a new wildlife crossing over the A3 as part of a replacement Cockcrow overbridge.

1.4.4 The scheme plans are provided in the following pages, with the scheme layout plans covering the full extent of the development area included in Appendix A.

- M25 junction 10 - Figure 1.2.
- Ockham Park junction - Figure 1.3
- Painshill junction - Figure 1.4
- Seven Hills junction - Figure 1.5
- Old Lane junction - Figure 1.6
- Wisley Lane - Figure 1.7

Figure 1.2: M25 junction 10 scheme plan

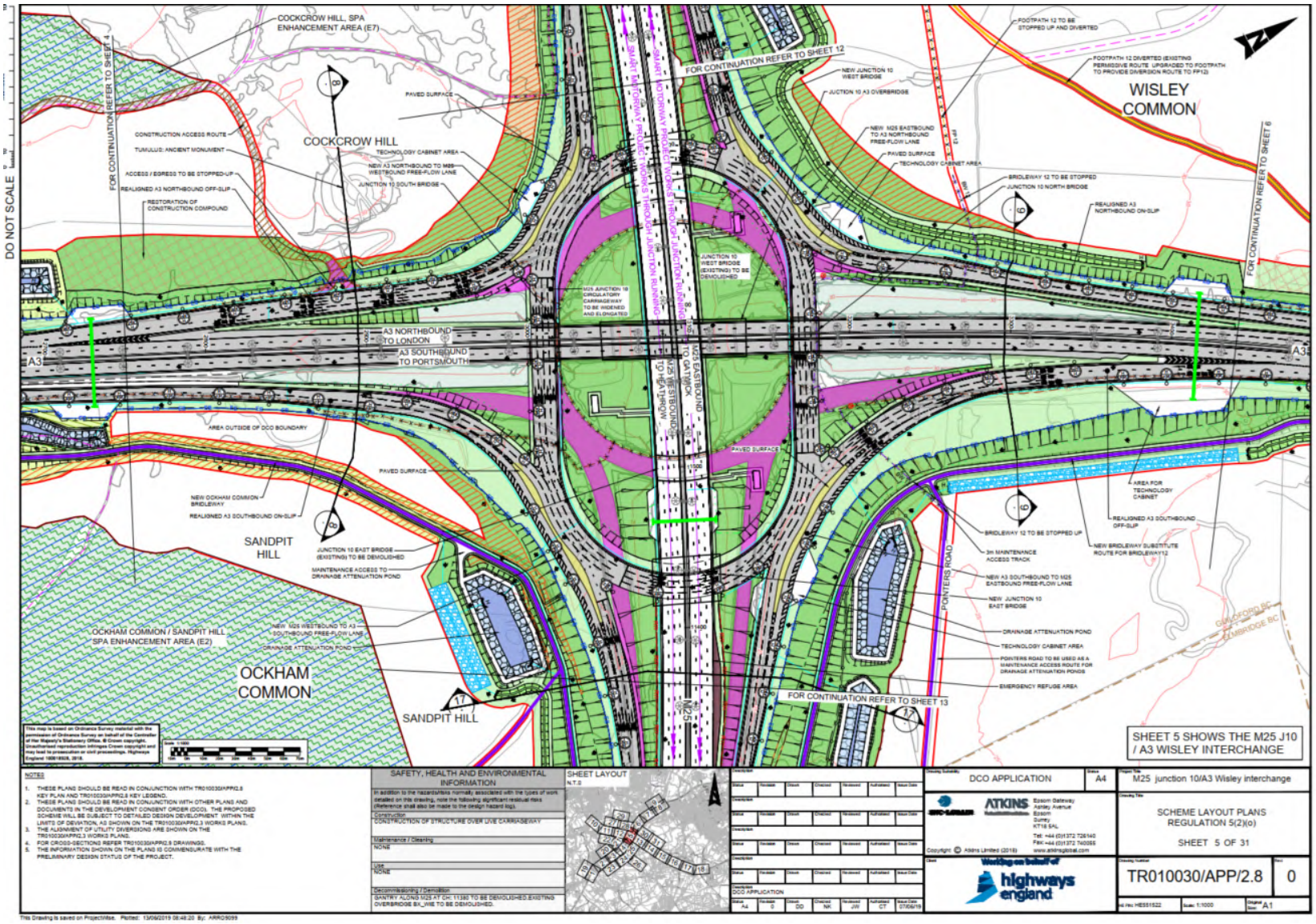


Figure 1.3: Ockham Park junction scheme plan

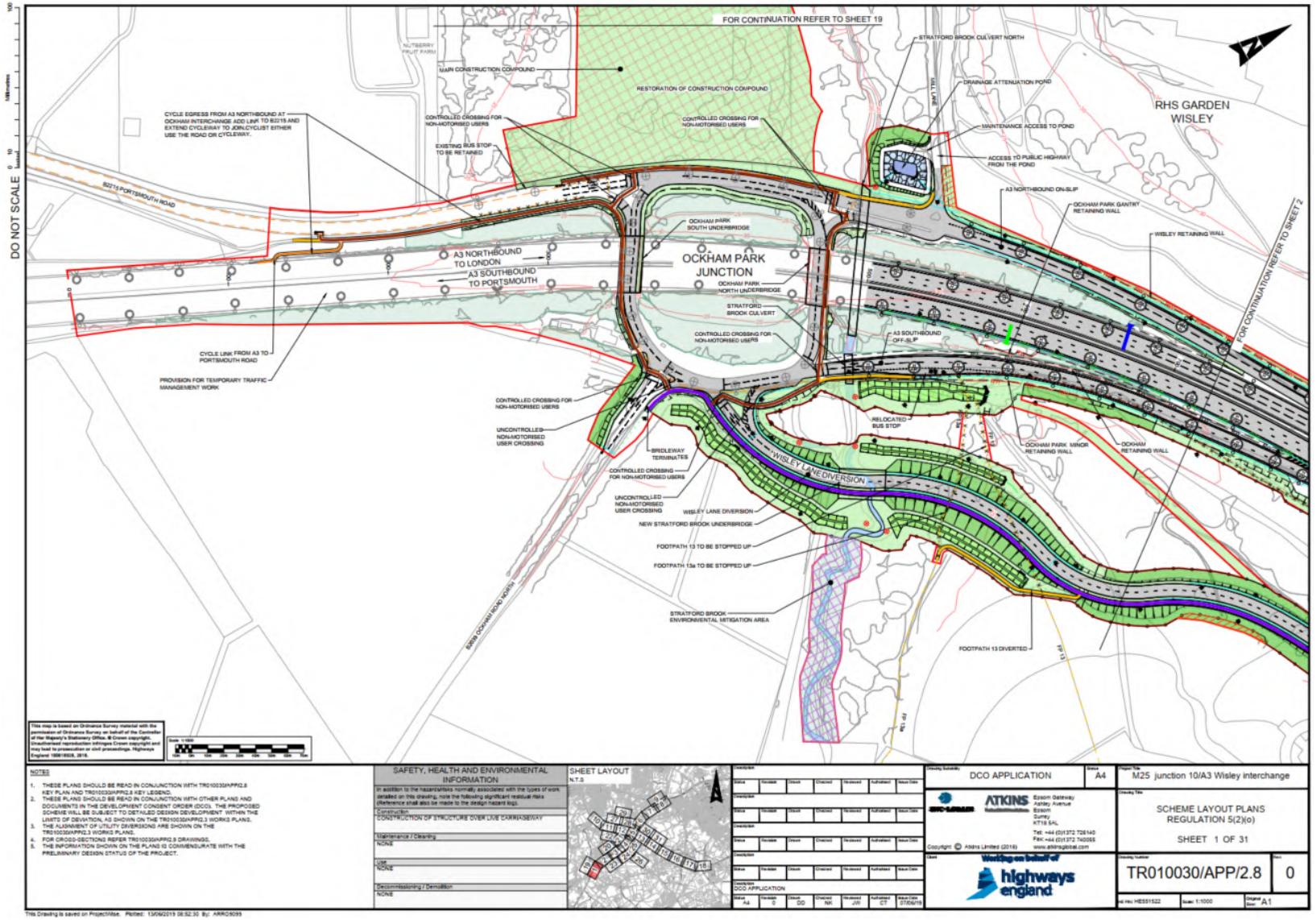


Figure 1.4: Painshill junction scheme plan

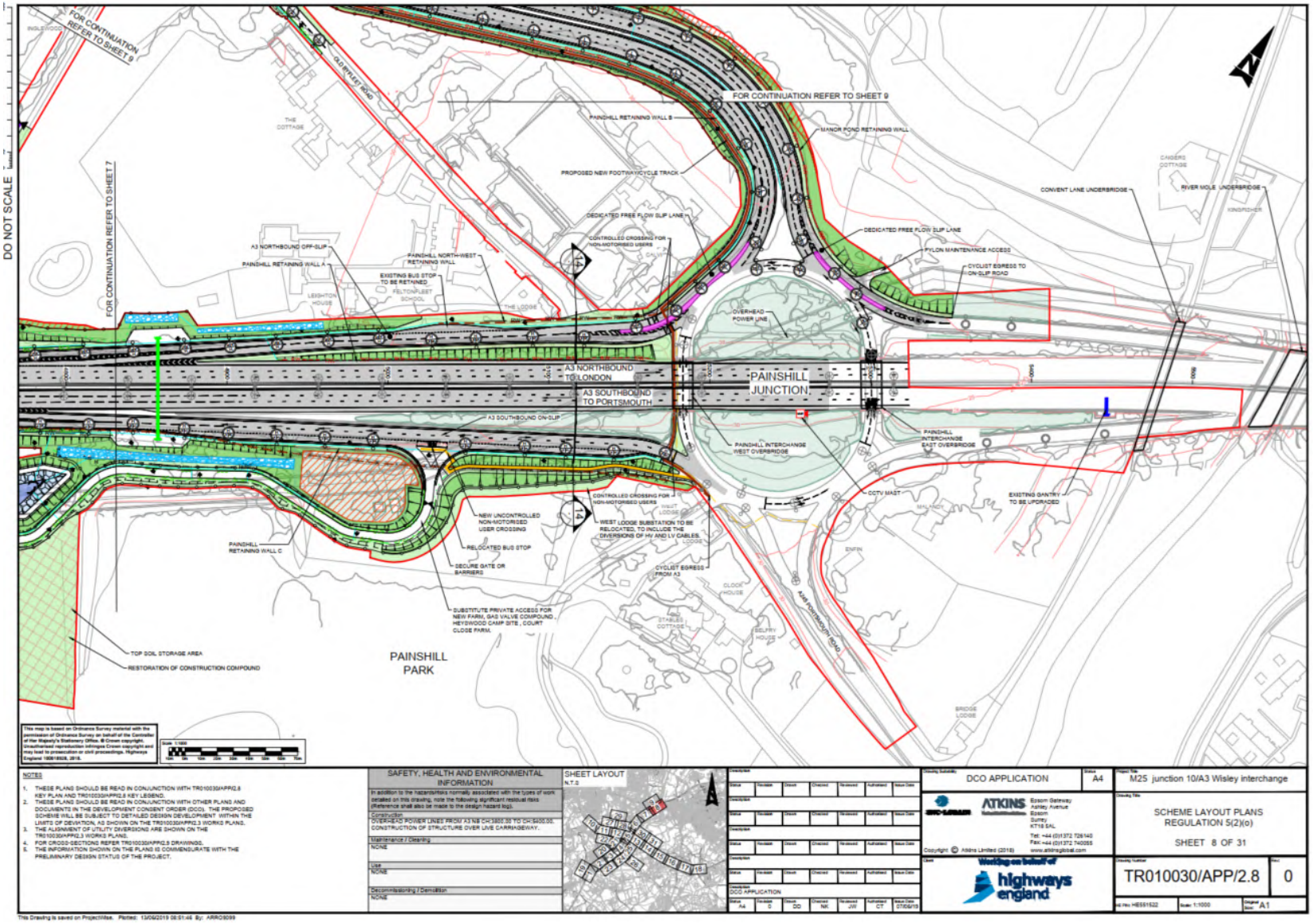


Figure 1.5: Seven Hills junction scheme plan

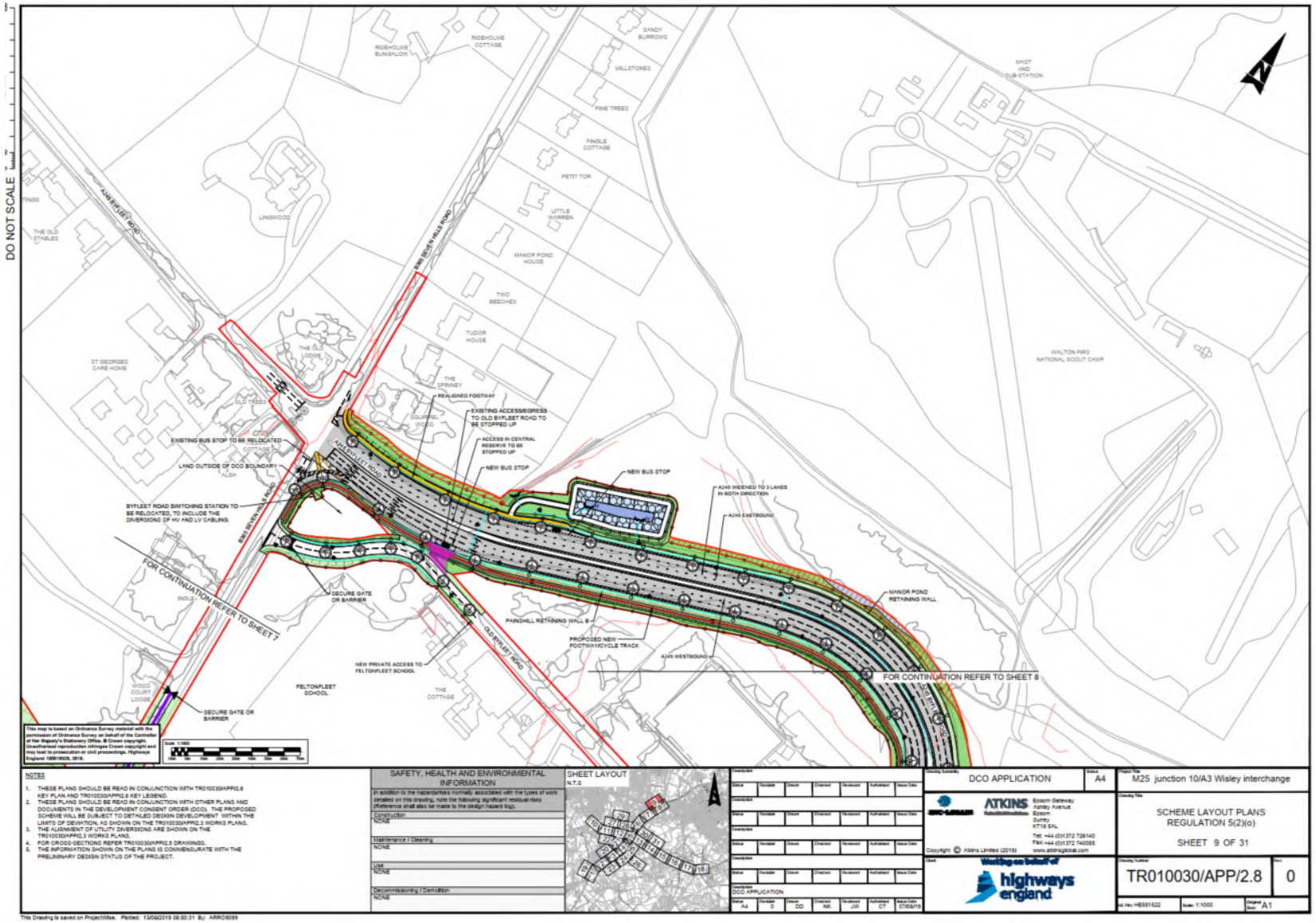


Figure 1.6: Old Lane junction scheme plan

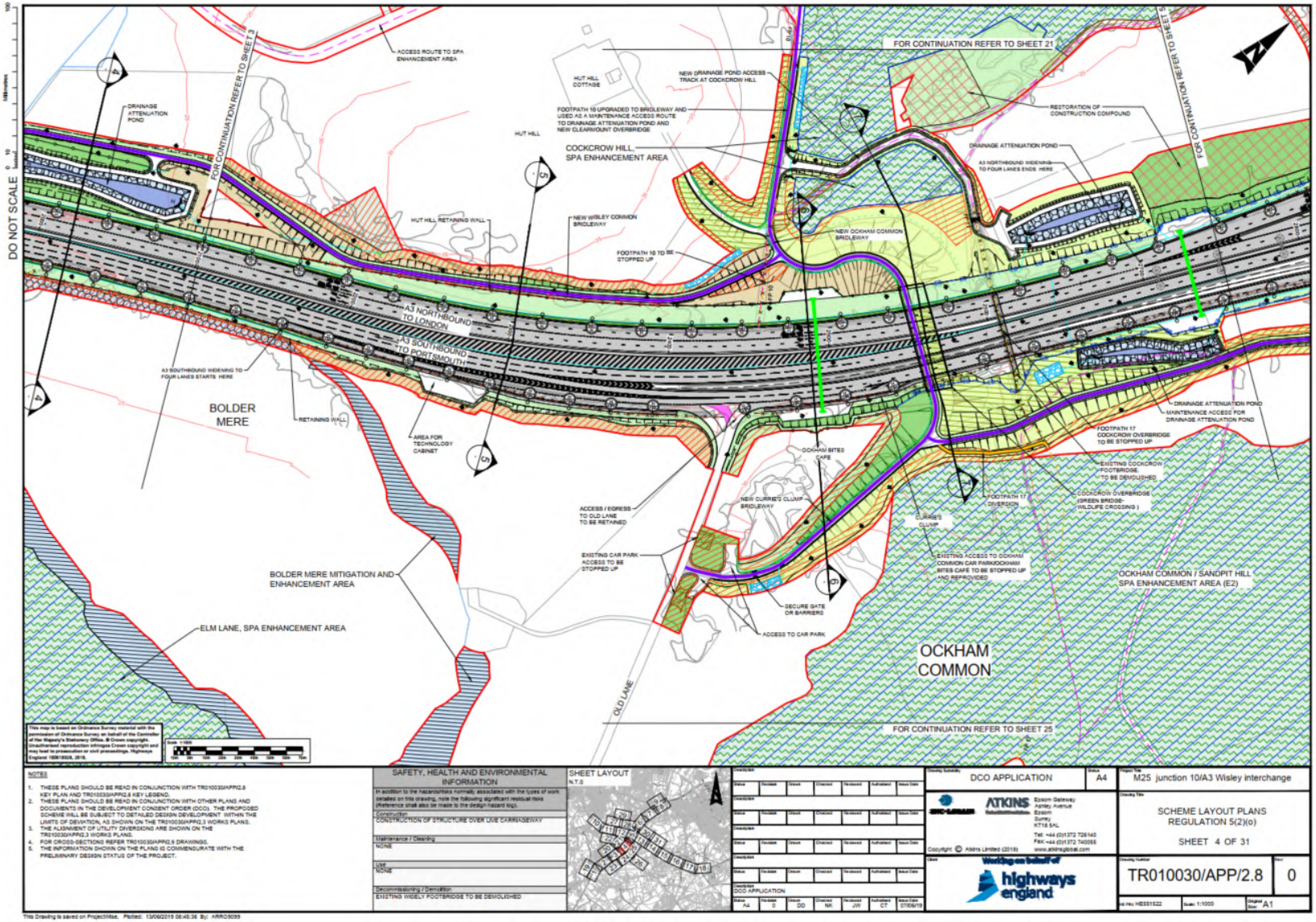
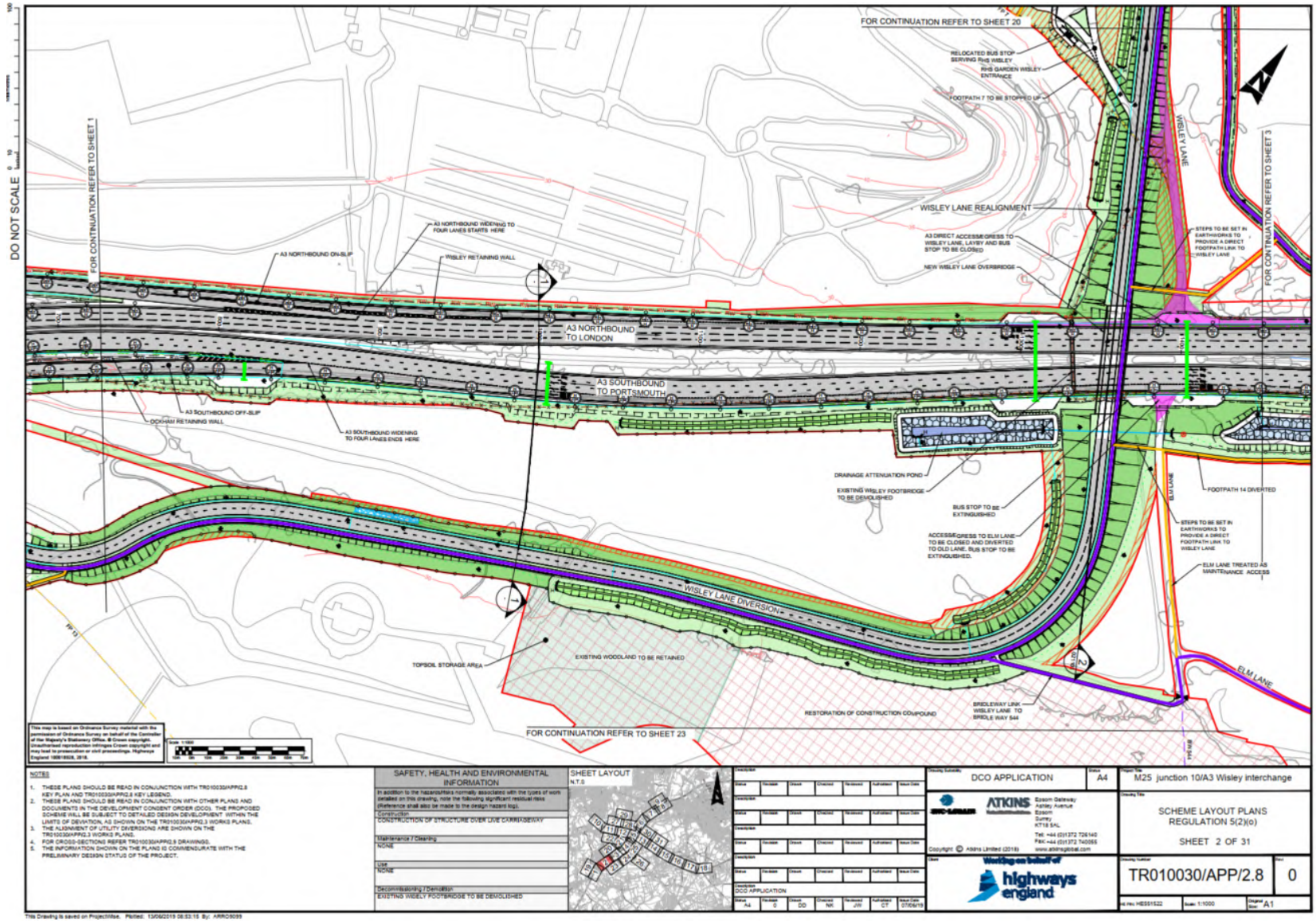


Figure 1.7: Wisley Lane junction scheme plan



1.5 Funding and delivery

1.5.1 The DfT announced in its 2014 RIS the committed investment for the M25 junction 10 scheme.

1.5.2 As published in the Highways England (HE) 2015-2020 delivery plan, it is proposed that the scheme will open to traffic in 2023. The construction period will take approximately 38 months. Construction is planned to start in winter 2020 if the scheme is approved.

1.6 Stakeholder consultation

1.6.1 Several potential options for the M25 junction 10 have been considered and consulted on previously. Between December 2016 and February 2017, a community consultation exercise took place on two proposed options, which led to a preferred option being announced in 2017 by the Secretary of State for Transport.

1.6.2 During this time, seven events open to the public were held across the M25 junction 10 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 junction 10, in Cobham and Ripley respectively.

1.6.3 The consultation received responses from approximately 750 individuals and organisations. There was a strong consensus about the need for the scheme and its core objectives, with the majority of respondents indicating a concern about congestion and road safety at M25 junction 10.

1.6.4 The stakeholder consultation feedback was incorporated into the designs following a review for both options.

1.6.5 For local accesses, considerable effort during and following the public consultation period was invested in developing and improving design ideas to meet local stakeholder needs.

1.6.6 In May 2018, a TA Scoping Report was issued to Surrey County Council (SCC), with a subsequent response received 30 May 2018. The TA Scoping Report and response received from SCC is included in Appendix B.

1.7 Report structure

1.7.1 To follow this introduction:

- Chapter Two – Discusses the policy context relevant to the scheme and subsequent compatibility
- Chapter Three – Provides detail on the collection of baseline data and development of traffic models
- Chapter Four – Summarises the existing road safety performance within the study area and assesses the impact of the scheme on road safety
- Chapter Five – Describes accessibility for Non-Motorised Users and impact of the scheme on local sustainable modes of transport
- Chapter Six – Provides and overview of current highway network performance
- Chapter Seven – Presents a commentary on future network performance both with and without the scheme and a future year operational assessment
- Chapter Eight – Provides the summary and conclusions to the assessment.

2. Policy context

2.1 Introduction

2.1.1 This section outlines the national, regional and local policies that are relevant to the scheme. It provides a summary of the scheme's compatibility with the relevant planning policy framework and transport strategies.

2.1.2 It is expected that the scheme is compliant with the policies detailed below and contribute towards their strategic objectives.

2.2 National Planning Policy Framework (July 2018)

2.2.1 The National Planning Policy Framework (NPPF) applies to England and is designed to supersede and simplify previous national planning policies. It is intended as a framework for the development of local and neighbourhood plans. However, existing Local Plan policies should not be considered out of date because they were adopted prior to the NPPF's publication. The NPPF emphasises that the purpose of planning is to help achieve sustainable development; i.e. that which results in positive growth and economic, environmental and social progress. The NPPF is based upon a presumption in favour of sustainable development, which should be allowed to proceed without delay.

2.2.2 NPPF strategic policies are set out in section 3 and paragraph 20 stating that the overall strategy for the pattern, scale and quality of development should make sufficient provision for transport infrastructure.

2.2.3 In section 6 entitled 'building a strong, competitive economy', paragraph 80 of the NPPF states: "Planning policies and decisions should help create the conditions in which businesses can invest, expand and adapt. Significant weight should be placed on the need to support economic growth and productivity, considering both local business needs and wider opportunities for development."

2.2.4 In building a strong competitive economy, paragraph 81 states that "Planning policies should:

- set out a clear economic vision and strategy which positively and proactively encourages sustainable economic growth, having regard to Local Industrial Strategies and other local policies for economic development and regeneration
- seek to address potential barriers to investment, such as inadequate infrastructure, services or housing, or a poor environment."

2.2.5 Section 9 entitled Promoting sustainable transport states under paragraph 102 that "Transport issues should be considered from the earliest stages of plan-making and development proposals, so that":

- the potential impacts of development on transport networks can be addressed
- opportunities from existing or proposed transport infrastructure, and changing transport technology and usage, are realised – for example in relation to the scale, location or density of development that can be accommodated
- opportunities to promote walking, cycling and public transport use are identified and pursued

- the environmental impacts of traffic and transport infrastructure can be identified, assessed and considered – including appropriate opportunities for avoiding and mitigating any adverse effects, and for net environmental gains

2.3 National Planning Practice Guidance (March 2012)

2.3.1 The National Planning Practice Guidance (NPPG) is intended to be consulted in conjunction with NPPF. Planning practice guidance will, where necessary, be updated in due course to reflect changes to the new National Planning Policy Framework (published in July 2018).

2.3.2 Of specific relevance is Section 42 of NPPG 'Travel Plans, Transport Assessments and Statements in decision-taking' which defines the overarching principles of TA's, Transport Statements (TS) and Travel Plans (TP). It identifies that these documents are suitable mechanisms for assessing and mitigating the negative transport impacts of development in order to promote the use of more sustainable transport options and, in summary, states that TA's and TS's evaluate the potential transport impacts of a development proposal. They should promote mitigation measures, where necessary, and should also establish whether the residual transport impacts of a proposed development are likely to be severe, in the context of NPPF.

2.4 National Networks National Policy Statement (NN NPS) (2014)

2.4.1 Under the title 'The need for development of the national road network' the NN NPS states "The Strategic Road Network (SRN) provides critical links between cities, joins up communities, connects our major ports, airports and rail terminals. It provides a vital role in peoples' journeys, and drives prosperity by supporting new and existing development, encouraging trade and attracting investment. A well-functioning SRN is critical in enabling safe and reliable journeys and the movement of goods in support of the national and regional economies."

2.4.2 The statement evidences the financial cost of delays; "in 2010 the direct costs of congestion on the SRN in England was estimated at £1.9 billion". Under 2014 estimates made by the DfT, "it is forecast that a quarter of travel time will be spent delayed in traffic by 2040, with direct costs rising to £9.8 billion per annum by 2040 without any intervention."

2.5 Transport Development Planning Good Practice Guide: Surrey County Council (2017)

2.5.1 The requirements detailed in the sub-heading "What subjects are often considered in transport assessments (TAs) and transport statements (TSs)?" will be adhered to, as far as practicable, as part of this TA in order to meet the Council's Interim Transport Assessment and Transport Statement Guidance.

2.5.2 In addition, the sub-heading 'How is the content of transport assessments (TAs) or transport statements (TSs) decided?' states "It is recommended that developers and their agents hold early discussions with the county council and any other relevant organisations. This helps to agree the coverage and content of TAs or a TSs, so that they meet the county council's and other's requirements." As part of the preparation of this document, it is considered that

sufficient engagement, through the discussions with and inclusion of feedback from SCC, was undertaken as part of this assessment.

2.6 Circular 02/13 The Strategic Road Network and the Delivery of Sustainable Development

2.6.1 Policy 18 states “capacity enhancements and infrastructure required to deliver strategic growth should be identified at the Local Plan stage, which provides the best opportunity to consider development aspirations alongside the associated strategic infrastructure needs”. The improvements in the M25 junction 10/A3 Wisley interchange are required to deliver strategic growth in the south east to meet the needs of projected increases in demand.

2.6.2 Policy 19 states “where a potential capacity need is identified, this will be considered and weighed alongside environmental and deliverability considerations. Additional capacity may be considered in the context of the Highways Agency’s forward programme of works, balancing the needs of motorists and other road users with wider impact on the environment and the local/regional community.”

2.7 Local Planning Policy – Emerging Guildford Local Plan (June 2017)

2.7.1 Policy ID2: *Supporting the DfT’s Road Investment Strategy* outlines that Guildford Borough Council is committed to working with Highways England to facilitate major, long-term improvements to the A3 trunk road and M25 motorway in terms of capacity and safety. It also notes that promoters/ developers of sites close to the A3 and M25 and strategic sites will need to take account of any emerging proposals by Highways England or other Highway Authorities.

2.7.2 Justifying its support, the document notes “The implementation of the three RIS schemes during the plan period, alongside other critical infrastructure, is required in order to be able to accommodate future planned growth outside and within the borough”.

2.7.3 This is an emerging local plan as of March 2019 but is expected to be adopted in the near future.

2.8 Local Transport Policies – Topic Paper: Transport (December 2017)

2.8.1 This document explains the approach taken in drafting the principal transport-related policy elements of the Submission Local Plan for Guildford Borough Council (December 2017). The three planned RIS schemes are required for the borough and its surrounding areas to accommodate future growth.

2.8.2 This also notes “The inadequacy of existing road infrastructure, with particular reference to the A3 trunk road and the M25”.

2.9 Local Transport Plan – Guildford Borough Transport Strategy (December 2017)

2.9.1 Under the chapter titled *'Our Strategic Road Network strategy'* it is noted that the long-term strategic planning and funding of the network has been introduced through the preparation of Route Strategies and publication of Highways England's RIS.

2.9.2 Guildford Borough Council state "we will work with the Government, Highways England, the Local Enterprise Partnership and Surrey County Council to realise the transformation of the Strategic Road Network in the borough and beyond for the long term." Indicating their support for the scheme and the benefits it will deliver locally.

2.10 Local Planning Policy – Elmbridge Borough Core Strategy Transport Evaluation (January 2010)

2.10.1 This provides further policy guidance published by Elmbridge Borough Council prior to the Elmbridge Local Transport Strategy & Forward Programme. It notes the future need for development on the M25 and A3, in relation to the study area.

2.10.2 The document assesses the potential impact of the location strategy on the M25 (notably junctions 9 to 12) and the A3, and the impact of planned development on transport infrastructure within the Borough.

2.10.3 It states that the most important aim is "to identify priorities for tackling congestion and reducing the need to travel in line with the objectives of sustainable development".

2.10.4 The findings of the transport evaluation state that a number of matters should be addressed within the Core Strategy, notability to *"work in partnership with transport infrastructure and service providers in order to provide a flexible response to changing transport priorities"* and *"support the development of the regional transport network identified within the South East Plan".*

2.11 Local Planning Policy – Woking Borough Council Core Strategy (October 2012)

2.11.1 This document outlines the key policies within the Woking Borough Council Local Development Framework (LDF) covering the years from 2012 to 2027.

2.11.2 Policy CS16 'Infrastructure delivery' states that the Council will work in partnership with infrastructure service providers to ensure that the infrastructure needed to support development is provided in a timely manner and will support in principle the development of infrastructure projects if they can be justified to support the delivery of the Core Strategy and meet all other requirements of the Development Plan for the area.

2.11.3 Policy CS18 'Transport and accessibility' sets out that the Council seeks to develop a sustainable transport system which connects people to jobs, services and community facilities, and minimises impacts on biodiversity. The Council supports proposals that deliver improvements and increased accessibility to cycle, pedestrian and public transport networks and interchange facilities, ensuring that changes made to transport infrastructure or increase in road

vehicle usage will not have an adverse effect on the integrity of a Special Protection Area (SPA), Special Area of Conservation (SAC) or Ramsar site.

2.11.4 Policy CS21 'Design' seeks proposals which should be designed in an inclusive way to be accessible to all members of the community, regardless of any disability and to encourage sustainable means of travel. Incorporate landscaping to enhance the setting of the development, including the retention of any trees of amenity value, and other significant landscape features of merit, and provide for suitable boundary treatments.

2.12 Local Planning Policy – Surrey Transport Plan: Elmbridge Local Transport Strategy & Forward Programme (September 2014)

2.12.1 This document references the location of the A3 and M25 in Elmbridge Borough alongside other routes on the SRN that pass through its boundaries.

2.12.2 Policy 3.11 states "Congestion and heavy vehicle movements can also have impacts on noise levels in the locality of the road which can contribute to quality of life issues.". Although it makes no direct reference to the M25 junction 10 improvements, it is expected that the scheme will result in reduced congestion.

2.13 Policy summary

2.13.1 As detailed for the individual polices above, it is considered that the proposed scheme is compliant with national, regional and local policies.

2.13.2 The provision of the scheme would support the NPPF economic objectives and strategic policies to make sufficient provision for transport infrastructure whilst providing the opportunity to promote sustainable transport through the provision of new and improved walking and cycling routes within the extents of the scheme.

2.13.3 Local planning policies support the implementation of enhancements to the M25 and A3 to accommodate future planned growth, tackle congestion and improve road safety, which are consistent with the scheme objectives.

3. Baseline data and model development

3.1 Introduction

3.1.1 This section of the TA provides information on baseline data collection and the development of the highway assignment and microsimulation models.

3.1.2 This includes the model development process; the forecast year scenarios; local and national growth assumptions; and local development and transport infrastructure scheme assumptions. The model development process is shown in Figure 3.1.

3.1.3 The strategic highway assignment model has been developed by Atkins to assess the M25 junction 10 scheme and is based on the South East Regional Traffic Model (SERTM) developed by Highways England to provide a consistent approach to the testing and analysis of the schemes proposed as part of the RIS. The SERTM provides an opportunity for a comprehensive assessment of the wider area and regional impacts of the M25 junction 10 scheme.

3.1.4 Some key features, and a brief description of the SERTM, consistent with the junction 10 model include:

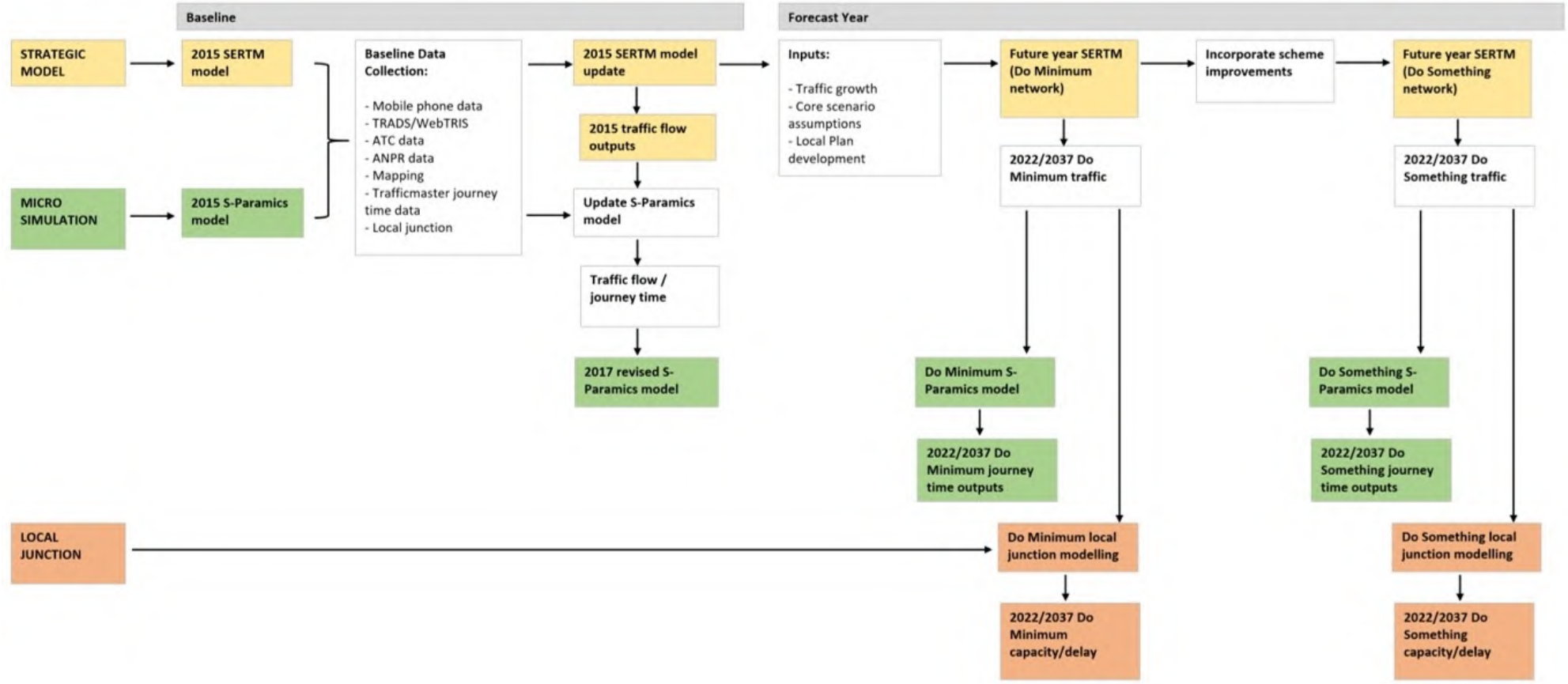
- The model uses a March 2015 base year, with average peak hour time segments
- The highway trip purpose is comprised of five user groups: Employers Business, Commute, Other, Light Goods Vehicles (LGVs) and Heavy Goods Vehicles (HGVs).

3.1.5 Mobile phone data is the primary source used for deriving trip distribution in the prior base year demand matrices. Other sources of traffic information have been used to refine and update the SERTM covering the Area of Detailed Modelling (AoDM-see below), including the following:

- TRADS/WebTRIS data
- Updated ANPR data around M25 junction 10
- SERTM data set
- ATC sites used in M25 junction 10 Project Control Framework (PCF) Stage 1 and PCF Stage 2
- Mapping data
- Trafficmaster Journey Time data.

3.1.6 The SERTM has been used as the basis for PCF Stage 3 of the M25 junction 10 study and transport modelling architecture. The PCF Stage 3 M25 junction 10 traffic model was enhanced by the inclusion of more detailed zoning and network resolution in the area local to the scheme.

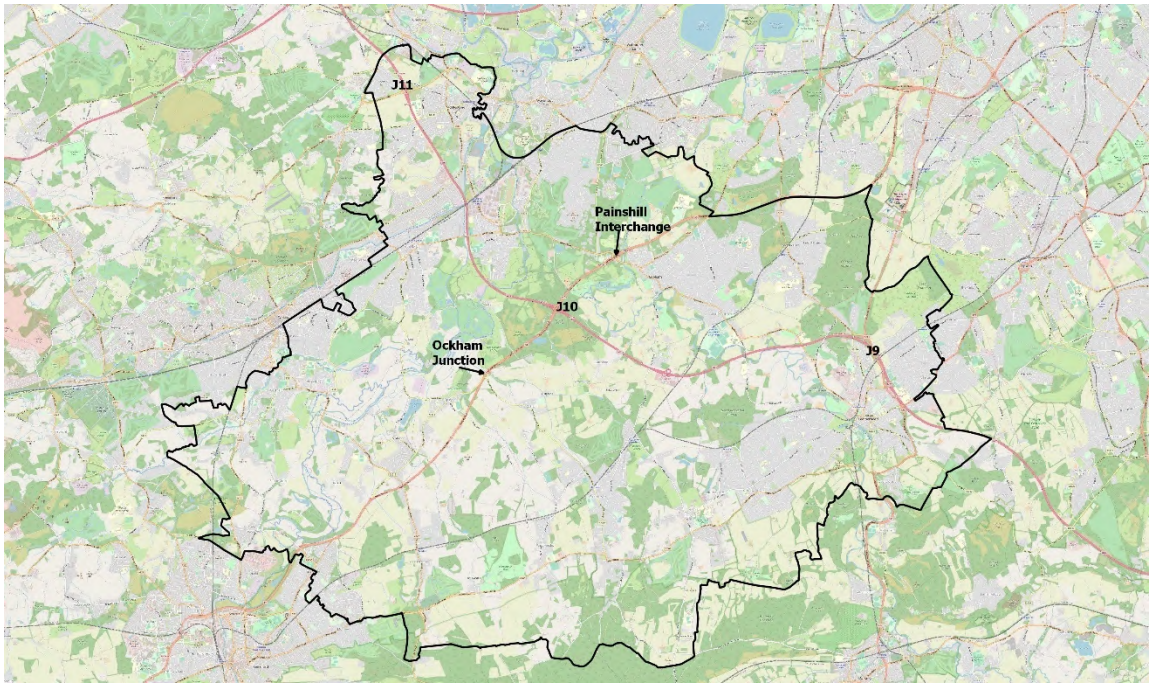
Figure 3.1: Model development process



3.2 Study area of strategic model

3.2.1 The Area of Detailed Modelling (AoDM) within the strategic model (i.e. the area within the model which is fully simulated) is shown in Figure 3.2. The whole of the South East Region is consistent with SERTM and is considered suitable for wider assessment.

Figure 3.2: Area of Detailed Modelling (AoDM)



3.3 Baseline data collection

Automatic Number Plate Recognition (ANPR) Surveys

3.3.1 The ANPR surveys were required to understand the origin-destination (O-D) movements in the area around M25 junction 10. The surveys for the models were completed during a neutral month to reflect a 'normal' day. The survey was required to be undertaken for a morning peak period of 0600-1000 and an evening peak period of 1500-1900, with data summarised in 15-minute intervals. The ANPR O-D data was classified by vehicle type. Link count data at each entry/exit point to the cordon was also required in 15-minute intervals.

3.3.2 The location of the 2014 and 2017 surveys are illustrated in Figure 3.3 and Figure 3.4.

3.3.3 The 2014 ANPR surveys were undertaken on Thursday 17th July 2014 and covered 14 sites in the vicinity of the scheme.

3.3.4 The updated ANPR surveys in 2017 took place on Tuesday 16th May 2017 covering a total of 20 sites – six more than the 2014 survey.

Figure 3.3: 2014 ANPR survey locations

Figure 3.4: 2017 ANPR survey locations

Volumetric traffic count data

3.3.5 In the development of the PCF Stage 3 models, available data was extracted from HE's traffic database (TRADS), focusing on the motorway mainline and slip roads. Traffic data from the strategic road network was readily available from the TRADS website. Where traffic counts are not available, a count for that location can sometimes be calculated from upstream or downstream counts at nearby counters.

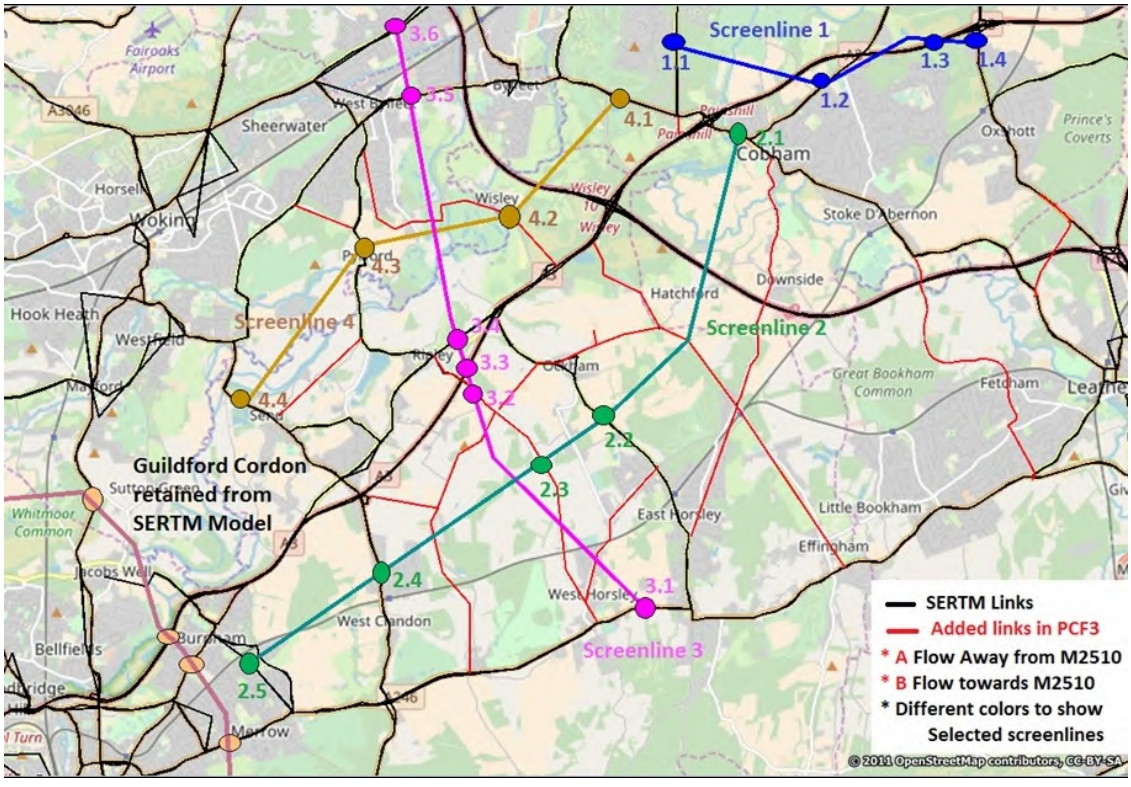
3.3.6 Additional Automatic Traffic Counts (ATC) sites, which were used in the PCF Stage 1 and PCF Stage 2 to refine the local road network in vicinity of M25 junction 10 were also used in calibration and validation of the PCF Stage 3 model.

3.3.7 Traffic counts on M25 junction 8 to M25 junction 17 have been informed by TRADS 2015 March data.

3.3.8 Additional ATC locations on the local network in the core area were used to determine screenlines in the PCF Stage 3 M25 junction 10 core model area. Figure 3.5 shows the screenlines used in the PCF Stage 3 M25 junction 10 model update.

- Screenline 2 is used for trip matrix validation
- Screenlines 1,3 and 4 are used in the model update
- The Guildford cordon and all other screenlines used in SERTM were retained in the PCF Stage 3 M25 junction 10 model

Figure 3.5: Added local network and screenlines in PCF Stage 3 M25 junction 10 model



3.4 Transport modelling overview

Strategic model

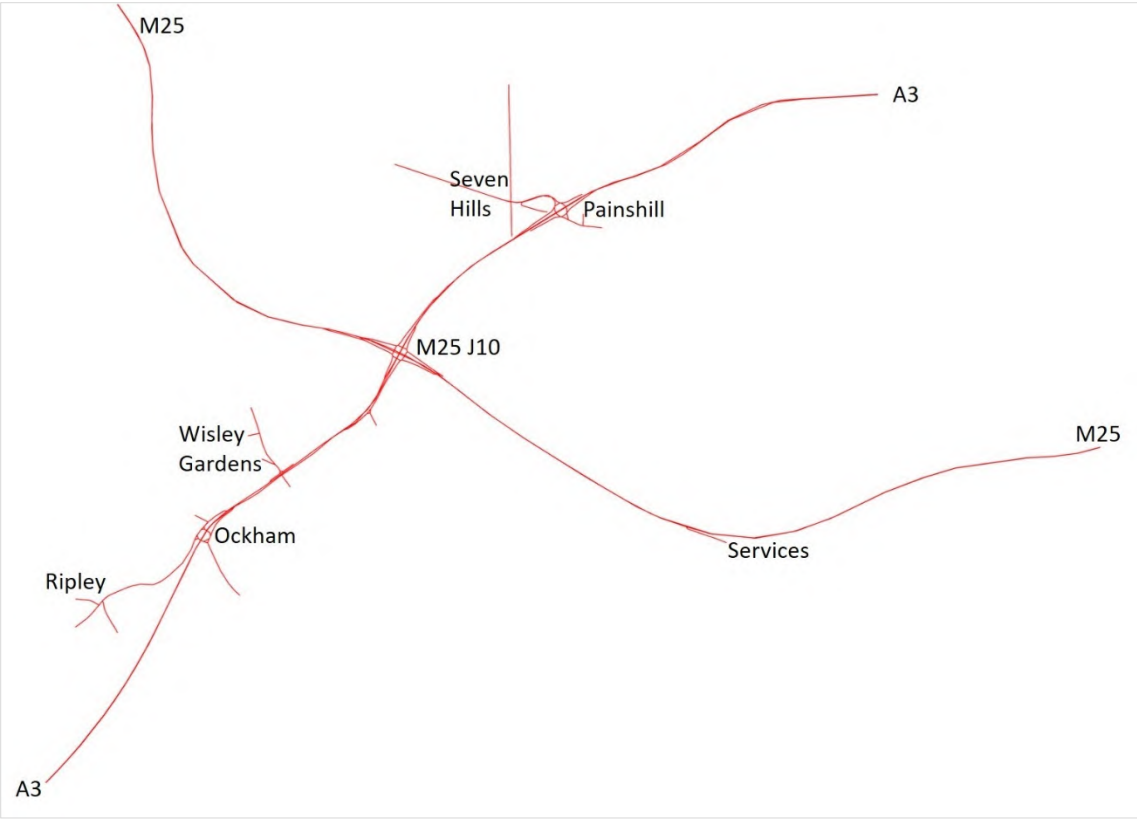
3.4.1 As previously stated, the SERTM is used as the assignment model for this assessment. This model has been enhanced for the scheme through the inclusion of more detailed zoning and network resolution in the vicinity of the scheme. This model was designed to retain consistency between the SERTM and earlier models used in previous PCF stages.

Operational S-Paramics model

3.4.2 A 2017 Base year S-Paramics microsimulation model was created for the M25 junction 10 and surrounding highway network. The model covers the following junctions, with the model extents shown in Figure 3.6:

- M25 junction 10
- Painshill
- Seven Hills
- Ockham Park
- Ripley

Figure 3.6: S-Paramics model extent



3.4.3 The model has been developed with a morning peak period of 0700-1000 and an evening peak period of 1600-1900.

3.4.4 Signal timing plans were provided for the M25 junction 10, Painshill and Seven Hills junctions, which included respective phasing/staging arrangements to inform the model creation.

3.4.5 The survey data has been used to create the base matrices for both the morning and evening peak. The flows in the model have been calibrated to the survey data.

3.4.6 As part of the assessment, the microsimulation model has used 18 journey time routes within the road network covered by the model to validate the S-Paramics model to the 2017 base year. Detail on the journey time routes is found in the Local Model Validation Report (LMVR).

3.4.7 The outputs are described in Chapters 6 and 7, which provides details of the impacts of the scheme on journey times.

Local junction models

3.4.8 Local junction models have been created, using industry standard junction modelling software, LinSig and Junctions 9, for the following junctions to assist with an understanding future network performance:

- M25 junction 10
- Painshill/Seven Hills Road
- Ockham Park
- Ripley

3.4.9 The outputs from the S-Paramics model were used to provide the traffic demand inputs for the local junction models. Results from the local junction models are summarised in Chapter 7 of this TA.

Forecast year scenarios

3.4.10 The forecast year scenarios are based on an opening year of 2022 and a design year of 2037. However, it is noted that Highways England expects construction of the scheme to commence in 2020 with the opening year anticipated to be 2023.

3.4.11 Initially, the forecast year of opening was anticipated to 2022. It is now anticipated that the opening year will be 2023. The modelling years have not been changed as traffic growth between 2022 and 2023 is not considered to be materially different enough to alter the conclusions derived from the traffic modelling. Furthermore, HE's recently appointed Delivery Partner may find efficiencies and deliver the scheme in a shorter timeframe.

Traffic growth

3.4.12 The traffic forecasts are dependent on household and employment growth, which were derived from; Local Growth Forecasts which consider local authority growth projections and National Growth Forecasts which take wider anticipated growth into account.

3.4.13 The traffic modelling process requires the production of a 'Core' Scenario. The 'Core' Scenario is founded on the most unbiased and realistic set of assumptions that form the scheme. This includes assumptions on local

uncertainty, which is dependent on whether developments or other planned transport schemes close to the scheme area are proposed.

3.4.14 The categorisation and schedule process for potential developments was agreed with the three Local Planning Authorities in the vicinity of the scheme, Woking Borough Council, Elmbridge Borough Council and Guildford Borough Council. As part of this, the schedule of developments input into the models can be considered ‘more than likely’.

3.4.15 Growth in cars trips is derived from the DfT National Trip End Model (NTEM 7.2). This provides demographic changes projections in employment and population throughout the UK. The change in freight traffic (light and heavy goods vehicles) was derived from the DfT 2015 road traffic forecasts. This was the most recent version available at the time of model development. A sensitivity test has been undertaken which demonstrates that the latest forecast (RTF18) results in minimal changes to overall scheme benefits and local network impacts.

3.5 Local development scenarios

3.5.1 The core scenario is intended to provide a sound basis for decision-making given current evidence. It must be robust and evidence-based taking on board various factors and uncertainties affecting travel demand in the future as listed in the uncertainty log.

3.5.2 The management of the uncertainties in formulating the core scenario follows relevant guidance in DfT’s transport appraisal guidance (WebTAG), which recommends the establishment of an uncertainty log, and subsequently forming a core scenario based on the level of uncertainty identified.

3.5.3 In the uncertainty log, each likely change in the future was classified according to the likelihood that they will occur. Based on WebTAG guidance, where a scheme or land use change is considered “near certain” or “more than likely”, it is included in the core scenario.

3.5.4 The local developments included in the core are shown in Figure 3.7 and

Table 3-1. The trip generation for each site, in production/attraction form was generated using locally calculated rates within the National Trip End Model (NTEM) 7.2 dataset. The growth was then "balanced" so the total production/attraction within each local county area matched NTEM 7.2 growth.

Figure 3.7: Major land use developments

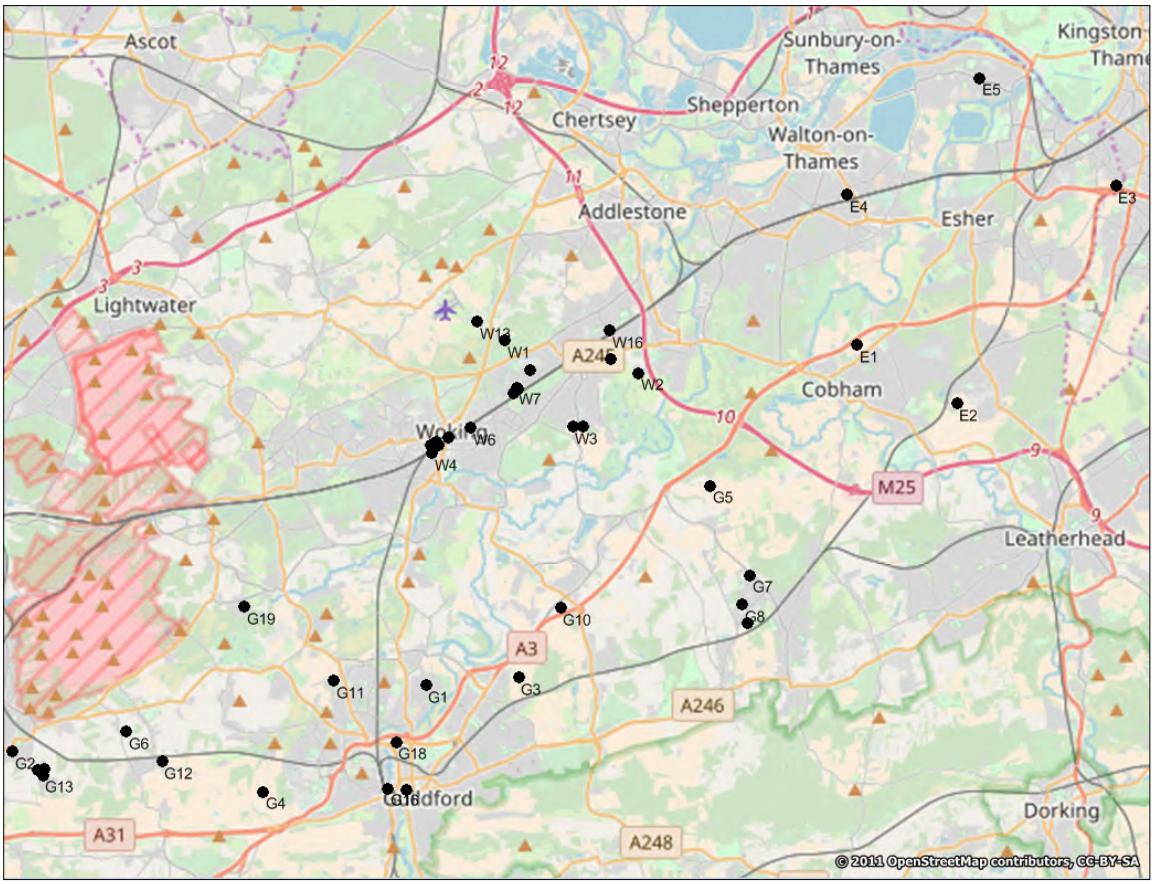


Table 3-1: Major land use developments from Local Plans

Ref	Name	Residential[1]	Employment[2]	Zone
E1	Land at Chippings Farm	500	0	80105
E2	Land at east Blundel Lane	500	0	80004
E3	and to north of Kingston Bypass	500	0	80003
E4	Walton Court	300	0	80009
E5	Molesey Combo	213	0	80002
Elmbridge (Total)		2013	0	
G1	Slyfield Ind Estate	1000	131	80028
G10	Burnt Common	400	137	80018
G11	Keens Lane Guildford	140	0	80027
G12	The paddocks	51	0	80026
G13	White Lane Ash Green	62	0	80032
G14	White Lane Ash Green	58	0	80032
G15	College Copse	15	0	80032
G16	The Billings, Guildford GU1 4JY	350	0	80023
G17	North Street Redevelopment	262	0	80022
G18	Ladymead GU1 1BZ	922	0	80022
G19	Pirbright Laboratory- Institute	0	1116	80026
G2	Ash and Tongham	1267	0	80032
G3	Gosden Hill Farm, Merrow Lane	2000	1150	96003
G4	Blackwell Farm	1800	919	80030
G5	Wisley Airfield	2000	753	80106
G6	Greater Normandy	1100	198	80026
G7	Waterloo Farm East Horsley	120	0	80019
G8	land at Manor Farm East Lane,	180	0	80019
G9	East lane / Lollesworth Rd	122	0	80019
Guildford (Total)		11849	4404	
W1	Land to the rear of Martyrs La	1200	0	80096
W10	2 - 24 Commercial Way	200	158	80094
W11	Albert Drive, Sheerwater	346	0	80097
W12	EFCO Forsyth Path, Sheer	0	70	80097
W13	Mclaren	0	1390	80096
W14	Poole Rd Industrial	0	1293	80094
W15	Forsyth Road Industrial Estate	0	158	80097
W17	Broad Oaks Parvis Rd	0	1324	80110
W2	West Hall	592	0	80110

Ref	Name	Residential[1]	Employment[2]	Zone
W3	Lovelace Rd	223	0	80112
W4	Coal Yard/Aggregates Yard	422	0	80099
W5	Aviary Road, Pyrford	200	0	80112
W6	Car park east Oriental Rd	250	0	80113
W7	Sheerwater Priority Place	250	0	80097
W8	30 - 32 Woking Railway and Ath	560	792	80094
W9	Church St West	393	868	80094
Woking (Total)		4636	6053	
Total		18498	10457	

Source: Elmbridge, Guildford, Woking local plans

1) Residential refers to the number of households, 2) Employment refers to the no. of FTE jobs

Forecast year network – Do Minimum

3.5.5 The Do Minimum (DM) is defined as the core highway network scenario without the M25 junction 10 scheme intervention, against which the proposed scheme is compared.

3.5.6 Outside the AoDM, the forecast year networks are consistent with the SERTM core forecast networks. Each of the committed schemes, within the uncertainty log are included. The 2022 network is equivalent to the assumptions from the 2021 SERTM network and the 2037 network assumes the same infrastructure as the 2041 SERTM. A full list of the schemes is found in the SERTM Traffic Forecasting Report.

3.5.7 Within the AoDM, localised changes made to the base network are shown in Table 3-2. Otherwise the M25 junction 10 DM network is consistent with the validated base model.

3.5.8 In future year models, including the DM, a version of the M25 J10-16 Smart Motorway scheme is incorporated, which is consistent with the modelling and appraisal of this scheme, namely widening to the M25 carriageway within junctions 11, 12 and 15 (to 4 lanes) and no widening between junctions. Between junction 10 and junction 12, the mainline will remain as 4 lanes and widening to 5 lanes will only take place between junction 15 and junction 16.

3.5.9 Previously the widening to 4 lanes of the M25 carriage within junction 10 was part of the Smart Motorway scheme, however this has now been incorporated as part of the M25 junction 10/A3 Wisley Interchange scheme.

Table 3-2: Summary of SRN major schemes in Do Minimum networks

Major Scheme	Description	DM Scenario
M25 junction10 to 16	Four lanes through junctions 11, 12 and 13 with no widening of mainline between J10 to J15. M25 mainline between J15 and 16 to be widened to 5 lanes. RIS1 scheme assumed opening in same time frame as junction 10 scheme	2022
M4 junction 3 to 12	Provision of SM-ALR between junctions 3 and 12. This results in a lane gain along the entire scheme, except through the junctions at 4b and 10. As part of these improvements there are also changes to many of the slip roads to reflect the changed mainline carriageway layout.	2022
M4 junction 10 (M4/A329(M) Interchange)	Merge slip roads from the M4 to A329(M) NB and SB one lane capacity. Improved slip road capacity by adding extra merge slips to A329(M) NB and SB to relieve congestion.	2022
M25 Cobham services	Accessed from both sides of the carriageway and permits U-turns between junction 9 and 10	2012
Wisley Airfield Development	As part of future year Wisley Airfield development changes at Ockham roundabout (Signalising priority movements)	Q
A3 widening Guildford	Widening of A3 between A31 and north of Guildford	2037

Forecast year network – Do Something

3.5.10 The scheme for testing the Do Something scenario is described in Section 1.4. with a full set of Scheme Layout Plans found in Appendix A.

3.5.11 For the baseline and forecast year scenarios, Table 3-3 summarises the Local Plan development assumptions and where junction improvements are being proposed as part of the scheme.

Table 3-3: Summary of growth assumption and scheme infrastructure provision

Scenario	Local Plan Growth	Scheme Junction Improvements Included		
		Junction 10	Painshill/Seven Hills	Ockham
2015 Baseline	None	No	No	No
2022 DM	2022 committed and planned on allocated sites	No	No	No
2022 Do Something		Yes	Yes	Yes– junction fully signalised
2037 DM	2037 committed and planned on allocated sites	No	No	Yes – partially signalised
2037 Do Something		Yes	Yes	Yes – junction fully signalised

4. Road safety

4.1 Introduction

4.1.1 One of the scheme objectives of the M25 junction 10/A3 Wisley Interchange improvements is specifically aimed at safety enhancements to 'Reduce annual collision frequency and severity ratio on the mainline A3 and slip roads and junction 10 gyratory'.

4.1.2 This section of the TA evaluates existing road safety issues at M25 junction 10 and the surrounding network and what road safety impacts would be expected from implementing the proposed scheme.

4.1.3 The analysis uses 5-year (2012-2016) STATS19 data provided by DfT in combination with COBA-LT's default accident rates; and scheme drawings.

4.1.4 The COBA-LT spreadsheet is provided by the DfT and is used to provide a simple assessment of the potential impact of the scheme on accident costs.

4.2 Background

4.2.1 The five-year collision data was analysed to determine where there is evidence of 'hotspot' locations around the M25 network. For each location, a 1km radius buffer was drawn around the junction, and the total number of accidents which were recorded at the junction and the mainline links within that buffer were analysed. The results are shown in Table 4-1.

4.2.2 The results show that the M25 junction 10 is shown to have the second highest number of accidents on the M25, with a total of 133 accidents recorded within the M25 junction 10 buffer. This equates to approximately 27 accidents per year.

Table 4-1: M25 junction collisions (2012-2016)

Junction	Total Accidents	Accidents per Year
M25 junction 1A	142	28.4
M25 junction 10	133	26.6
M25 junction 25	125	25.0
M25 junction 1B	102	20.4
M25 junction 30	102	20.4
M25 junction 2	101	20.2
M25 junction 12	96	19.2
M25 junction 23	95	19.0
M25 junction 6	91	18.2
M25 junction 13	91	18.2

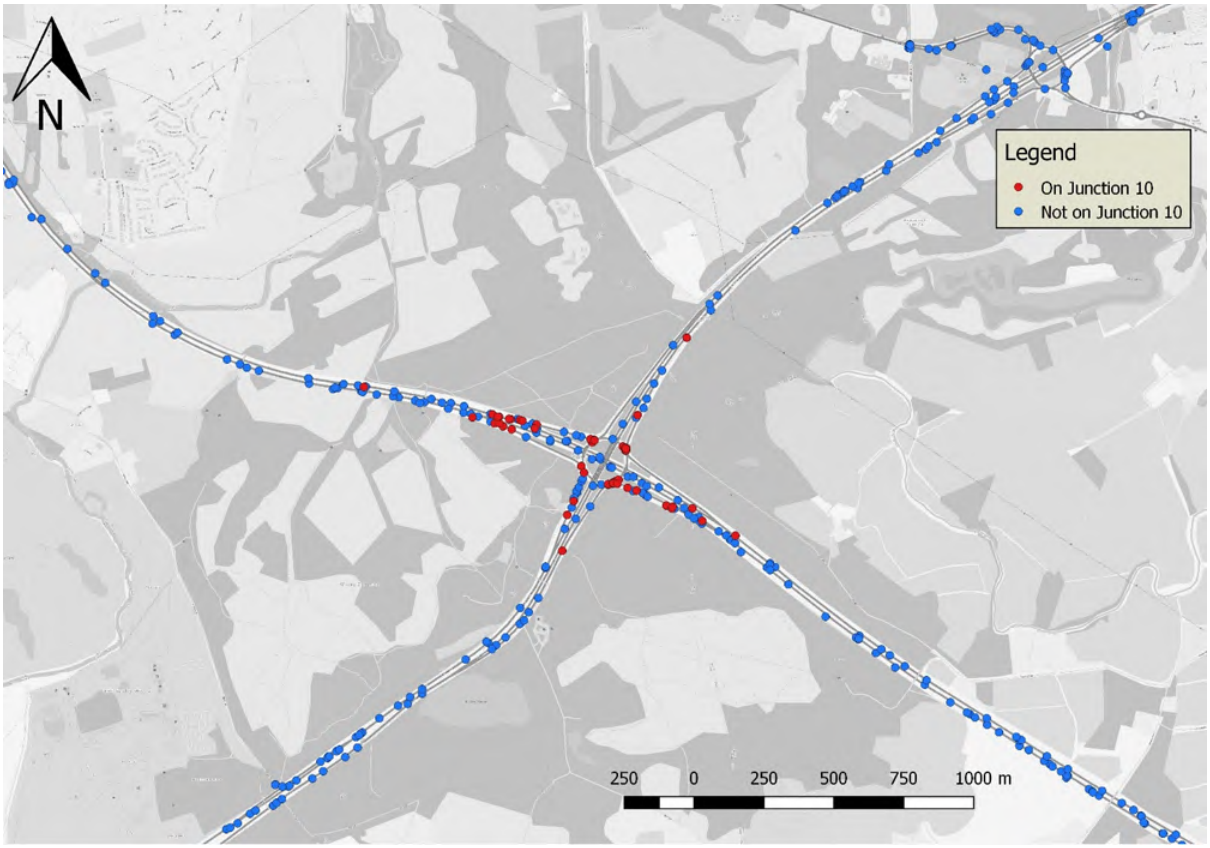
4.2.3 Further local analysis was undertaken in the proximity of junction 10, for the area shown in Figure 4.1, using the STATS-19 accident data for 2012-2016 (inclusive). This covers an area extending up the A3 to Painshill and Seven Hills junction, and southbound beyond Wisley Lane. During the period of 2012-2016 (inclusive), there have been 171 accidents in total (just over 34 per year on average) at and around M25 junction 10. It is likely that some collisions not

resulting in injury go unreported, although the number of such events is unknown. Of the 171 accidents, none resulted in fatalities, nine resulted in severe injuries and 163 in slight injuries.

4.2.4 Of these reported accidents over the five-year period, approximately 106 accidents were on either M25 or A3 main carriageways (approximately 21 per year on average). There is no particularly common feature of the accidents (time of day/weather etc.), although the average number of vehicles involved was 2.4 (with a maximum of six), indicating congestion related shunts and collisions as the likely cause. Over the same five-year period, the other 65 accidents occurred on or near junction 10 (13 per year on average), and they can be broadly divided into the following categories:

- 46% were on circulatory/roundabout conflict points
- 54% were on the merge points and the slip-roads, with a concentration of such accidents on the A3 Northbound off-slip and M25 Eastbound off-slip (the busiest slip roads).

Figure 4.1: Accidents in the vicinity of M25 junction 10 between 2012-2016



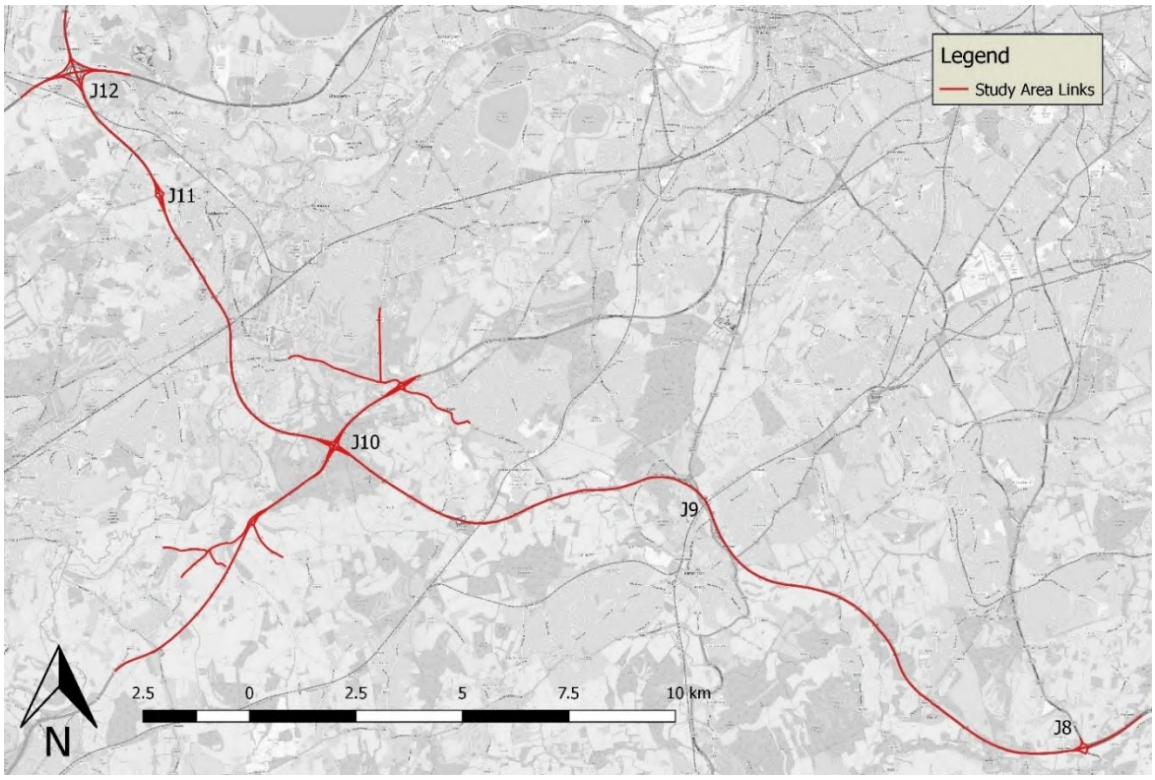
4.2.5 Analysing the existing situation at M25 junction 10 further, as well as understanding the proposed impact of the M25 junction 10/A3 Wisley Interchange improvement scheme, requires a more detailed assessment of the area.

4.2.6 Further analysis has been undertaken, focusing upon the wider study area as shown in Figure 4.2 and including the following roads.

- The A3 from Painshill junction to Ockham Park junction;
- Roads into Ripley, Ockham and Cobham; and

- The M25 junction 8 to junction 12.

Figure 4.2: Detailed area study links



4.2.7 During the 2012-2016 five-year period, there were 1,108 recorded accidents in total on the study links (averaging just over 221 per year).

4.2.8 Table 4-2 presents a split by severity by year for the reported accidents. Over the whole study period, 90.9% were slight, 8.7% were serious, and 0.4% were fatal. The 1,108 accidents resulted in 1,824 casualties, giving an average of 1.6 casualties per accident. The number of annual accidents has decreased between 2012 and 2016, however in 2012 London hosted the Olympic Games, leading to a higher volume of traffic around London and hence more accidents. From 2014, a generally increasing trend can be identified through to 2016.

Table 4-2: M25 junction 10 collisions by severity

Year	Fatal accidents	Serious accidents	Slight accidents	Total accidents
2012	0	13	225	238
2013	1	21	201	223
2014	3	17	181	201
2015	0	22	199	221
2016	0	24	201	225
Total	**4**	**97**	**1007**	**1108**

4.2.9 Figure 4.3 presents the personal injury accident (PIA) rate per million vehicle kilometres in the vicinity of M25 junction 10. The highest link accident rates are observed on:

- M25 anti-clockwise slip roads at junction 10;

- The northbound A3 off-slip at junction 10;
- A3 northbound on-slip at Ockham Park junction; and
- Links in proximity to the access/egress at Wisley Lane.

Figure 4.3: Five-year average (2012-2016) accident rates (PIA/million vehicle kilometres)

4.2.10 The improvements resulting from the proposals seek to address the safety issues reported on the links with the highest accident rates.

Non-Motorised Users

4.2.11 Additional assessment on collisions involving Non-Motorised Users (NMUs) has been completed on the most recent available data covering 2013-2017 from Crashmap.

4.2.12 This covered incidents that occurred at Ockham Park junction through to Painshill junction, including M25 junction 10. This collision data is shown in Table 4-3 and Table 4-4.

Table 4-3: Pedal cycle collisions

Year	Serious accidents	Slight accidents	Total accidents
2013	0	0	0
2014	0	0	0
2015	0	0	0
2016	3	1	3
2017	0	2	2
Total	**3**	**3**	**6**

Table 4-4: Pedestrian collisions

Year	Serious accidents	Slight accidents	Total accidents
2013	0	0	0
2014	0	1	1
2015	0	0	0
2016	0	1	1
2017	1	0	1
Total	**1**	**2**	**3**

4.2.13 Five of the six cycle collisions were at the Ockham Park junction, with one on the A3 northbound shared use footpath. Of the five collisions at Ockham Park, four took place on the southbound off-slip from the A3, of which two were classified as serious with the other two as slight.

4.2.14 Two of the three pedestrian collisions were at M25 junction 10 with another at the northbound off-slip at the Painshill junction. The two collisions at M25 junction 10 were both classified as slight, with the collision at the Painshill junction classified as serious in nature.

4.3 Expected collision changes resulting from the proposals

Number of accidents

4.3.1 The scheme is anticipated to result in a reduction of accidents through introducing several operational improvements, including:

- Provision of free-flowing left turns at junction 10;
- Introduction of controlled crossings at Painshill and Ockham Park junctions to improve NMU safety;
- Improvements at the Painshill junction;
- Closing of side-road accesses on the A3 (such as the A3 direct access/egress to Wisley Lane and layby, access/egress to Elm Lane);
- Improvements at the A245/Seven Hills Rd junction;
- Improved and longer merge links, proving increased safety for weaving movements;
- Improvements of geometry at the M25 junction 10 roundabout and slip roads; and
- Widening of the A3.

4.3.2 The improvements are expected to reduce accidents through the removal of several conflicting movements at the junctions. Elongating and widening the roundabout at M25 junction 10 will better facilitate weaving movements on the junction and providing free-flow left turns will reduce the number of conflicting movements. These changes will improve the safety at M25 junction 10.

4.3.3 The A3 improvements, such as the closing of direct accesses to the A3 from side-roads and increasing the number of lanes on the A3 mainline, are likely to contribute to an improvement in road safety.

4.3.4 COBA-LT analysis has been undertaken to capture the accident impacts of the scheme. For this, the appraisal period has been set at 60 years. Local accident rates for all links and junctions have been derived from the STATS19 data covering the years 2012-2016. Where there are links with no recorded accidents over the 5-year data period a COBA-LT default rate has been used.

4.3.5 The accident analysis at junction 10, by link, is summarised in Table 4-5. In terms of accident savings on junction 10, the largest savings are forecast on the M25 clockwise and counter-clockwise off-slips and the A3 northbound off-slip. Some links (usually those that are not improved as part of the scheme) experience a slight increase in accidents, due to an increase in traffic flow in the Do Something scenario.

4.3.6 There is forecast to be a 30% reduction in accidents at M25 junction 10 over the 60-year appraisal period compared with the Do Minimum scenario.

Table 4-5: COBA-LT junction 10 Accidents, by link – 60-year appraisal period

Link	Total Number of Accidents		Number of Accidents Saved
	Do-minimum	Do-something	
A3SB Off-slip	4	5	-1
A3SB Off-slip (free left)	0	2	-2
M25ACW On-slip	6	10	-4
A3NB On-slip	18	10	8
M25ACW Off-slip	88	23	65
M25ACW Off-slip (free left)	0	7	-7
A3NB Off-slip	82	7	75
A3NB Off-slip (free left)	0	14	-14
M25CW On-slip	32	27	5
A3SB On-slip	52	48	4
M25CW Off-slip	136	76	60
M25CW Off-slip (free left)	0	5	-5
M25J10 roundabout East	4	10	-6
M25J10 roundabout NE junction	111	114	-3
M25J10 roundabout North	4	3	1
M25J10 roundabout NW junction	82	65	17
M25J10 roundabout SE junction	152	105	46
M25J10 roundabout South	2	2	0
M25J10 roundabout SW junction	51	40	11
M25J10 roundabout West	3	3	0
Total	**825**	**574**	**251**
Reduction from Do-Minimum		**30%**	

4.3.7 In addition, there are expected to be accident savings in the area surrounding M25 junction 10. These benefits are largely derived from widening the A3, particularly on the A3 northbound carriageway due to the closure of the Wisley Lane access and the relocation of merges away from the junctions. Table 4-6 provides the outputs of the COBA-LT assessment for the scheme, excluding M25 junction 10 itself.

Table 4-6: COBA-LT Accidents in detailed assessment area excluding junction 10 by section – 60-year appraisal period

Link	Total Number of Accidents		Number of Accidents Saved
	Do-minimum	Do-something	
Seven Hills Rd junction/ Byfleet Road	207	206	1
A3NB mainline	706	490	216
A3SB mainline	390	346	44
M25EBmainline	3243	3219	24
M25WB mainline	2976	2851	125
Ockham interchange	572	549	23
Painshill interchange	267	231	36
Seven Hills Rd junction/ Byfleet Road	207	206	1
Total	**8360**	**7891**	**469**
Reduction from DM		**6%**	

4.3.8 Overall, most of the forecast reduction in accidents due to the scheme are slight (85.8%), with 12.4% severe and 1.8% fatal accidents.

Changes to number of Killed or Seriously Injured

4.3.9 HE has a target to reduce the numbers of people killed or seriously injured (KSI) on the SRN by 40% or more by the end of 2020 against the 2005-2009 average baseline. Table 4-7 provides a comparison between the forecast number of accidents in the modelled 2022 opening year of the do-something scenarios and the observed average annual number of accidents for the 2005-2009 period.

4.3.10 The results show that the scheme provides a 7% reduction in KSI accidents in the opening year. Without the scheme, the situation is expected to worsen, with an extra KSI accident occurring in the opening year.

Table 4-7 COBA-LT Opening Year (2022) appraisal comparison with 2005-2009 average baseline

Severity		2005 – 2009 annual average	Do Minimum	Do Something
Fatal	Number	3	3	2.7
	Reduction		0%	10%
Serious	Number	20	21	18.6
	Reduction		-5%	7%
Slight	Number	256.8	272.7	252.2
	Reduction		6%	2%
Total	**Number**	**279.2**	**296.7**	**273.5**
	Reduction		**-6%**	**2%**
KSI	**Number**	**23**	**24**	**21.3**
	Reduction (%)		**-4%**	**7%**

Source: 2005-2009 accident data have been derived from the STATS19 dataset

NMUs

4.3.11 An assessment of collisions involving cyclists has indicated that five of the six collisions recorded in total in the study area occurred at the Ockham Park junction and it is anticipated that the introduction of signal controlled crossings at this junction will reduce the frequency of future collisions involving cyclists.

4.3.12 Two of the three pedestrian collisions recorded in the study area were at M25 junction 10 with another at the northbound off-slip at the Painshill junction. The scheme proposals involve removing the interaction of pedestrians and vehicles at M25 junction 10 and enhanced crossing provision at Painshill junction to improve safety.

4.4 Scheme benefits

4.4.1 The scheme improvements are expected to reduce accidents through the removal of several conflicting movements at the junctions. Elongating and widening the roundabout at junction 10 and providing free-flow left turns will increase the junction's safety, thus better facilitating weaving movements on the junction. The A3 improvements, such as the closing of direct accesses to the A3 from side-roads and increasing the number of lanes on the A3 mainline will contribute to increased road safety.

4.4.2 The DfT's COBA-LT software has been used to capture the accident impacts over the 60-year period following implementation the scheme of the M25 junction 10 scheme, covering the affected road network. Across the whole of the affected road network the scheme is anticipated to result in a reduction in accidents compared to the without intervention scenario, as set out below:

- Reduce accidents among users of M25 junction 10 by 30%
- Reduce accidents in the assessment area, excluding M25 junction 10, by 6%.

4.4.3 A review of collision data involving NMUs has revealed a pattern involving cyclists where four collisions were recorded on the southbound off-slip from the A3 meets the Ockham Park junction for the five-year period between 2013-2017. This node is currently uncontrolled with traffic coming off the A3 approaching the Ockham Park junction at speed and not necessarily coming to a complete stop at the give-way line, which may be the reason for collisions involving cyclists. The scheme will introduce signal controls at this junction, which will regulate the flow of traffic and improve road safety, particularly for vulnerable users such as cyclists.

5. Sustainable transport

5.1 Introduction

5.1.1 The scheme will support NMUs through the introduction of safety measures including new crossings and routes for NMUs and the retention of existing links to local amenities.

5.1.2 Government policy encourages consideration of the needs of NMUs when undertaking scheme design. The Design Manual for Roads and Bridges (DMRB) contains a section on NMU audits. These have been compulsory for most schemes on the Highways England network.

5.1.3 The sustainable transport objectives of the scheme are informed by the W-CHAR audit which supersedes NMU audit guidance and has been published to inform the improvements that relate to pedestrians, cyclists and equestrian users.

5.1.4 As part of the Highways England Delivery Plan (2015–2020) a key feature within the Key Performance Indicators (KPIs) is associated with the consideration of Vulnerable Road Users (VRUs) and the incorporation of measures in a scheme that enables them to continue to use the network as in the current situation.

5.1.5 The scheme meets the objective outlined by the DfT which encourages the development of safe, secure and sustainable transport. The TA will analyse the scheme objectives against relevant policy guidelines regarding NMUs.

5.1.6 The scheme demonstrates Highways England's approach to sustainable development practices:

- Financial – supporting national and local economic growth and regeneration
- Human – protecting and improving the safety of road users and road workers
- Natural – protecting, managing and enhancing the environment
- Social – seeking to improve the well-being of road users and communities affected by the network
- Manufactured – ensuring efficiency and value for money (Highways England: Licence, April 2015).

5.2 Overview of existing conditions

5.2.1 A network of NMU infrastructure exists in the wider area of M25 junction 10 linking the surrounding quadrants and allowing NMU north-south movements between the A3 Painshill junction and A3 Ockham Park junction.

5.2.2 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.

5.2.3 NMU infrastructure in the vicinity of the junction includes Public Rights of Way (PRoW) and pedestrian/cycle links within public highway. There is also a Pegasus crossing at M25 junction 10 and a bridleway travelling east to west.

5.2.4 The NMU Context Report (PCF Stage 1) referenced a previous NMU assessment (Integrated M25 DBFO Network Pedestrians, Cyclists & Equines Study) which found several areas around the M25 junction 10 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.

5.2.5 Extensive pedestrian footways are provided at both the Ockham Park junction and Painshill junction on the A3. A pedestrian footway runs from Painshill roundabout along the A3 northbound slip road to the bus stop which also connects to the Old Byfleet Road, for access to Feltonfleet School.

5.2.6 There are cycle lane crossings with lowered kerbs provided at Ockham Park junction on the A3 on-slip and off-slip to the north of the junction. At Painshill junction there are tactile paved lowered kerb crossing points on the A3 southbound on-slip and off-slip, with the latter being positioned adjacent to the traffic signals at this junction allowing safer crossing. There are also lowered kerbs with tactile paving on the A245 southern arm at Painshill junction. At junction 10, there are signalised pedestrian crossings for NMUs that enable movements across the junction.

5.2.7 Approximately 100m to the north of the roundabout, a push button signalised crossing is provided for all NMU's to cross the A3 northbound on-slip road. The pedestrian route follows the opposite side of the slip to the roundabout where it circumvents the outer side of the roundabout. At the stop line of the southbound off-slip a signalised crossing for all NMUs is provided.

5.2.8 Existing PRoW routes are illustrated in Figure 5.1 with definitions provided in Table 5-1.

Figure 5.1: Existing PRoWs

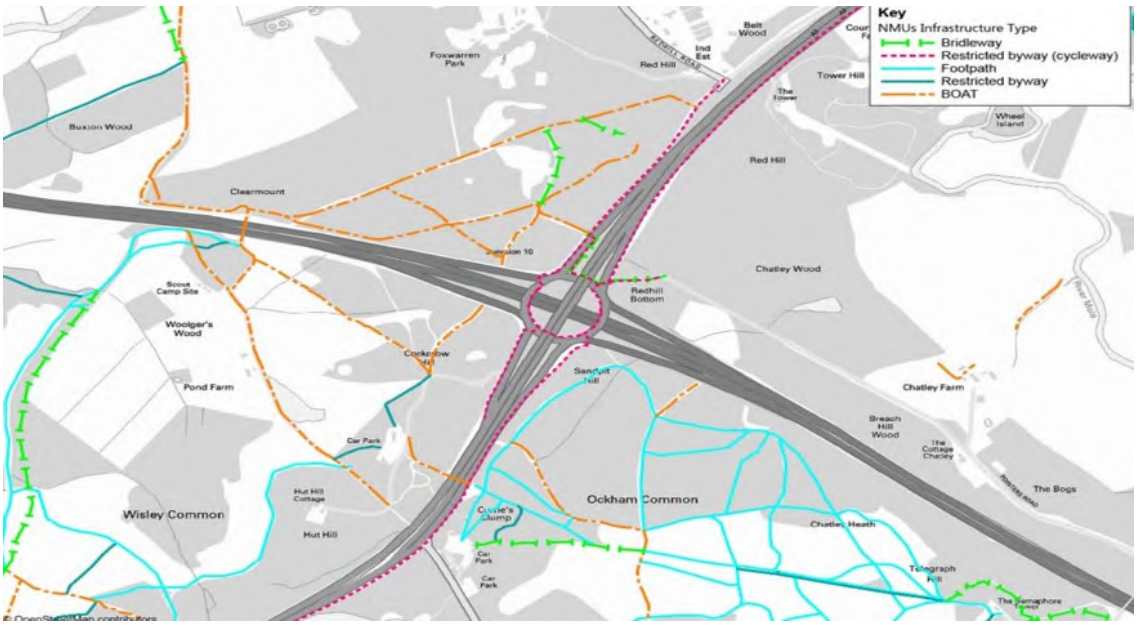


Table 5-1: PRoW Definitions

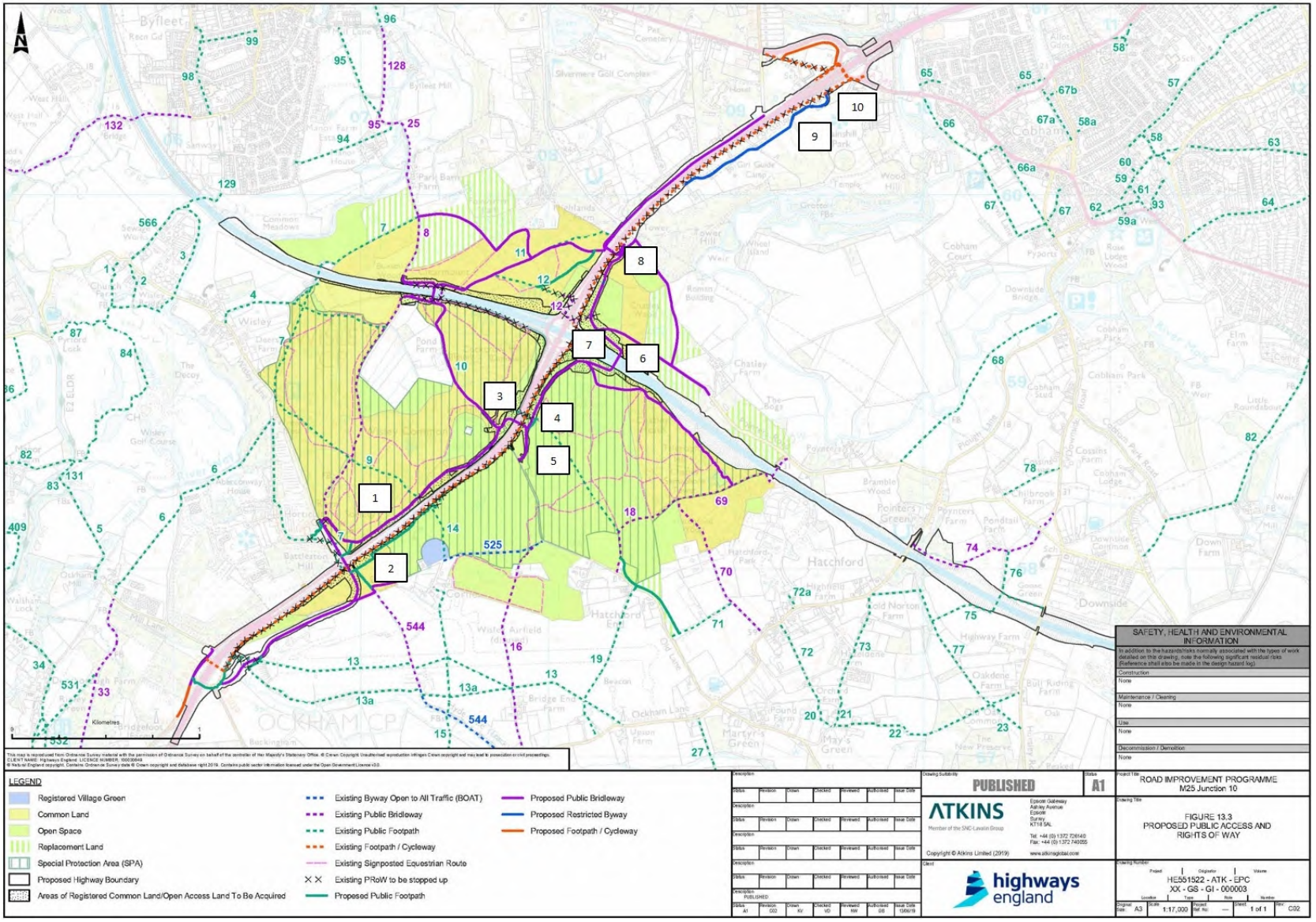
Type	Definitions
Footpath	If a path is used for walking only, it is a footpath. Footpaths are legally protected routes that the public can travel along by foot. These are different from footways (the pavement alongside a road), as they comprise the whole width of the highway. Footpaths are usually unsurfaced tracks (rarely surfaced or lit), open to walkers, runners and users of mobility vehicles or powered wheelchairs.
Bridleway	Bridleways are legally protected routes that the public can use on foot or on horseback. Cyclists are permitted to use the bridleways although, through the Countryside Act 1968, there is no obligation to facilitate cycling on the routes, and cyclists must give way to other users. Horse drawn vehicles are not permitted.
Byway open to all traffic (BOAT)	These are open to all forms of traffic; pedestrians, horse riders, cyclists and car and other motor vehicle drivers.
Restricted byway	On restricted byways, individuals are permitted to use the route on foot, horseback, bicycle or horse-drawn carriage. Motorised vehicles are not permitted.
Permissive path	It is possible for landowners to allow access over their land without dedicating a right of way. These accesses are called permissive paths. To the user they are often indistinguishable from normal highways. Landowners have granted permission for the route to be used by the public, but they also have the right to withdraw that permission if they choose. They can also specify which user groups are permitted to use these routes, which can include cyclists, equestrians and pedestrians.
Access land	The public have a right of access on foot (walking, running, climbing) under the Countryside and Rights of Way Act 2000. Although there may be footpaths and trails, there is no legal obligation for users to follow them. There are several exempted activities associated with access land, including cycling, horse riding, camping, driving a vehicle and walking animals (other than dogs, which must be kept on a leash at certain times). The land can be used for these activities if expressly permitted by the landowner. On Ordnance Survey they are referred to as ‘open access land’.
Common land	Common land is private land over which the landowners, commoners and members of the public have rights. The Countryside and Rights of Way Act 2000 introduced a right of access on foot over common land, which is a type of access land under the Act. Each common often has its own rules with regards to permitted activities.
Green lane	Term has no legal meaning but is sometimes used to describe unclassified roads which may have similar rights to BOATs. They are sometimes referred to on Ordnance Survey mapping as ‘other routes with public access’ and shown with either green or red dots.

5.3 New provision and enhancement

5.3.1 A key feature of the scheme is the dedicated NMU route that will provide a continuous link between the A245 Byfleet Road and the Ockham Park junction via the Painshill junction with new NMU overbridge provision for the A3 and to the east of the M25 junction 10.

5.3.2 Elsewhere, the scheme proposes enhanced NMU provision at Ockham Park junction, Wisley Lane and Painshill junction and significant improvements to PRoW routes. The locations of new and improved routes are illustrated in Figure 5.2.

Figure 5.2: NMU / PRoW improvements provided by the scheme



NMU connection along A3 corridor

5.3.3 NMU improvements delivered as part of the scheme are shown in Figure 5.2 alongside other new and improved routes.

5.3.4 The Scheme Layout Plans in Appendix A includes detail on NMU connections on the A3 corridor.

5.3.5 A new NMU route will provide a replacement for the existing shared-use pedestrian and cycle surface that runs alongside, or close to, the existing A3 southbound carriageway and slip roads between Ockham Park junction and Painshill junction.

5.3.6 This new facility will be separated from the A3 as NMUs will be prohibited from the A3 carriageways between Painshill and Burnt Common junctions. The new NMU route will be provided with bridges across both the A3 and the M25, creating approximately 5.5km of route that is safer, easier and more attractive to use than the existing roadside facilities.

5.3.7 The southern part of this new route will be provided by the Wisley Lane diversion bridleway, described above as part of Work No. 31. The major part of the route will be provided by a new restricted byway, with a 3m hard surface suitable for road cycle use.

5.3.8 This work includes several components as shown in Table 5-2.

Table 5-2: NMU route specific improvements

Figure 16 Reference	Improvement
1	A new restricted byway running from the Wisley Lane diversion bridleway close to the start of Bridleway 8, following the line of an existing SWT maintenance track parallel to Wisley Lane and then parallel to the A3 north-eastwards, before becoming an entirely new track set back from the A3 as the widening works encroach further into the common, continuing over the south side of Hut Hill, above the retaining wall, to the new Cockcrow bridge. This length of the restricted byway has been aligned to the west of the A3.
2	A new footpath link between the above restricted byway and the Wisley Lane diversion bridleway, using steps up the embankment to the overbridge.
3	A replacement for the existing Cockcrow bridge over the A3 by a new 68m two-span bridge with a 16m wide deck.
4	Connections from this new byway into the private means of access to Hut Hill Cottage, Pond Farm and Birchmere camp site, which will enable these access tracks and Footpath 10 to connect to the replacement Cockcrow bridge.
5	A new restricted byway link from Old Lane to the replacement Cockcrow overbridge, a revised means of access to Ockham Bites Café and Ockham Common car parks and a connection to Footpath 17; this will be gated after the car park entrance and will be the means of vehicular access for onto Wisley Common and the associated properties.
6	A new 95m three-span restricted byway bridge, 5m wide, across the M25 at Sandpit Hill, southeast of M25 junction 10, including steps down the embankment slopes on both sides of the M25 to provide shorter routes for walkers. The bridge will provide a shared surface 3.5m wide and will have parapets suitable for equestrian use.
7	A new restricted byway running from Cockcrow bridge and across Sandpit Hill bridge to Redhill bridleway bridge, which includes connections to Footpath 17, Pointers Road and the proposed bridleway links to Telegraph Hill and to Chatley Wood. This also provides the substitute for Bridleway 12 between Pointers Road and Redhill bridleway bridge.
8	A new restricted byway from the junction with Redhill bridleway bridge north-eastwards to the entrance to Court Close Farm
9	A new restricted byway from Court Close Farm entrance to the access from the A3 southbound on-slip from Painshill junction, as a 4.8m wide shared surface.
10	A short length of 3m wide restricted byway that connects to footways around Painshill junction, past the garden of West Lodge, as well as providing access to the relocated bus stop on the A3 southbound on-slip.

Local highways proposals and associated developments

Ockham Park junction

5.3.9 The junction will be fully signal-controlled, with the stop lines set back from the exit points onto the roundabout to allow space for NMU crossings.

5.3.10 There will be some additional facilities for NMUs to negotiate the junction and provide a route across the A3:

- A shared pedestrian and cycle surface will be provided in the verge around the east and south sides of the junction to connect between the Wisley Lane diversion bridleway (see below) and the footway and cycle lane running south along the B2215 Portsmouth Road

- A bridleway will be provided in the verge around the northern side of the junction to connect between the bridleway link past the bus stop and Mill Lane, via a Pegasus crossing of the northbound on-slip to the A3
- On the B2215 Portsmouth Road as it approaches the stop line for the junction, a shared pedestrian and cycle surface will be provided in the verge to continue around the west side of the junction to the above Pegasus crossing and Mill Lane.

5.3.11 The above NMU improvements are found at number 11 on Figure 5.2. The scheme plan for Ockham Park junction is found on Figure 1.3

Wisley Lane diversion

5.3.12 The Wisley Lane diversion will include a new bridleway link along the eastern verge of the road, linking to Footpaths 13 and 13a, Work No. 32 bridleway, Elm Lane (Footpath 14), Bridleway 8 and the Work No. 33 restricted byway, including steps down the embankment slopes on the both sides of the A3 to provide shorter routes for walkers. The bridleway surface will be 3m wide. Footpaths 13 and 13a will be diverted a short distance to converge and join the new bridleway. Footpath 7 will be diverted to meet Wisley Lane west of the access into Wisley Garden, to facilitate crossing the road to meet the diversion bridleway and other PRoW on the other side. Because of the bridleway, the maximum gradient for Wisley Lane diversion will be 5% (1 in 20). Wisley Lane diversion, including the bridleway and the footpath diversions, is Work No. 31. The existing footbridge across the A3 will be demolished to allow space for the A3 carriageway widening, after the diversion bridge is open to use.

5.3.13 There will be a new bridleway link from an NMU crossing at Ockham Park junction signals, running alongside the A3 southbound off-slip and bus stop and continuing to Wisley Lane diversion, opposite where the diverted Footpaths 13 and 13a will meet the bridleway alongside the Lane. This will provide connections from the bus stop to Wisley Lane and to the crossing under the A3 to Mill Lane and the west side of the B2215.

5.3.14 There will be a new bridleway alongside the common, running from the Wisley Lane diversion bridleway north-eastwards to meet Bridleway 544 (Hyde Lane), close to the point where this meets Elm Lane.

5.3.15 The above NMU improvements are found at number 1 on Figure 5.2.

Painshill junction

5.3.16 There will be various changes made to Painshill junction with the aim of improving the efficiency of the junction and accommodating facilities for NMUs to cross the enlarged junction.

5.3.17 The above NMU improvements are found at number 10 on Figure 5.2. The scheme plan for Painshill junction is found on Figure 1.4.

Public Rights of Way proposals

5.3.18 In addition to the various PRoW elements included in the highways and NMU Works described above, there will be several other additions and changes to the PRoW network.

Footpath near Hatchford End

5.3.19 A new footpath will be provided to between Footpath 71 near Elm Lane and Bridleway 18, to provide a pedestrian route that does not entail walking along Old Lane (which has not footways) and to provide access through the replacement land. This route will not be surfaced.

5.3.20 The above NMU improvements are found at number 12 on Figure 5.2.

Redhill bridge and bridleway

5.3.21 A new bridleway will be provided to connect Red Hill bridleway bridge to the bridleway upgrade proposed along an existing horse track to the west and then along Footpath 11 to the southwest. This route will not be surfaced. The above NMU improvements are found at number 8 on Figure 5.2.

Chatley Wood bridleway

5.3.22 A new bridleway will be provided between the restricted byway (Work No. 33) close to the junction with Redhill bridge bridleway (Work No. 36) and Pointers Road, using the line of a former trackway from Chatley Farm and then passing through the eastern part of Chatley Wood.

5.3.23 The above NMU improvements are found at number 13 on Figure 5.2.

M25 Clearmount bridleway bridge

5.3.24 Clearmount bridge will be replaced by a new bridge over the widened motorway, which will continue to carry Bridleway 8 and to provide accommodation access across the motorway. The new bridge will have a 63m span, be 7.0m wide, provide a minimum 5.7m clearance above the M25 carriageways and will have parapets suitable for equestrian use

5.3.25 Bridleway 8 will be realigned on both sides of the motorway to connect to the new bridge, as well as providing connections to the bridleway upgrades of Footpaths 10 and 11 and to associated accommodation access tracks.

5.3.26 The above NMU improvements are found at number 14 on Figure 5.2.

PRoW creation and upgrades

5.3.27 Two footpaths will be upgraded in status to bridleways; both paths are currently used as part of the signposted horse-riding network managed by Surrey Wildlife Trust (SWT). No clearance or construction works are required, apart from new or amended signposts, hence these upgrades are not identified as Works:

- Footpath 10 from its connection to the proposed restricted byway at Cockcrow bridge across the western part of Wisley Common to the proposed realignment of Bridleway 8 at Clearmount bridge (see number 15 on Figure 5.2).
- Footpath 11 from the proposed realignment of Bridleway 8 at Clearmount bridge across the northern part of Wisley Common to the point where the existing signposted horse ride diverges from the footpath towards Redhill bridleway bridge (see number 16 on Figure 5.2).

5.3.28 Two existing signposted horse rides will be designated as bridleways. No clearance or construction works are required, apart from new or amended signposts, hence these upgrades are not identified as Works:

- The ride that runs from Footpath 11 (as upgraded, above) to the proposed Redhill bridleway bridge and its connections (see number 17 on Figure 5.2)
- The ride that runs from the proposed restricted byway near Sandpit Hill bridge along the northeast side of Ockham Common and Chatley Heath towards the Semaphore Tower on Telegraph Hill, where the new bridleway will join Bridleway 69 (see number 18 on Figure 5.2).

5.3.29 Three lengths of existing road will be reclassified as PRoW:

- Elm Lane will become Footpath 14 between its junction with the diverted Footpath 14 and Bridleway 544 (see number 19 on Figure 5.2)
- Elm Lane will become a bridleway between its junction with Bridleway 544 and where the road is stopped up by the property access to the north (see number 20 on Figure 5.2)
- Pointers Road will become a bridleway between its connection to the proposed restricted byway and the existing vehicle access control gate (see number 21 on Figure 5.2).

PRoW Diversions

5.3.30 Footpath 12 will be diverted along existing tracks across Wisley Common to join the proposed bridleway from Footpath 11, as a replacement for the current connection to Bridleway 12 across the junction 10 signals. This diversion will also provide connection to the bridleway link to Redhill Road.

5.4 Impact on pedestrian and cycle routes

5.4.1 The resultant network of PRoW and local road connections provided by the scheme will achieve the scheme objective to support walking and cycling by incorporating safe, convenient, accessible and attractive routes for pedestrians, cyclists and equestrians and improving crossing facilities by providing:

- A discrete route usable by pedestrians, equestrians and cyclists along the A3 corridor between Ockham Park and Painshill junctions that will be set away from the A3 carriageways, will be easier, safer and more attractive to use than the existing roadside shared-surface paths and be maintained to a standard suitable for all NMUs, including road cyclists
- Four new or replacement bridges usable by pedestrians, equestrians and cyclists to cross all four arms of the A3 and M25 near to junction 10 – Cockcrow, Sandpit Hill, Redhill and Clearmount bridges – connected by a network of bridleways or restricted byways, which will remove the severance caused by the existing crossings of these roads at junction 10 and the existing inadequate connection of PRoW to bridges
- A connected PRoW network that provides a right of access from roads or bridleways into and, usually, across all the existing and proposed areas of common land
- A connected PRoW network that provides a right of access from roads, bridleways or footpaths into and, usually, across all the existing and proposed areas of public open space

- A bridleway crossing of the A3 at Wisley Lane, which will remove the partial severance caused by the existing sub-standard footbridge
- Improved facilities usable by pedestrians, equestrians and cyclists to cross under the A3 at Ockham Park junction, which will remove the partial severance caused by the existing arrangements

5.5 Public transport

5.5.1 Two bus services are directly affected by the scheme, the 715 route and the C1/C2 route.

5.5.2 The 715 bus operates between Kingston and Guildford with services operating at hourly intervals between 05:25 and 19:25 Monday to Friday. This bus operates at a similar level on Saturdays but has a reduced service on Sunday with services operating at one and a half hour intervals, commencing at 08:20 and finishing at 18:45. The service is operated by Stagecoach on behalf of Surrey County Council.

5.5.3 The C1 route operates between Weybridge and Oxshott with two services per day Monday to Friday between 10:02 and 12:51 with one additional service operating between Weybridge and Cobham Station in each direction per day.

5.5.4 The C2 operates an extended route of the C1 between Weybridge and Leatherhead on Saturdays with four services at approximately two-hour intervals between 08:51 and 14:40.

5.5.5 The scheme will include the relocation of the Painshill junction bus stops which are located on the on-slip of the southbound carriageway with the bus stop on the off-slip of the northbound carriageway being retained.

5.5.6 At present both bus stops are located in the respective lay-bys on the on and off-slip roads. There are minimal facilities at both stops with no sheltered waiting areas or bus timetable information. Both stops are served by the 715 with northbound services towards Kingston and southbound services towards Guildford. Access to both stops is via footpaths that connect the stops to Painshill Roundabout.

5.5.7 There are also two bus stops located on the A3 between junction 10 and the Ockham Park junction in the vicinity of Wisley Lane.

5.5.8 On the southbound carriageway of the A3, there is a bus stop just to the south of Elm Lane, where there is a short layby for buses serving this stop. This bus stop is currently served by the 715 towards Guildford. There is access to this bus stop via a pedestrian footbridge that connects to Wisley Lane on the opposite side of the A3. At present there is a small sheltered waiting area for passengers at this stop.

5.5.9 On the northbound carriageway there is a bus stop just to the north of Wisley Lane. This bus stop is located on a lay-by which is often used as a rest area for HGVs, which can impact its operation. This bus stop is currently served by the 715 towards Kingston. There is access to this bus stop via a narrow footway which connects to Wisley Lane. There is a small sheltered waiting area for passengers at this stop.

5.5.10 The 715 service provides an important public transport link to RHS Wisley.

5.5.11 As part of the scheme proposals, the bus stops positioned in these lay-bys adjacent to the A3 carriageway are to be closed and there will be a new bus stop for northbound and southbound services provided on Wisley Lane which will require a diversion for the 715 bus route in both directions via the Ockham Park junction and the new Wisley Lane overbridge.

Impact on bus routes

5.5.12 The diversion of the 715 bus route via the Ockham Park junction will result in a small increase in bus journey time. However, the relocation of the bus stops to a new facility on Wisley Lane will reduce the pedestrian walk time to RHS, particularly for those using the southbound service, who will no longer have to negotiate the footbridge to access the 715 service.

5.5.13 There are no proposed changes to the existing bus stops at the Ockham interchange in either direction.

5.5.14 At the Painshill interchange the existing bus stop on the northbound off-slip will be retained but the southbound on-slip bus stop will be relocated further south and positioned at the junction of the proposed Painshill Local Access Road which adjoins the A3 on the southbound on-slip.

5.5.15 The detailed scheme proposals, including the location of the proposed bus stops are shown in the scheme plans (Appendix A).

5.5.16 The C1/C2 bus is not affected by the scheme as it passes through the Painshill junction along the A245. However, the improvements being proposed as part of the scheme to reduce delays on the highway network will be of benefit of bus service efficiency.

5.6 Summary

New provision and enhancement

5.6.1 A new road bridge spanning the widened A3 will be provided just to the south of the end of Redhill Road, linking the access road from Seven Hills Road South to a new two-way local access road running parallel along the south-east side of the A3 as far as Court Close Farm, Heyswood Guides Camp and New Farm. This new link road and bridge will also form part of the NMU network around the Scheme, via a bridleway link to the re-provided NMU route south from Painshill interchange.

5.6.2 A new two-way link road will be provided directly from the east side of the Ockham interchange roundabout along the north-western edge of the Wisley Airfield site before turning north west to rise and cross over the A3 on a new bridge close to the line of Elm Lane. This access ties into the existing level of Wisley Lane beyond the RHS Wisley entrance, which will need to be amended. The existing access to and from Wisley Lane from the northbound A3 will be closed. The new crossing would provide access over the A3 for NMUs and the existing footbridge would be removed.

5.6.3 As part of the scheme, the following PRoW works will be proposed, to ensure that the scheme re–provides or enhances existing NMU routes and connectivity, providing suitable rights of access to the remaining areas of existing Registered Common and Access Land, and to/through the replacement land areas:

- Upgrading the existing equestrian route in the northern quadrant to bridleway status, to connect NMUs at Redhill Road to the bridleway bridge at Clearmount; this will also provide a basis for bridleway links to Areas N1, N2 and N4
- Bridleway connection to this upgraded equestrian route from the local road or bridleway bridge over the A3 by Redhill
- A bridleway/cycleway link connecting the local access road along the east side of the A3 to Painshill junction and to Pointers Road, with a link to the bridge over the A3 to Redhill Road
- A new bridleway bridge across the M25 to the south east of the junction 10 roundabout, with bridleway links to Pointers Road and across Ockham Common (by upgrading the existing equestrian route) to Old Lane
- A bridleway/cycleway link along the south east side of the A3 between the above bridge and Ockham Park junction, with links to the replacement Cockrow bridge, Old Lane, Wisley Lane bridge and Footpaths 14, 13 and 13a
- Connecting the south end of Footpath 9 to the bridleway on Footpath 10 by Hut Hill
- Provision of Pegasus crossings at Ockham interchange to provide safe access under the A3 to the B2215
- Upgrading the existing equestrian route from Clearmount Bridge to bridleway status and connecting it to the replacement for Cockrow Bridge
- Upgrading the existing equestrian route across Ockham Common to bridleway status and connect it to the replacement for Cockrow Bridge
- Upgrading Footpath 7 to bridleway status to provide appropriate connection between two areas of existing Registered Common Land over the replacement Buxton Wood bridge – this will also entail a small realignment onto the farm track on the south side of Buxton Wood Bridge to avoid the existing set of steps.

Impact on pedestrian and cycle routes

5.6.4 The resultant network of PRoW and local road connections provided by the scheme will achieve the scheme objective to support walking and cycling by incorporating safe, convenient, accessible and attractive routes for pedestrians, cyclists and equestrians and improving crossing facilities by providing:

- A discrete route usable by pedestrians, equestrians and cyclists along the A3 corridor between Ockham Park and Painshill junctions that will be set away from the A3 carriageways, will be easier, safer and more attractive to use than the existing roadside shared-surface paths and be maintained to a standard suitable for all NMUs, including road cyclists
- Four new or replacement bridges usable by pedestrians, equestrians and cyclists to cross all four arms of the A3 and M25 near to junction 10 – Cockcrow, Sandpit Hill, Redhill and Clearmount bridges – connected by a network of bridleways or restricted byways, which will remove the severance caused by the existing crossings of these roads at junction 10 and the existing inadequate connection of PRoW to bridges

- A connected PRoW network that provides a right of access from roads or bridleways into and, usually, across all the existing and proposed areas of common land
- A connected PRoW network that provides a right of access from roads, bridleways or footpaths into and, usually, across all the existing and proposed areas of public open space
- A bridleway crossing of the A3 at Wisley Lane, which will remove the partial severance caused by the existing sub-standard footbridge
- Improved facilities usable by pedestrians, equestrians and cyclists to cross under the A3 at Ockham Park junction, which will remove the partial severance caused by the existing arrangements.

Impact on bus routes

5.6.5 The diversion of the 715 bus route via the Ockham Park junction will result in a small increase in bus journey time. However, the relocation of the bus stops to a new facility on Wisley Lane will reduce the pedestrian walk time to RHS Wisley, particularly for those using the southbound service, who will no longer have to negotiate the footbridge to access the 715 service.

5.6.6 There are no proposed changes to the existing bus stops at the Ockham Park junction in either direction.

5.6.7 At the Painshill junction the existing bus stop on the northbound off-slip will be retained but the southbound on-slip bus stop will be relocated further south and positioned at the junction of the proposed Painshill Local Access Road which adjoins the A3 on the southbound on-slip.

5.6.8 The C1/C2 bus not affected by the scheme as it passes through the Painshill junction along the A245. However, the improvements being proposed as part of the scheme to reduce delays on the highway network will be of benefit of bus service efficiency.

6. Current network performance

6.1 Introduction

6.1.1 This chapter provides an overview of the current operation of the road network. It also provides details of peak hour traffic flow outputs from the 2015 base year SATURN strategic highway network assignment model, and the calibration/validation of the base year flows and journey times from the S-Paramics microsimulation model. The S-Paramics model provides a platform for assessing future network performance alongside local junction modelling.

6.2 Observation of network performance

6.2.1 A site visit was undertaken on Wednesday 21 June and Thursday 22 June 2017, covering the morning period of 0600-1000 and the evening period of 1500-1900. The purpose of the site visit was to understand how the network operates during the peak period, in addition to how the demand in the network varies over time.

M25

6.2.2 The M25 is frequently congested, with significant excess travel times during the peak morning and evening hours. From the site visit and use of online travel tools it was possible to identify key areas of congestion which have been replicated in the model to provide the best representation of actual network conditions.

A3

6.2.3 It was observed during the site visit that there was notable congestion in the morning peak, back from the M25 junction 10, along the A3 through Ockham Park junction. When observing this movement, some of the congestion appeared to result from blocking back from the M25 clockwise mainline. Online travel tools indicate that the section of road where Ockham merged onto the A3 is frequently congested. It was observed that this was due to vehicles leaving the A3 at junction 10 slowing down to allow vehicles from Ockham to merge onto the mainline.

Seven Hills/Painshill

6.2.4 Further observations were undertaken at the Seven Hills and Painshill junctions during the site visit and were supported by analysis from online travel tools. In both the morning and evening, congestion was observed on the eastbound approach to Seven Hills junction, extending back some way along Byfleet Road. On the westbound exit from Seven Hills junction there was some congestion generated due to vehicles slowing down as they exited the junction, which caused a shockwave queue back through the junction. This slowing down was sometimes caused by vehicles on Byfleet Road letting vehicles turn out of the side roads. It was observed during the site visit that vehicles queued back from Seven Hills, with the queue almost extending back onto the A3 northbound mainline. Long queues were also observed on Seven Hills Road (north) and on Cobham Bridge.

Ripley

6.2.5 Traffic congestion in Ripley during peak periods was observed to stem from a pinch point on Newark Lane on its approach to its junction with the B2215 Ripley High Street. This has the effect of constraining the two-way flow of traffic into and out of Newark Lane. This impairs the ability of traffic to turn right into Newark Lane from Ripley High Street and in doing so creates a queue of vehicles that can extend beyond the right turn lane, impeding the progress of southbound through-movements on Ripley High Street.

6.3 Overview of observed traffic flows

6.3.1 The western section of the M25 is the busiest in terms of annual average daily traffic flow (AADT) on the entire Strategic Route Network[1]. Information taken from the Highways England WebTRIS database for 2017 provides AADTs (both-ways) of:

- 120,000 vehicles pass through junction 10 along the M25
- 48,000 vehicles turning from the M25 to the A3
- 53,000 vehicles pass through junction 10 along the A3
- 48,000 vehicles turning from the A3 to the M25.

6.3.2 An average of approximately 270,000 vehicles pass through, or turn at, the junction every day.

Reliability

6.3.3 An analysis of Highways England journey time data taken from their Traffic Records Information System (TRIS) dataset was undertaken for investigating the reliability of junction turning movements at Junction 10, as well as on M25 and A3 mainline movements.

6.3.4 Journey time and traffic flow data have been analysed for the morning peak (07:00-08:00) and peak PM (17:00-18:00) hours of 88 days (normal weekdays of April, May, June, September, October 2015), to calculate a Planning Time Index (PTI) for the movements around M25 junction 10. 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. A PTI greater than 2 means that journey times could take twice as long as free flowing conditions.

6.3.5 The analysis[2] 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. It can be seen that journey time reliability is particularly poor at junction 10.

[1] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/610669/tra0303.ods
[2] Traffic Modelling Report: HE551522-ATK-GEN-XX-RP-TR-000003

Link delay

6.3.6 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 junction 10. The delay statistics are expressed as seconds per vehicle per mile (sec/veh/mile).

6.3.7 Highways England does not have an explicit KPI target for delay but lower delay represents better network performance. For the south east of England, the average delay was 8-10 seconds per vehicle per mile in 2016[3]. This value is typically exceeded in the AM and PM peaks on both the A3 and M25 approaches to M25 10, with the A3 northbound between Ockham and M25 experiencing delays in excess of 40 seconds per vehicle per mile. The PTI on the M25 through junction 10 also exceeds the regional average.

6.4 Strategic model validation

6.4.1 The model has been validated as per standard calibration and validation criteria recommended in WebTAG using the acceptability validation criteria in respect of traffic flows and journey time as set out in WebTAG Unit M3.1 (section 3.27) and consistent with Highways England SERTM.

6.4.2 Traffic counts have been validated for total number of vehicles. Traffic flow validation has been undertaken for the average peak hour from 0700-1000 and 1600-1900 and for the inter peak 1000-1600.

6.4.3 A high-level summary of the strategic model calibration and validation is presented in the section 'Strategic Model Calibration / Validation Summary' in Appendix C. Further details are also found in the associated LMVR.

6.4.4 The model shows a good fit with observed data and is therefore considered suitable for forecasting and scheme assessment as per TAG.

6.5 Operational model assessment

S-Paramics microsimulation model

6.5.1 The 2017 base S-Paramics model was coded to reflect observed conditions at the M25 junction 10 and surrounding highway network. The development of the S-Paramics model is described in Section 3.4 of this document.

6.5.2 The S-Paramics model was calibrated to the observed survey flows, with flow validation undertaken using Trafficmaster data. The LMVR for the S-Paramics model details information regarding the model development, in addition to the flow calibration and journey time validation of the model.

Flow calibration

6.5.3 Flow calibration of the operational model has been undertaken for individual hours from 0700-0900 and 1600-1800. The observed flows used for calibration were taken from the surveys.

[3] http://www.orr.gov.uk/__data/assets/pdf_file/0017/23444/benchmarking-highways-England-performance-2016-progress-report.pdf

6.5.4 The results showed that 99% or more of the total turns/links in the model were within the GEH criteria of 5 in the morning peak. In the evening peak 98% or more of the total turns/links were within the GEH criteria of 5. Full calibration results are shown in the LMVR.

Journey time validation

6.5.5 Journey time validation, of the operational model, has been undertaken for individual hours from 0700-0900 and 1600-1800. The observed journey times for this study are based on data collected by Trafficmaster. 18 journey time routes have been analysed as part of the base validation process.

6.5.6 The morning and evening journey times validate well on the M25 and A3 mainlines, with the all mainline routes falling within the specified criteria. The level of validation is greater than the recommended 85% of routes specified in DMRB and is therefore considered to be compliant to industry standards.

6.5.7 The journey time routes used for validation and full validation results are shown in the LMVR.

7. Future network performance

7.1 Introduction

7.1.1 Traffic forecasts for 2022 and 2037 has been prepared using the modelling approach outlined in Section 3 and the validated models summarised in Section 6. Using these models and assumptions 'Do Minimum' (DM) and 'Do Something' (DS) scenarios have been prepared to enable the impacts of the proposed scheme to be evaluated by comparison to the forecast situation without the scheme.

7.1.2 The DM scenario includes only those changes unrelated to the scheme, which are considered more than likely to be in place prior to the respective future year. The DS scenario includes the M25 junction 10 improvement scheme. The local development and transport infrastructure assumptions for these DM and DS scenarios are detailed in Section 3.5.

7.1.3 The strategic model provides the best source of the wider routeing and reassignment of traffic in response to changes to the road network and traffic demand. The local operational junction models (S-Paramics, LinSig and Junctions 9) provide the most robust travel time, delay and operational performance at each junction resulting from the proposed scheme and wider change in traffic re-assignment. Therefore, the traffic flow changes presented are from the strategic model and the peak period network time/delay and operational performance are derived from the operational models. However, the Interpeak operational performance is derived from the strategic model.

7.1.4 The operational performance of the local network and each junction is presented using a range of indicators, which include:

- Average network journey times/delay & average journey time/delay by movement at each junction (S-Paramics)
- Planning Time Index (PTI). PTI is a method of determining the predictability of travel times that aims to measure the additional time (compared to free flow conditions) that drivers need to leave to ensure that they arrive on time. PTI is defined, in this instance, as the average delay / free flow time. A PTI greater than 2 means that journey times could take twice as long as free flowing conditions.
- Level of Service (LoS) (S-Paramics)
- Operational capacity metrics (LinSig and Junctions 9).

Average journey times and delay

7.1.5 Average journey times are calculated by inserting journey time routes into the S-Paramics model, which record the journey times of any vehicles traversing the route. To calculate the average journey time through the junction, the individual journey times are weighted by flow.

7.1.6 The approximate average delay was calculated by running the models with 'free flow' conditions, which meant that there were few vehicles in the network, and the signals were removed, so the resultant journey time is approximately the quickest the vehicle could complete the movement in the model.

Level of service

7.1.7 The average delay results have been used to calculate Level of Service (LoS) values for individual arms and stop lines. The LoS is reported to match standards presented in the Highway Capacity Manual 2010 which uses the letters A to F, with A being the highest level of service and F being the worst. For clarity, the LoS values relate to the following types of condition:

A. Free flow with motorists having a high level of physical and psychological comfort. LoS A generally occurs late at night in urban areas and frequently in rural areas.

B. Reasonably free flow. Motorists still have a high level of physical and psychological comfort.

C. Stable flow, at or near free flow. Most experienced drivers are comfortable, roads remain safely below but efficiently close to capacity, and posted speed is maintained. This is the target LoS for some urban and most rural highways.

D. Approaching unstable flow. Examples are a busy shopping corridor in the middle of a weekday, or a functional urban highway during commuting hours. It is a common goal for urban streets during peak hours, as attaining LoS C would require prohibitive cost and societal impact in bypass roads and lane additions.

E. Unstable flow, operating at capacity. This is a common standard in larger urban areas, where some roadway congestion is inevitable.

F. Forced or breakdown flow. Every vehicle moves in lockstep with the vehicle in front of it, with frequent slowing required. Travel time cannot be predicted, with generally more demand than capacity. A road in a constant traffic jam is at this LoS because LoS is an average or typical service rather than a constant state.

7.1.8 There are LoS definitions to separate between signalised and non-signalised movements/arms. These are shown in Table 7-1, with the definitions based upon delay.

Table 7-1: Level of Service definitions

Level	Signalised delay (secs)		Non-Signalised delay (secs)	
	From	To	From	To
A	0	10	0	10
B	10	20	10	15
C	20	35	15	25
D	35	55	25	35
E	55	80	35	50
F	80		50	

7.1.9 The LoS values for the arms are based on link results, whereas the LoS values for certain movements are based on journey time results. This is to get a more

definitive picture of the delay differences between differing movements at a junction.

7.1.10 The difference in LoS classifications have been calculated to understand the overriding differences between the DM and DS scenarios. A negative value indicates an improvement in LoS in the DS, whilst a positive value indicates a worsening in LoS in the DS. A value of zero indicates that the predicted LoS between the DM and DS is the same.

7.1.11 Table 7-2 shows the colour classification which has been used for the LoS difference results. The colours have been applied based on the LoS of the DS scenario.

Table 7-2: Level of Service colour classification

LoS	Colour Classification
A	Free flow
B	Reasonably free flow
C	Stable flow
D	Approaching unstable flow
E	Unstable flow
F	Forced or breakdown flow

Operational performance metrics

7.1.12 LinSig has been used to assess the M25 junction 10, Painshill/Seven Hills and Ockham Park junctions (with the exception of the 2022 DS scenario). The operational performance of the junctions is presented using the following criteria:

- Practical Reserve Capacity (PRC): The PRC is a measure of how much additional traffic could pass through a junction, whilst maintaining a maximum DoS of 90% on all lanes. The result showed is therefore the lane with the worst DoS of the entire network.
- Degree of Saturation (DoS): this represents the demand to capacity on each approach to the junction. For signalised junctions, the practical capacity of the junction is defined as 90%, whereas values of 100% or more indicates it has exceeded its absolute capacity.

7.1.13 Junctions 9 (ARCADY and PICADY) models have been used to assess the predicted operation of Ockham Park (2022 Do Minimum) and Ripley junctions. The operational performance of the junctions has been assessed for:

- Queue in passenger car units (PCUs)
- Ratio of Flow to Capacity (RFC).

7.1.14 The traffic flows included in the LinSig and Junctions 9 models are directly taken from the strategic highway model assignments. The results from the S-Paramics model at individual junctions will differ from the junction models as the flows in the S-Paramics model are subject to delays elsewhere in the network. For example, vehicles will experience delay travelling through busy junctions and may not arrive at the assessment junction within the same time period.

7.2 Strategic overview

Introduction

7.2.1 It has been assumed that link flow changes on roads with “low” traffic volumes (700 vehicles) can be considered statistically insignificant if the change is within ±100 vehicles. This is consistent with WebTAG/DMRB link traffic flow validation criteria and model standard error. It is assumed that roads with <700 will have a low volume of heavy vehicles so vehicles are equivalent to PCUs.

7.2.2 For links carrying more than 700 vehicles, WebTAG/DMRB recommends that an acceptable model error is within 15%. It is recommended that the change in flow, resulting from the scheme, is considered on a link by link basis depending on the level of congestion and available capacity, rather than define acceptable criteria.

7.2.3 The nature of the strategic model requires some simplification and aggregation of how trips load or join onto the local road network which might not meet resident expectations of travel behaviour. An example is within Ripley. Traffic from this region has the choice, within the model, of joining the road network either on Newark Lane or on Portsmouth Road west of the Newark Lane. This “choice” within the model can result in minor (<50 PCUs) reassignment of trips. There are also some isolated instances where there are very low or zero trip volumes on certain roads. In these instances, this can be attributable to localised loading of trips or localised assignment. In all instances of this type the change in volume on a local road can be considered “statistically insignificant”. This has been presented to and agreed by SCC.

7.2.4 In addition to the above:

- All traffic model flows presented are derived from the strategic transport model, unless stated otherwise and are measured in Passenger Vehicles Units per hour
- Traffic flows plots present increases in traffic as green, decreases in traffic as red. Where plots present different metrics, this is noted in the comments
- For the Strategic Model, unless stated otherwise: AM Peak refers to the average peak hour between 07:00-10:00, and PM Peak refers to the average peak hour between 16:00-19:00. The operational model utilises different peak hours.

Do Minimum strategic overview

7.2.5 Figure 7.1 and Figure 7.2 show the projected change in traffic flows between the 2015 base year and the 2037 DM for the AM and PM peak periods.

7.2.6 There is, in general, expected to be increases in traffic throughout the network, with this primarily focused on the SRN. These figures show some decreases in traffic flow which is indicative of capacity constraints on the network, particularly on the arm outside the M25 at junction 11 in the morning peak and inside the M25 in the PM and on Seven Hills road north in the PM. The routes are expected to be affected by congestion and an increase in opposing/circulatory trips.

Figure 7.1: Traffic flow change: 2037 DM vs 2015 – AM Peak

Figure 7.2: Traffic flow change: 2037 DM vs 2015 – PM Peak

Do-Something strategic overview

7.2.7 Figure 7.3 and Figure 7.4 show the expected change in traffic flow in 2037 due to the scheme, compared to the DM, for the morning and evening periods respectively. The links shown as green indicates an increase in traffic flows with red indicating a reduction. It is expected there will be an increase traffic on the A3, through Seven Hills/Painshill junctions and other links on the SRN with reductions in traffic on most "competing" routes on the local road network, particularly on the approaches to M25 junctions 9, 11 and 12.

7.2.8 In addition, there is expected to be an increase south of junction 11 in both directions in the AM. This is due to a reduction in circulatory traffic from the north (which now utilises an improved M25 junction 10) and hence improves the operational capacity of M25 junction 11.

7.2.9 This section provides an analysis and explanation of the impact of the scheme at a local junction operational level.

Figure 7.3: Traffic flow change: 2037 DS vs 2037 DM – AM Peak

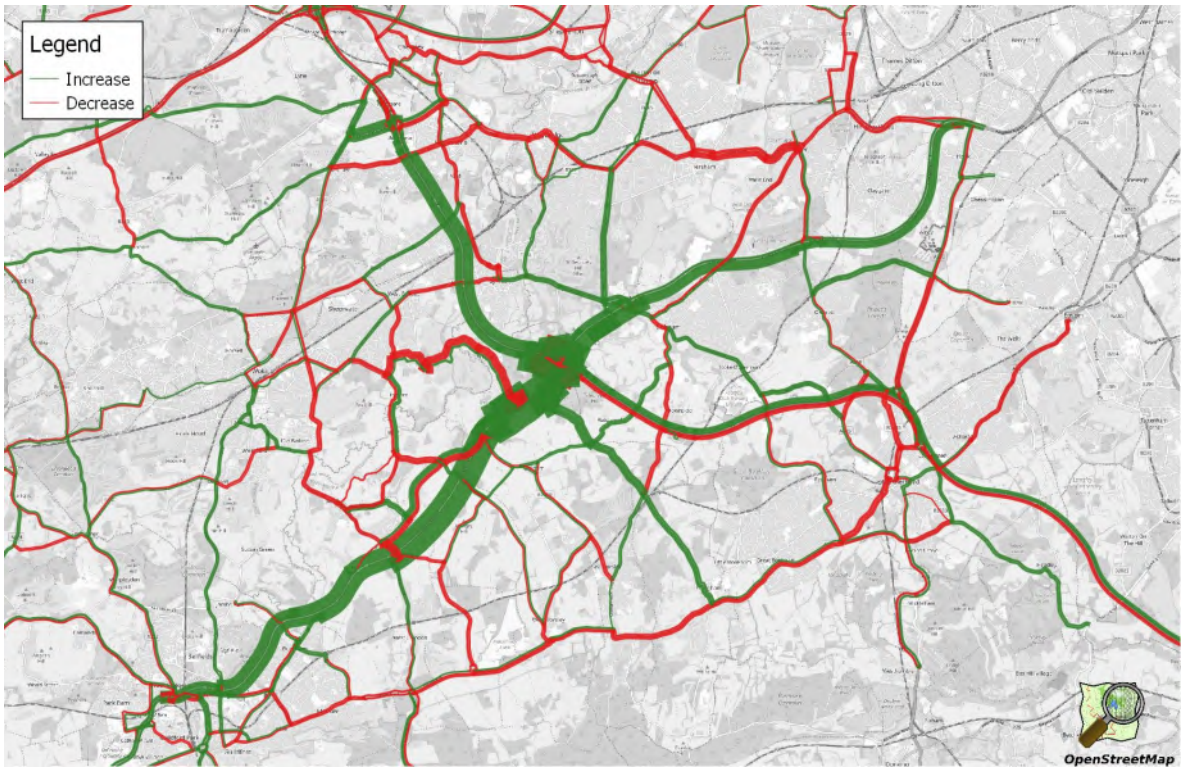
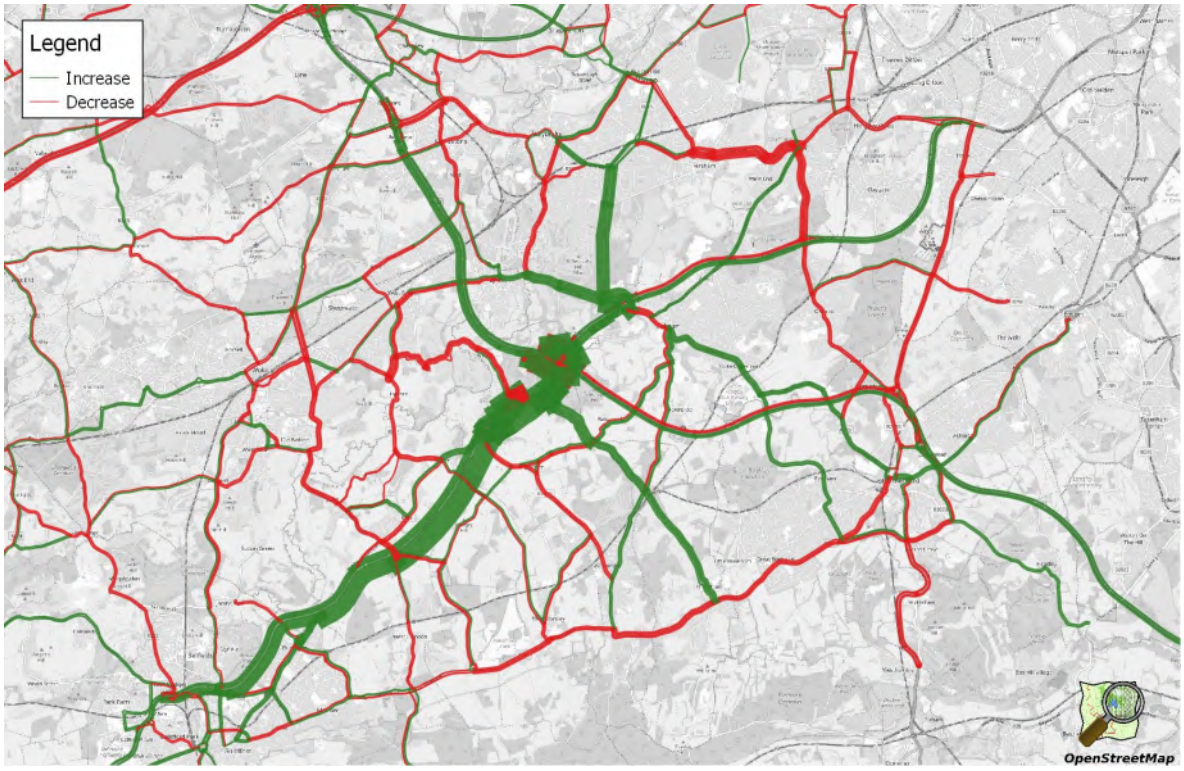


Figure 7.4: Traffic flow change: 2037 DS vs 2037 DM – PM Peak



Network wide statistics – Operational model

7.2.10 Network wide average travel times and delay have been extracted from the S-Paramics micro-simulation model (see section 3.4 and section 6.5). These times represent a weighted average of all trips which travel through the network within the specified time periods.

7.2.11 The average journey time and delay, for all vehicles entering the operational model region (see Figure 3.6) is shown in Table 7-3. This shows that the average journey time over the AM and PM peak hours combined, compared to the DM scenario, is expected to reduce by:

- Nearly 3 minutes in 2022 (from 1 minute in the PM and up to 8 minutes in the AM - reducing overall delay from 6 to 3 minutes) and;
- Over 5 minutes in 2037 (from 1.5 minutes in the PM up to 17 minutes in the AM, reducing delay from 9 to 4 minutes).

7.2.12 The morning peak is expected to show the most congestion and operational issues in the DM. This is primarily a result of the network being unable to cope with the predicted increase in future year demand, particularly at M25 junction 10 and the Painshill/Seven Hills Road junctions which is expected to show persistent issues with traffic exit blocking through to the motorway.

7.2.13 In the DS scenario, the scheme is predicted to improve operational performance and resolve many of the issues on the local network.

7.2.14 The reliability of journeys will increase considerably compared to the DM scenario, with the PTI dropping from over 2.1 in 2037 DM to 0.8 in the 2037 DS.

Table 7-3: Average network journey time and delay (S-Paramics model)

Time Period	2022			2037		
	DM	DS	vs DM	DM	DS	vs DM
0700-0800	9m 52s	8m 4s	-1m 48s	12m 54s	8m 24s	-4m 30s
0800-0900	15m 21s	8m 14s	-7m 53s	25m 51s	8m 48s	-17m 3s
1600-1700	8m 13s	7m 26s	-49s	8m 52s	7m 47s	-1m 5s
1700-1800	8m 17s	7m 26s	-51s	9m 37s	8m 8s	-1m 29s
Peak	10m 22s	7m 47s	-2m 35s	13m 40s	8m 16s	-5m 23s
0700-0800	5m 23s	3m 22s	-2m 1s	8m 25s	3m 42s	-4m 43s
0800-0900	10m 52s	3m 32s	-7m 20s	21m 22s	4m 5s	-17m 17s
1600-1700	4m 1s	2m 58s	-1m 3s	4m 40s	3m 19s	-1m 21s
1700-1800	4m 5s	2m 58s	-1m 7s	5m 25s	3m 40s	-1m 45s
Peak	6m	3m 11s	-2m 49s	9m 18s	3m 41s	-5m 37s
PTI	1.4	0.7		2.1	0.8	

"Peak" is defined as the average peaks between 07:00-09:00 & 16:00-18:00. PTI is the delay / free flow time

7.3 Impact on strategic routes

7.3.1 It is important on safety grounds that traffic joining both the M25 and A3 is adequately channelled into merging area and that diverging traffic should be able to leave the mainline easily without impeding the progress of through traffic. To consider this, the principles of merge/diverge assessment in DMRB TD 22/06 have been applied to the forecast years to determine the merge/diverge layouts required at M25 junction 10, Ockham Park junction and Painshill junction and ascertain whether the minimum requirements has been provided as part of the scheme design.

7.3.2 The merge/diverge assessment is shown in Table 7-4. This indicates that adequate arrangements are proposed at each of the junctions assessed and meet DMRB standards. The full assessment is included in Merge/Diverge Assessment Full Outputs. A brief description (DMRB TD22/06) of each layout is:

- A - Taper Diverge
- B - Parallel Merge
- C - Ghost Island Merge / C - Lane Drop at Taper Diverge
- D - Ghost Island Diverge for Lane Drop/Lane Drop at Parallel Diverge
- E - 2 Lane Drop
- F - Lane Gain with Ghost Island Merge
- G - 2 Lane Gain with Ghost Island

Table 7-4: Scheme (DS) merge / diverge assessment

Junction	Movement	Merge/ Diverge	Motorway/ All Purpose	2022 AM		2022 PM		2037 AM		2037 PM	
				Layout required	Provided ?	Layout required	Provided ?	Layout required	Provided ?	Layout required	Provided ?
M25 J10	M25 WB (CW)	Merge	Motorway	F	Yes	F	Yes	G	Yes	F	Yes
	M25 EB (ACW)	Merge	Motorway	C	Yes	F	Yes	F	Yes	F	Yes
	A3 NB	Merge	All Purpose	F	Yes	F	Yes	F	Yes	F	Yes
	A3 SB	Merge	All Purpose	F	Yes	G	Yes	G	Yes	G	Yes
Ockham	A3 NB	Merge	All Purpose	F	Yes	B	Yes	F	Yes	F	Yes
Painshill	A3 SB	Merge	All Purpose	F	Yes	F	Yes	B	Yes	F	Yes
M25 J10	M25 WB (CW)	Diverge	Motorway	D	Yes	D	Yes	D	Yes	D	Yes
	M25 EB (ACW)	Diverge	Motorway	D	Yes	E	Yes	D	Yes	E	Yes
	A3 NB	Diverge	All Purpose	E	Yes	D	Yes	E	Yes	E	Yes
	A3 SB	Diverge	All Purpose	D	Yes	D	Yes	D	Yes	D	Yes
Ockham	A3 NB	Diverge	All Purpose	A	Yes	C	Yes	C	Yes	C	Yes
Painshill	A3 SB	Diverge	All Purpose	D	Yes	D	Yes	D	Yes	D	Yes

7.4 M25 junction 10

7.4.1 It has been assumed that the design in the DM scenario will remain consistent with the current infrastructure at the junction.

7.4.2 The proposed scheme (see Figure 1.2) is to introduce an elongated roundabout, with an increased number of lanes on the circulatory to improve the capacity of the junction. All left turns at the roundabout are proposed to be free flow, except for the A3 (north) to M25 (east), which is a left turn filter. Having the left turns as free flow reduces the level of traffic using the roundabout signals. This has been modelled in the DS scenario.

7.4.3 A summary of the change in traffic flow, from the strategic model at M25 junction 10, is shown in Table 7-5. A summary of the operational performance of the junction is presented in Table 7-6 and The difference between the DM and DS LoS results is shown in Table 7-2, with Figure 7.5 showing the difference in the 2037 0800-0900 LoS. The image on the left shows the DM and the image on the right shows the DS.

7.4.4 The colours used in the tables relate to the LoS classification of the DS scenario. The results show that in most cases there is an improvement in LoS.

7.4.5 The colour classification shows that the LoS for the DS scenarios are all between A and C in both 2022 and 2037. There are three instances in the 2022 AM peak where there is an increase in the LoS in the DS by 1 classification. These increases are due to differences in signal timings at the junction.

7.4.6 The largest improvement is in the 2022 AM peak for the A3 southbound off-slip. The LoS has improved from an F in the DM to an A in the DS. In addition, in the 2037 AM peak there are significant improvements in the DS model due to a reduction in congestion from the DM scenario, which is as a result of the implementation of the scheme.

7.4.7 Table 7-7 shows outputs from the S-Paramics model. The operational models have utilised the wider reassignment of traffic flows from the strategic highway model.

7.4.8 More detailed operational outputs are found in Appendix E.

7.4.9 Without the scheme, there is expected to be an 11% increase in total daily traffic which travels through M25 junction 10, from 278,000 (modelled in 2015, note marginally higher than observed) to 308,000 in 2022.

7.4.10 In addition, the 2037 total daily traffic flow is forecast to increase by 29% compared with the 2015 base year, to 359,000. For trips which turn at the junction there is expected to be a marginal reduction by 2022, due to capacity constraints on the M25 restricting the number of movements and forcing users to use alternate routes.

7.4.11 In later years, considerable development growth and capacity constraints on the wider network is expected to result in a 14% increase in daily traffic from 106,000 (in 2015) to 121,000 (by 2037).

7.4.12 Over the whole day, by 2037, the scheme is expected to provide capacity for an additional 9,000 trips travelling through the junction. This is an increase from 359,000 in the DM to 368,000 in the DS, with over 14,000 extra trips turning at it (an increase from 121,000 to 135,000). This additional reassignment of traffic

(rather than induced trips) is reducing the burden on competing routes on the local road network, which are also severely congested.

7.4.13 When assessing per hour, the scheme is expected to result in an additional overall capacity for all trips travelling through the junction by 2037 from 500 (PM) to 1,300 (AM) trips. For journeys turning at the junction this increases to an additional 800 (PM) to 2,000 (AM) trips per hour.

7.4.14 Despite this increase in demand, due to both the Local Plan growth and redistributed trips from the local road network because of the scheme's increase in capacity, there are considerable operational and performance benefits for existing and forecast users from the proposed scheme.

Table 7-5: Traffic flows: M25 junction 10 (strategic model)

Peak	Arm	2015	2022		2037	
		Base	DM	DS	DM	DS
AM	Through J10 on M25	7,540	8,690	8,260	9,490	9,040
	from the M25 to A3	3,430	3,410	3,930	3,440	3,870
	Through J10 on A3	4,430	5,100	4,770	5,890	5,700
	from the A3 to M25	3,570	3,230	4,210	3,280	4,840
	Total	18,970	20,430	21,170	22,090	23,450
	% change vs Base		**8%**	**12%**	**16%**	**24%**
IP	Through J10 on M25	7,480	8,450	8,230	9,240	9,130
	from the M25 to A3	3,010	3,190	3,510	3,460	3,760
	Through J10 on A3	3,740	4,180	4,110	5,070	4,950
	from the A3 to M25	3,090	2,820	3,190	3,210	3,730
	Total	17,320	18,640	19,040	20,970	21,570
	% change vs Base		**8%**	**10%**	**21%**	**25%**
PM	Through J10 on M25	8,040	9,360	9,050	9,820	9,580
	from the M25 to A3	3,670	3,640	4,140	3,780	4,110
	Through J10 on A3	4,700	5,210	5,030	5,670	5,640
	from the A3 to M25	3,630	3,260	3,710	3,760	4,270
	Total	20,040	21,480	21,930	23,030	23,600
	% change vs Base		**7%**	**9%**	**15%**	**18%**
AADT	Through J10 on M25	114,640	134,990	131,310	155,130	152,150
	from the M25 to A3	48,500	52,390	57,600	61,380	65,920
	Through J10 on A3	62,450	70,600	68,140	82,720	80,840
	from the A3 to M25	52,570	49,640	56,410	59,680	69,040
	Total	278,170	307,620	313,460	358,910	367,950
	% change vs Base		**11%**	**13%**	**29%**	**32%**

7.4.15 In 2022 DM scenario the junction is predicted to operate under considerable operational stress in all time periods. In the morning peak period, the M25 (west) off-slip, the M25 (east) off-slip and the A3 (north) off-slip are predicted to operate over capacity. The evening peak does not predict operational issues to the same extent as the morning peak, however the results are showing that the junction is predicted to be operating at/above capacity.

7.4.16 By 2037, the additional growth is predicted to further exacerbate the operational and congestion issues. There are predicted to be considerable delays and operational issues, particularly in the morning peak when average delays could reach 5-6 minutes by 2022, increasing to 11-12 minutes by 2037. This delay is a combination of multiple pressures at junction 10 and the operation of Seven Hills junction which is expected to have severe capacity constraint problems and thus block back through to junction 10.

7.4.17 With the scheme, in both 2022 and 2037 the junction is predicted to operate well within capacity, with only minor delays and limited queuing across all arms. This is despite the 900 (PM) to 2,000 (AM) extra vehicles per hour turning (reassigning rather induced traffic) at M25 junction 10, due to the scheme. In both the morning and evening peaks, each arm operates well within operational capacity therefore reducing congestion and improving safety.

7.4.18 In the 2037 AM peak, it is forecast that with the scheme, that average delays would reduce from 12 minutes, to less than two minutes compared to the DM scenario. With the average journey time reducing for these trips from over 15 minutes to just over 4 minutes.

7.4.19 In the 2037 PM peak, vehicles using the junction are predicted to benefit from a reduction in average travel time from 4.5 to 4 minutes, saving 30 seconds compared to the DM scenario.

7.4.20 A key benefit of the scheme is the implementation of free flow/left turn filter lanes which allows for vehicles turning left at the junction to bypass the signals, and therefore any delays associated with the signals. This also reduces the number of vehicles travelling through the signals, which puts less pressure on the circulatory signalised stop-lines.

7.4.21 The elongation of the roundabout allows for an increased capacity for vehicles travelling through the roundabout. The junction model results in Table 7-6 show there are capacity improvements with improved PRC on all arms with the scheme.

Table 7-6: Operational performance: M25 junction 10 (LinSig model)

Peak	Arm	2022		2037	
		DM	DS	DM	DS
AM	PRC %	-18.5	8	-23.6	3.4
	Max DoS	106.6	83.4	111.2	87
PM	PRC %	-11.4	22	-24.7	13.5
	Max DoS	100.3	73.8	112.2	79.3

7.4.22 The difference between the DM and DS LoS results are shown in Table 7-8, with Figure 7.5 showing the difference in the 2037 0800-0900 LoS. The left image shows the DM and the right image shows the DS.

7.4.23 The colours used in the table relate to the LoS classification of the DS scenario. The results show that in most cases there is an improvement in LoS.

7.4.24 The colour classification shows that the LoS for the DS scenarios are all between A and C in both 2022 and 2037. There are three instances in the 2022 morning

peak where there is an increase in the LoS in the DS by 1 classification. These increases arise from differences in signal timings at the junction.

7.4.25 The largest improvement is in the 2022 morning peak for the A3 southbound off-slip. The LoS has improved from an F in the DM to an A in the DS. As shown in the Figure, in the 2037 morning peak there are significant improvements in the DS model due to a reduction in congestion from the DM scenario, which is as a result of the implementation of the scheme.

Table 7-7: Operational Performance: M25 junction 10 (S-Paramics model)

Time Period	2022			2037		
	DM	DS	Change	DM	DS	Change
Average Travel Time (mins/secs)						
0700-0800	5m 27s	4m 29s	-58s	6m 10s	4m 34s	-95s
0800-0900	10m 15s	4m 27s	-5m 48s	15m 38s	4m 37s	-11m 2s
1600-1700	4m 33s	4m	-33s	4m 44s	4m 14s	-30s
1700-1800	4m 27s	3m 58s	-29s	4m 35s	4m 17s	-18s
Peak	6m 1s	4m 14s	-1m 47s	6m 52s	4m 25s	-2m 37s
Average Delay per vehicle (mins/secs)						
0700-0800	2m 38s	1m 38s	-1m	3m 21s	1m 44s	-1m 37s
0800-0900	7m 27s	1m 36s	-5m 51s	12m 50 s	1m 46s	-11m 4s
1600-1700	1m 45s	1m 9s	-36s	1m 56s	1m 23s	-33s
1700-1800	1m 39 s	1m 7s	-31s	1m 46s	1m 26s	-20s
Peak	3m	1m 12s	-1m 48s	3m 52s	1m 24s	-2m 28s

7.4.26 Improvements in the DS are related to the free flow left turns taking traffic away from the signals, thereby reducing the delay on approach to the signals. This also reduces the level of traffic on the roundabout circulatory, thereby reducing the delays on approach to the circulatory stop lines.

Figure 7.5: LoS 2037 0800-0900: M25 junction 10 (Left: DM) (Right: DS)

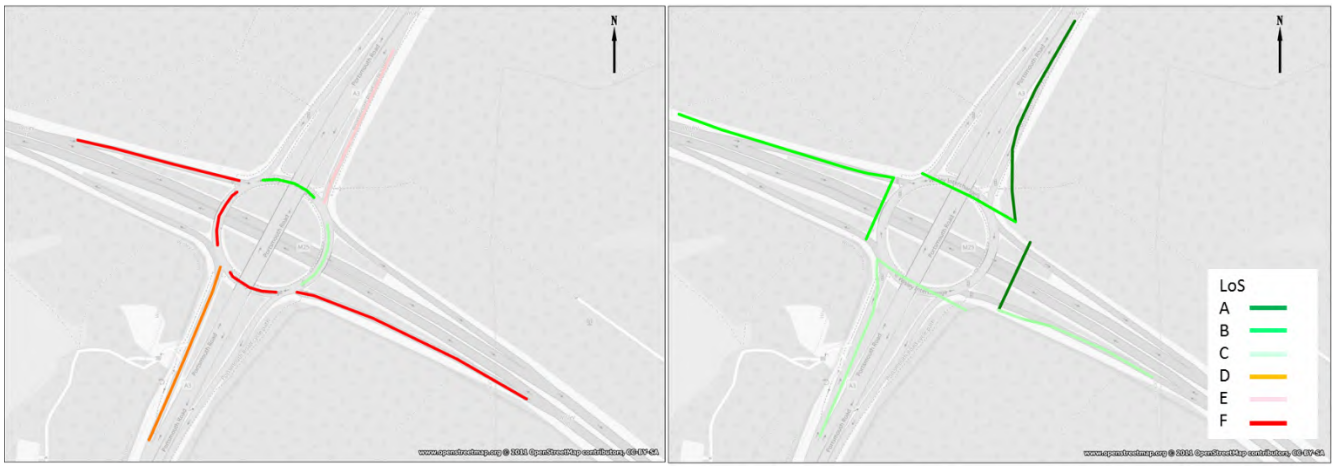


Table 7-8: M25 junction 10 – Level of Service (LoS) difference

Link	0700-0800	0800-0900	1600-1700	1700-1800	0700-0800	0800-0900	1600-1700	1700-1800
	2022				2037			
A3 SBD off-slip	-5	-2	-2	-2	-3	-4	-3	-2
M25 WBD off-slip	-3	-3	-1	-1	-1	-3	-1	-1
A3 NBD off-slip	1	-1	-1	0	0	-1	-1	0
M25 EBD off-slip	-1	-4	-1	0	-2	-4	0	0
Northern Circ	1	1	-1	-1	0	0	-1	-1
Eastern Circ	0	-1	0	0	0	-2	-1	0
Southern Circ	0	-1	0	0	-1	-3	0	0
Western Circ	0	-2	-1	-1	-1	-4	-1	-1

Value refers to change from DM, colour refers to the LoS of the DS

7.4.27 In their response on the TA scoping, SCC requested consideration of scheme impact on the following roads and junctions:

- B2215 Ripley High Street / Newark Lane
- Ockham Interchange
- Old Lane
- Wisley Lane
- Seven Hills / A245 / Painshill

7.5 Ripley High Street / Newark Lane

7.5.1 The Ripley junction is a staggered priority junction with Newark Lane and Rose Lane providing access to Ripley High Street. There are no changes to this junction proposed as part of the scheme.

7.5.2 Traffic congestion in Ripley during peak periods has been observed to stem from a pinch point on Newark Lane on approach to its junction with the B2215 Ripley High Street. This has the effect of constraining the two-way flow of traffic into and out of Newark Lane which impairs the ability of traffic to turn right into Newark Lane from Ripley High Street, and in doing so creates a queue of vehicles that can extend beyond the right turn lane, impeding the progress of southbound through-movements on Ripley High Street.

7.5.3 Traffic often has a choice of routes, for example traffic travelling from Woking to London via the A3 has a choice of travelling either via A245 West Byfleet; Wisley Lane, Newark Lane/Ripley or via Potters Lane. The decision over which route to take is heavily influenced by the journey time and distance of each alternative.

The strategic model assigns trips based on the relative cost of each alternative that is calculated based on a combination of journey times and distances. The strategic model has been interrogated to understand the potential impact of the scheme on traffic through Ripley. As a junction approaches operational capacity, it is expected that delays increase, and traffic will reassign to utilise these routes. The assessment has not considered any mitigation to manage changes in traffic flow through Ripley resulting from the M25 junction 10 scheme.

7.5.4 The strategic nature of the highway assignment model requires it to represent simplified localised loading of traffic. Trips to/from Ripley have a choice of using either Newark Lane or Portsmouth Road. This results in some minor localised reassignment of trips in different model scenarios. However, the volume of traffic is small (<50 PCUs).

7.5.5 Table 7-9 summarises the strategic traffic flows changes through Ripley and the link to Ockham Park interchange which are predicted to change over time both with and without the M25 junction 10 scheme. Overall, there is expected to an increase in demand on nearly all arms in 2022 Do Minimum compared to the base, with a further increase in 2037.

7.5.6 The operational performance changes are summarised in Table 7-10, with the results from the PICADY model showing the maximum RFC values across all arms of the junction. Appendix H shows the results across each individual arm at the junction. The LoS results have been calculated at Ripley, with difference in LoS between the 2037 0800-0900 DM and DS is shown in Figure 7.6. The difference between all DM and DS scenarios is shown in Table 7-12.

7.5.7 The 2022 LoS results show similar values for the DM and DS, which would be expected as the junction has not been changed between the two modelled scenarios. The LoS is between A and C for the DS, except for during the morning peak, where the LoS is D/F on Newark Lane (in both scenarios). On Newark Lane, vehicles in both the DM and DS model struggle to gain access to High Street due to the high northbound opposing flow. Therefore, vehicles queue on Newark Lane until they can find a gap. However, model observations suggest that vehicles do get into the network within the modelled time period.

7.5.8 The 2037 LoS results show similar LoS between the DM and DS for most of the comparisons. As with 2022, the LoS for Newark Lane in the DM and DS is an F due to the high opposing flow through Ripley. For Newark Lane, the LoS does not deteriorate from the DM to the DS. As shown in the figure below, during the 0800-0900 period the DS has an LoS of E for the right turn into Newark Lane due to this high northbound flow.

7.5.9 Table 7-11 provides a summary of the model outputs in Ripley. Full model outputs are found in Appendix H.

7.5.10 Without the M25 junction 10 scheme, between the 2015 base year and 2022, total flow at the junction is predicted to increase by 12% (AM peak) and 17% (PM peak). By 2037 the anticipated trips through the junction without the M25 junction 10 scheme are shown to increase by 36% (AM Peak) and 55% (PM peak) compared with the base year.

7.5.11 The comparison between the 2022 and 2037 DM and DS scenarios predict a marginal change in the level of traffic travelling through Ripley in both the morning and evening peaks, with a 1% increase in the morning peak and a 2% decrease in the evening peak. The with scheme scenario shows that the change on the links is effectively within a “statistically insignificant change” on nearly all arms.

7.5.12 Flows on Newark Lane are expected to decrease by a significant proportion in both the DM and further in the DS, except during the evening peak in the 2022 scenario. There is a clear relationship between flows on Newark Lane and Ripley High Street, with flows on Newark Lane decreasing as flows along Ripley High Street increases. It is evident that flows along the High Street limits the available gaps for traffic on Newark Lane in the AM peak, thereby causing trips to reroute to avoid the longer delay. With the decrease in RFC on Newark Lane, there are increases in RFC on the other arms of the junction.

7.5.13 Between the base year and the 2022 forecast year, the performance of Newark Lane is expected to worsen, approaching operational capacity in the AM peak (see Appendix H. Junction model results – Ripley). By 2037, the strategic model indicates that Newark Lane will operate at or above capacity in the DM scenario due to an increase in traffic on the High Street. This results in traffic re-routeing to avoid the congestion (there is a reduction in demand from 380 to 280 trips). There is a corresponding increase on Wisley Lane (see Table 7-20) as traffic is expected to use this route to join the A3.

7.5.14 The change in infrastructure at Wisley Lane in the DS scenario has a limited impact on trips expected to use Newark Lane and Ripley, as there is expected to be congestion on this route. This is evidenced by the small changes in trips shown in Table 7-9. The strategic model is forecasting that trips will reassign to alternate routes away from Ripley.

7.5.15 Based on the significance criteria, all changes on the links are considered statistically insignificant. The only link which is expected to see a noticeable change is the High Street in 2037 AM. Whilst traffic volume is expected to increase from the south (by ~200 PCUs), there is an equivalent reduction in trips from the north.

7.5.16 The total change in the volume of traffic travelling through Ripley due to the scheme is considered marginal.

Table 7-9: Traffic flows: Ripley (Strategic model)

Peak	Arm	Base 2015	2022				2037			
			DM	vs Base	DS	vs DM	DM	vs Base	DS	vs DM
B2215 High Street / Newark Lane junction										
AM	B2215 High St (s)	605	644	6%	656	2%	804	33%	994	24%
	B2215 High St (n)	743	910	22%	936	3%	1212	63%	996	-18%
	Rose Lane	67	80	19%	75	-6%	144	115 %	169	18%
	Newark Lane	388	379	-2%	367	-3%	284	-27%	247	-13%
	Total	**1803**	**2013**	**12%**	**2033**	**1%**	**2444**	**36%**	**2406**	**-2%**
PM	B2215 High St (s)	476	525	10%	546	4%	787	65%	827	5%
	B2215 High St (n)	695	832	20%	943	13%	1,151	66%	1,179	2%
	Rose Lane	22	37	68%	24	-36%	95	332 %	93	-2%
	Newark Lane	305	354	16%	357	1%	296	-3%	274	-8%
	Total	**1498**	**1748**	**17%**	**1870**	**1%**	**2329**	**55%**	**2373**	**0%**
B2215 Portsmouth Road between Ripley and Ockham Interchange										
AM	B2215 NEbnd	939	1,074	14%	1,067	-1%	1,162	24%	1,328	14%
	B2215 SWbnd	743	910	22%	936	3%	1,212	63%	996	-18%
	Total	**1682**	**1984**	**18%**	**2003**	**1%**	**2374**	**41%**	**2324**	**-2%**
PM	B2215 NEbnd	566	770	36%	814	6%	1,009	78%	1,086	8%
	B2215 SWbnd	695	832	20%	943	13%	1,151	66%	1,179	2%
	Total	**1261**	**1602**	**27%**	**1757**	**10%**	**2160**	**71%**	**2265**	**5%**

7.5.17 There is expected to be operational issues on Newark Lane in both 2022 and 2037 without the scheme. Note that the operation is expected to marginally improve in 2037, this is primarily due to marginal reassignment reduction predicted in the strategic model, due to increased congestion through Ripley. However, there are likely to be some capacity constraints in all future years.

7.5.18 Importantly, this road is not expected to be consistently over-capacity as many vehicles which use this route have several alternatives options including: Wisley Lane, A245 Byfleet Road and M25 junction 11. The last two of these alternative routes are expected to benefit from the proposed scheme changes and hence will provide attractive alternate routeing options which is likely to reduce the impact in Ripley.

7.5.19 Output from the micro-simulation model shows that the scheme results in relatively minimal change in all travel routes through Ripley and there are likely to be benefits in the morning peak due to reduced congestion on the A3.

7.5.20 The change in the trip distribution pattern expected due to the scheme are shown in plots in Appendix H. All trip distribution changes are derived from the operational strategic model cordon of the wider strategic model. This explains the reason for the "edge" of the plot changes.

7.5.21 There is expected to be an increase in trips travelling north-eastbound on Portsmouth Road. In the AM peak there is expected to be a reduction in traffic travelling south-westbound. These changes in distribution are due to the wider scheme changes mentioned previously as well as changes in access from Wisley Lane to the A3 (see section 1.4) and improvements from Old Lane to the A3, which affects Ockham Road North (see section 1.4) and access via Rose Lane.

7.5.22 To summarise, it is predicted that there will be negligible changes in traffic flows through Ripley due to the scheme. A similar overall volume of traffic will continue to pass through Ripley, resulting in limited changes in the operation performance of the local road network.

Table 7-10: Overall Operational performance: Ripley (High Street/Newark Lane junction - junctions 9 model)

Peak	Arm	2022		2037	
		DM	DS	DM	DS
AM	Queue (PCUs)	12.5	5.1	3.8	2.6
	Max RFC (%)	0.95	0.84	0.8	0.72
PM	Queue (PCUs)	3.2	3.8	2.7	5.1
	Max RFC (%)	0.77	0.8	0.73	0.88

Table 7-11: Operational Performance: Ripley (S-Paramics model)

Time Period	2022			2037		
	DM	DS	vs DM	DM	DS	vs DM
Average Travel Time (mins/secs)						
0700-0800	1m 30s	1m 28s	-2s	1m 47s	1m 27s	-20s
0800-0900	1m 19s	1m 16s	-3s	3m 13s	1m 35s	-1m 38s
1600-1700	1m 7s	1m 8s	1s	1m 11s	1m 10s	-1s
1700-1800	1m 11s	1m 13s	2s	1m 23s	1m 22s	-1s
Peak	1m 18s	1m 17s	-1s	1m 54s	1m 24s	-30s
Average Delay per vehicle (mins/secs)						
0700-0800	27s	25s	-2s	44s	24s	-20s
0800-0900	16s	13s	-3s	2m 11s	32s	-1m 39s
1600-1700	4s	5s	1s	8s	7s	-1s
1700-1800	8s	10s	2s	20s	19s	-1s
Peak	13s	12s	-1s	49s	19s	-30s

Figure 7.6: LoS 2037 0800-0900: Ripley (Left: DM) (Right: DS)

Table 7-12: Level of Service: Ripley – Level of Service (LoS) difference

Link	0700-0800	0800-0900	1600-1700	1700-1800	0700-0800	0800-0900	1600-1700	1700-1800
	2022				2037			
Right turn into Newark Lane	1	0	0	0	1	2	0	0
Right turn into Rose lane	0	0	0	0	0	-5	0	2
Newark Lane	0	-1	1	1	0	0	0	0
Rose Lane	0	0	0	0	-1	0	-1	0
Value refers to change from DM, colour refers to the LoS of the DS								

7.5.23 A summary of the main changes in trip patterns, through Ripley, are found to be:

- There is an increase in traffic travelling through Ripley heading anti-clockwise on the M25 as the scheme has improved journey times on this route. This is the main reason for the net increase in demand;
- There is very little net change in trips travelling through Ripley towards the A3 north of junction 10;
- The traffic distribution with the scheme is resulting in a reduction in trips using Newark Lane to access the A3 north of junction 10, with an increase from Portsmouth Road south;
- Traffic which used Newark Lane or Wisley Lane to access London via the A3, is now expected to re-route via junction 11 or the A245 which has replaced traffic demand for trips which are now using junction 10;
- Traffic travelling south-westbound between Ockham interchange and Ripley is expected to decrease in the AM. This is due to the change in access from the airfield site that will result in traffic using Old Lane to travel southbound on the A3, rather than via Ripley; and
- The number of trips on Rose Lane changes very little.

7.6 Ockham Park junction

7.6.1 The proposed scheme design at Ockham Park junction is presented in Figure 1.3. In the 2022 DM the Ockham Park junction layout is to remain the same as the base year. In the 2037 DM the proposed WSP scheme from Wisley Airfield application is assumed to have been implemented, which improves the capacity at the junction and incorporates signals at the A3 (north) off-slip the provides the link to Wisley Airfield and Portsmouth Road.

7.6.2 In the DS scenarios it is proposed that the junction will be fully signalised, with two lanes around the circulatory from the Airfield Link and Ockham Road North, to the A3 northbound on-slip. This increased additional capacity is to accommodate the predicted increase in demand.

7.6.3 In all scenarios, except the 2022 DM, the proposed scheme at Ockham Park includes incorporating an arm to the east of the roundabout to accommodate the Wisley Airfield development. In the DS models it is proposed that Wisley Lane is relocated, so that the access is at Ockham Park rather than the A3. The

proposed junction of Wisley Lane and Wisley Airfield has been modelled as a mini roundabout.

7.6.4 In the DM scenarios, the on and off-slips have been retained as in the base network, however, they have been upgraded as part of the DS scenarios as proposed by the scheme.

7.6.5 The expected change in traffic flow at the Ockham Park junction is presented in Table 7-13. The output shows there are expected to be some large increases in flows on all entry arms in the 2022 and 2037 DM vs base. This is due to locally planned growth and increasing congestion on the wider network. The scheme (included in 2037) results in changes to the operation compared to 2022 resulting in a reduction in demand on the A3 Southbound off-slip, as extra demand circulates past this approach to utilise the new arm.

7.6.6 The new arm is expected to result in a large proportion of the increased demand. In the DS scenario, demand on Ockham Road North is expected to decrease slightly as this arm approaches operational capacity.

7.6.7 The distribution of trips on Ockham Road North is not expected to change significantly as a result of the scheme, which is shown in Figure 7.7 and Figure 7.8

Table 7-13: Traffic flows: Ockham (Strategic model)

Peak	Arm	Base 2015	2022				2037			
			DM	vs Base	DS	vs DM	DM	vs Base	DS	vs DM
AM	Portsmouth Rd	939	1,074	14%	1,067	-1%	1,162	24%	1,328	14%
	A3 SB Off-slip	736	839	14%	864	3%	749	2%	971	30%
	New arm	-	-	-	160	-	828	-	724	-13%
	Ockham Rd N	399	551	38%	584	6%	536	34%	525	-2%
	Total	**2074**	**2,464**	**19%**	**2,675**	**9%**	**3,275**	**58%**	**3,548**	**8%**
PM	Portsmouth Rd	566	770	36%	814	6%	1,009	78%	1,086	8%
	A3 SB Off-slip	746	850	14%	877	3%	915	23%	1,055	15%
	New arm	-	-	-	267	-	347	-	563	62%
	Ockham Rd N	328	447	36%	454	2%	566	73%	505	-11%
	Total	**1640**	**2,067**	**26%**	**2,412**	**17%**	**2,837**	**73%**	**3,209**	**13%**

Figure 7.7: Trip distribution - Ockham Road North 2037 AM

Figure 7.8: Trip distribution - Ockham Road North 2037 PM

7.6.8 The operational performance of the junction is presented in Table 7-14 and the change in average travel time in Table 7-15. More detailed model outputs are found in Appendix G.

7.6.9 The 2022 DS results suggest that during all time periods the junction is predicted to operate within capacity. The maximum DoS is 69.2% in the morning peak, which is on the Ockham Road North approach.

7.6.10 The 2037 DM results predict that the Ockham Park junction will operate over capacity, particularly during the morning peak period. Ockham Road North is predicted to operate significantly above capacity, as the demand on this arm would have to give way to the high circulatory flow. The Airfield access is also predicted to operate at/above capacity.

7.6.11 The 2037 DS model predicts that the junction will operate within capacity. There is a predicted significant improvement in the PRC across all arms compared to the DM scenario. This suggests that the implementation of the scheme and associated additional capacity it brings helps to mitigate the proposed increase in demand.

7.6.12 The assessment of journey times through the Ockham Park junction indicates that in 2022, when comparing the DS and the DM scenarios, journey times though the junction are similar in the morning peak. In 2037, journey times through the junction are predicted to improve in the morning peak, when comparing the DS and the DM scenarios. This is due to the scheme increasing capacity within the local highway network. Table 7-15 summarises the average journey time through Ockham Park junction from the S-Paramics model.

7.6.13 During the evening peak, the introduction of the scheme is predicted to create some minor delays at the Ockham Park junction due to increased traffic throughput at the junction and the introduction of traffic signals on all approaches. The green time for the circulatory has been prioritised in the S-Paramics model, compared to the green splits in the LinSig model, to prevent vehicles queues on the circulatory blocking the junction, which has increased some journey times in the evening peak in the DS scenarios. However, this should be considered in the context of the significant benefits proposed at this junction for more vulnerable road users such as pedestrian and cyclists.

7.6.14 In the S-Paramics model, the interaction of signals at the circulatory stop lines in combination with the significantly higher throughput in DS scenarios, cause an increase in average journey time through the junction during the evening peak periods, which is not reflected in the LinSig model results.

7.6.15 Both the LinSig and S-Paramics model results predict that Ockham Park junction will be able to accommodate future year traffic demand.

Table 7-14: Overall operational performance: Ockham Park junction (LinSig)

Peak	Arm	2022		2037	
		DM*	DS	DM	DS
AM	PRC %	N/A	30.1%	-56.2%	-0.2%
	Max DoS% (RFC for 2022 DM)	49%	69.2%	140.5%	90.2%
PM	PRC %	N/A	33.6%	-9.9%	17.1%
	Max DoS% (RFC for 2022 DM)	38%	67.4%	98.9%	76.9%
*2022 DM value refers to Max RFC from Junctions model					

Table 7-15: Operational performance at Ockham Park junction (S-Paramics)

Time Period	2022			2037		
	DM	DS	vs DM	DM	DS	vs DM
Average Travel Time (mins/secs)						
0700-0800	1m 33s	1m 38s	5s	2m 35s	1m 51s	-44s
0800-0900	1m 30s	1m 34s	4s	4m 19s	1m 48s	-2m 31s
1600-1700	1m 17s	1m 32s	15s	1m 31s	1m 38s	7s
1700-1800	1m 16s	1m 32s	16s	1m 32s	1m 41s	9s
Peak	1m 25s	1m 34s	9s	2m 30s	1m 45s	-45s
Average Delay per vehicle (mins/secs)						
0700-0800	32s	37s	5s	1m 44s	50s	-44s
0800-0900	29s	33s	4s	3m 18s	47s	-2m 31s
1600-1700	15s	31s	16s	30s	37s	7s
1700-1800	15s	31s	16s	31s	40s	9s
Peak	23s	33s	10s	1m 28s	43s	-45s

7.6.16 The LoS results have been calculated at Ockham Park junction, with the difference between the DM and DS shown in Table 7-16. The 2037 0800-0900 LoS for the DM and DS is shown in Figure 7.9. The N/A's in the table represent links that do not exist in the DM scenario (Airfield Link) or where there is no circulatory stop line.

7.6.17 The results show that in both 2022 and 2037 the DS is predicted to have a LoS of between A and C. In 2022 DS scenario there are increases in the LoS compared to the DM scenario. This is due to the incorporation of signals in the DS scenario, which introduces delay. In the DM scenario any delay is due to vehicles giving way to the circulatory flow.

7.6.18 In the 2037 morning peak there are generally improvements in LoS compared to the DS scenario due to the local highway improvements. In the evening peak there are predicted increases in LoS, which are related to the increased

throughput in the DS scenario. Despite this increase in throughput, the LoS is predicted to be between A and C in the DS scenario.

Figure 7.9: LoS 2037 0800-0900: Ockham Park junction (Left: DM) (Right: DS)

Table 7-16: Level of Service: Ockham Park – Level of Service (LoS) difference

Link	0700-0800	0800-0900	1600-1700	1700-1800	0700-0800	0800-0900	1600-1700	1700-1800
	2022				2037			
A3 Southbound off-slip	1	1	1	1	0	-1	0	1
Airfield Link	N/A	N/A	N/A	N/A	0	-3	0	0
Ockham Road North	1	1	2	2	0	-3	2	2
Portsmouth Road	2	1	1	1	-3	-3	1	1
Northern Circulatory	N/A	N/A	N/A	N/A	0	1	1	1
Eastern Circulatory	N/A	N/A	N/A	N/A	0	0	0	0
Southern Circulatory	N/A	N/A	N/A	N/A	-2	-3	0	0

Value refers to change from DM, colour refers to the LoS of the DS

7.7 Old Lane

7.7.1 The scheme design for Old Lane and its junction with the A3 is shown in Figure 1.6. The scheme provides a deceleration lane from the A3 into Old Lane and an acceleration lane for traffic leaving Old Lane to join the A3. The design also removes some opposing traffic on the A3 with Old Lane joining after the lane gain diverges.

7.7.2 Traffic on Old Lane is expected increase in 2037 due to the scheme in combination with locally planned growth. The predicted traffic flows for Old Lane are shown in Table 7-17. The large increases in flow in the 2037 scenarios exiting Old Lane are related to the scheme allowing traffic to safely access the A3 instead of taking alternative routes to access the A3 southbound via Ockham Park junction.

7.7.3 The increase to Old Lane from the A3 predicted in 2037 is a result of traffic being attracted to use Old Lane via the improved deceleration lane and increase in capacity at M25 junction 10 and the A3 mainline. This flow to Old Lane has been attracted from the wider scheme, travelling to destinations such as the proposed Wisley Airfield development and Effingham. There is also an increase in flow on the A3 southbound on-slip, opposing Old Lane. This is due to the wider improvements of the highway network resulting in reassignment of traffic.

Table 7-17: Traffic flows: Old Lane/A3 junction (Strategic Model)

Peak	Arm	Base 2015	2022				2037			
			DM	vs Base	DS	vs DM	DM	vs Base	DS	vs DM
AM	Old Lane to A3	37	25	-32%	70	132%	70	89%	565	707%
	Old Lane from A3	182	231	25%	265	15%	295	62%	417	41%
	A3 slip to A3 slip	2169	2151	-1%	2805	30%	2146	-1%	2667	24%
PM	Old Lane to A3	43	28	-35%	29	4%	39	-9%	337	764%
	Old Lane from A3	177	264	49%	259	2%	495	180%	622	26%
	A3 slip to A3 slip	2120	2088	-2%	2620	25%	2200	4%	2641	20%

7.7.4 The operational performance of the Old Lane/A3 junction is presented in Table 7-21. The average travel time and delay is similar in the DM and DS, with a minor increase in the DS. This is as a result of increased traffic through the junction, in the DS due to the wider scheme attracting traffic to the area, whereas in the DM traffic is not predicted to increase as significantly from the base year.

7.7.5 As previously mentioned, there is an increase in flow on the A3 southbound on-slip in the DS, which opposes vehicles on Old Lane, and leads to a minor increase in delay. Despite an increase in the DS there is still a low level of delay at the junction.

Table 7-18: Operational performance at Old Lane/A3 junction (S-Paramics)

Time Period	2022			2037		
	DM	DS	vs DM	DM	DS	vs DM
Average Travel Time (mins/secs)						
0700-0800	46s	54s	8s	47s	55s	8s
0800-0900	46s	55s	9s	45s	56s	11s
1600-1700	46s	52s	6s	46s	54s	8s
1700-1800	46s	53s	7s	46s	55s	9s
Peak	46s	53s	7s	46s	55s	9s
Average Delay per vehicle (mins/secs)						
0700-0800	1s	12s	11s	1s	13s	12s
0800-0900	1s	13s	12s	1s	14s	13s
1600-1700	1s	10s	9s	1s	13s	12s
1700-1800	1s	12s	1s	1s	13s	12s
Peak	1s	12s	11s	1s	13s	12s

7.7.6 The LoS results have been calculated at Old Lane, with the difference between the DM and DS shown in Table 7-19. The 2037 0800-0900 LoS for the DM and DS is shown in Figure 7.10. The results show that in the DM and DS there is low levels of delay associated with Old Lane. In the DS scenario, more traffic is attracted to Old Lane because of traffic reassignment due to the scheme.

Figure 7.10: LoS 2037 0800-0900: Old Lane/A3 junction (Left: DM) (Right: DS)

Table 7-19: Level of Service: Old Lane/A3

Link	0700-0800	0800-0900	1600-1700	1700-1800	0700-0800	0800-0900	1600-1700	1700-1800
	2022				2037			
Old Lane	0	0	0	0	0	0	0	0

Value refers to change from DM, colour refers to the LoS of the DS

7.8 Wisley Lane

7.8.1 The scheme design for Wisley Lane is found in Figure 1.7 The scheme provides a link from Wisley Lane over the A3 to join onto a new arm of the Ockham Park roundabout. The current left in left out arrangement on the A3 is closed. The locally planned growth is expected to result in a large percentage increase in traffic demand in the DM vs base scenario. However, the absolute demand on this road, during a normal weekday, is well within its operational capacity.

7.8.2 Traffic volumes on Wisley Lane (see Table 7-20) are largely expected to decrease as a result of the scheme. This is due to the road realignment which results in an increased travel distance to the A3, but achieves safety improvements at the junction.

7.8.3 The impact of this change in highway alignment is that traffic is expected to utilise alternate routes, notably A245 Byfleet Road or M25 junction 11, both of which are expected to benefit from wider scheme changes and improvements. The impact on Ripley has been discussed in section 7.5.

Table 7-20: Traffic Flows: Wisley Lane (between A3 and RHS Wisley Gardens - strategic model)

Peak	Arm	Base 2015	2022				2037			
			DM	vs Base	DS	vs DM	DM	vs Base	DS	vs DM
AM	Wisley Lane NW	97	164	69%	156	-5%	197	103 %	230	17%
	Wisley Lane SE	166	213	28%	160	-25%	484	192 %	213	-56%
	Total	263	377	43%	316	-16%	681	159 %	443	-35%
PM	Wisley Lane NW	115	167	45%	166	-1%	190	65%	183	-4%
	Wisley Lane SE	133	291	119 %	267	-8%	450	238 %	353	-22%
	Total	248	458	85%	433	-5%	640	158 %	536	-16%

Table 7-21: Wisley Lane journey distance changes

From	To	Distance change (km)
Wisley Lane	Junction 10	2.5
Junction 10	Wisley Lane	0.1
Wisley Lane	A3 South (via A3)	2.5
	A3 South (via Ripley)	-3.7
A3 South	Wisley Lane (via A3)	5.3
	Wisley Lane (via Ripley)	0.0

7.8.4 The predicted change in travel time and distance to/from Wisley Lane due to the scheme (derived from the strategic model) is presented in Table 7-22.

7.8.5 The impact of the proposed road alignment is that all trips to/from Wisley Lane to/from the A3 south are expected to travel via Ripley. The alternate route, via a U-Turn at M25 junction 10, takes marginally more time.

7.8.6 The closure of the direct Wisley Lane access to the A3 means southbound trips from Wisley Lane are choosing to travel via the new link road into the Ockham Park roundabout and then through Ripley, thereby avoiding the need to U-turn at M25 junction 10. This results in a large journey time improvement compared to either the existing journey via Ripley, as well as the probable 'signed' route via M25 junction 10 in the DS scenario.

7.8.7 Trip times from Wisley Lane to the A3 north are expected to increase slightly, this can be attributed to the longer distance, via the new overbridge access. The change in travel time is not as significant as might be expected due to the reduced congestion at M25 junction 10.

7.8.8 Time–Distance graphs for different route options are presented below for the AM and IP periods. Note that evening peak shows a very similar pattern to the morning and is not included.

7.8.9 Trips from Wisley Gardens to the A3 south would take a U-turn at M25 junction 10 in the DM. The new overbridge, in the DS, and routeing via Ripley reduces the distance by approximately 2km and the journey time by 2-3 mins in the AM peak and by 1 minute in the interpeak.

- Figure 7.11 – Wisley Gardens to A3 South Guildford (2037 AM)
- Figure 7.12– Wisley Gardens to A3 South Guildford (2037 IP)

7.8.10 Trips from Wisley Gardens to the A3 north are only expected to increase by 1 minute due to a significant delay reduction on the approach to M25 junction 10 that offsets the additional journey time from the 2.5 km overbridge route in the DS. In the interpeak, the additional time from the increased distance is expected to be 2.5 minutes.

- Figure 7.13 – Wisley Gardens to A3 North (2037 AM)
- Figure 7.14– Wisley Gardens to A3 North (2037 IP)

7.8.11 Trips from the A3 north to Wisley Gardens are expected to experience a 1-minute reduction in travel time, due to delay reductions at M25 junction 10. In the interpeak this benefit is reduced to 30-40 seconds.

- Figure 7.15 – A3 North to Wisley Gardens (2037 AM)
- Figure 7.16 – A3 North to Wisley Gardens (2037 IP)

7.8.12 Trips from the A3 south to Wisley Gardens are required to route via Ripley or U-turn at M25 junction 10 with the scheme. This results in either a distance or time increase. In the morning peak, travelling via Ripley the journey time will increase from 6 minutes to 12 minutes. The time to travel via a U-Turn at M25 junction 10 will take 15 minutes.

7.8.13 In the interpeak, the journey time will increase from 5 minutes (DM, via A3) to 11 minutes (DS via Ripley) and 12 minutes (DS via M25 junction 10 U-Turn).

- Figure 7.17 – A3 South to Wisley Gardens (2037 AM)
- Figure 7.18 – A3 South to Wisley Gardens (2037 IP)

Table 7-22: Journey time change summary: to/from Wisley Lane (minutes)

From	To	AM			IP			PM		
		DM	DS	vs DM	DM	DS	vs DM	DM	DS	vs DM
2022										
Wisley Lane	A3 N of J10	2.99	4.65	1.66	1.84	4.33	2.48	2.08	4.43	2.35
	M25 CW	3.39	4.24	0.85	2.20	3.92	1.72	2.45	3.99	1.55
	M25 ACW	4.02	5.98	1.97	3.05	5.36	2.31	3.06	5.47	2.41
A3 N of J10	Wisley Lane	4.03	3.69	-0.34	3.58	3.44	-0.15	4.22	3.85	-0.37
M25 CW		8.30	4.50	-3.80	5.26	4.30	-0.96	6.95	4.45	-2.50
M25 ACW		6.91	5.24	-1.67	5.30	4.67	-0.63	6.20	5.06	-1.14
Wisley Lane	A3 South[1]	12.24	10.96	-1.28	9.75	10.08	0.33	10.70	10.72	0.02
A3 South	Wisley[1]	5.37	11.48	6.11	5.13	9.85	4.72	5.42	9.96	4.54
2037										
Wisley Lane	A3 N of J10	4.09	5.05	0.96	2.10	4.6	2.49	2.74	4.61	1.87
	M25 CW	4.82	4.69	-0.13	2.75	4.16	1.41	3.37	4.15	0.78
	M25 ACW	5.02	8.17	3.15	3.23	6.08	2.85	4.01	5.82	1.81
A3 N of J10	Wisley Lane	5.66	4.43	-1.23	4.69	4.10	-0.58	4.97	4.54	-0.43
M25 CW		10.62	5.83	-4.79	6.85	5.38	-1.47	9.10	5.53	-3.57
M25 ACW		9.64	6.57	-3.07	7.72	5.39	-2.33	9.42	5.91	-3.51
Wisley Lane	A3 South[1]	14.93	12.20	-2.73	11.76	10.95	-0.81	14.35	11.82	-2.53
A3 South	Wisley[1]	5.97	12.41	6.44	5.33	10.64	5.31	5.62	11.41	5.79

1. Via A3 in DM, via Ripley in DS

Figure 7.11: Distance-Time: Wisley Gardens to A3 South Guildford (2037 AM)

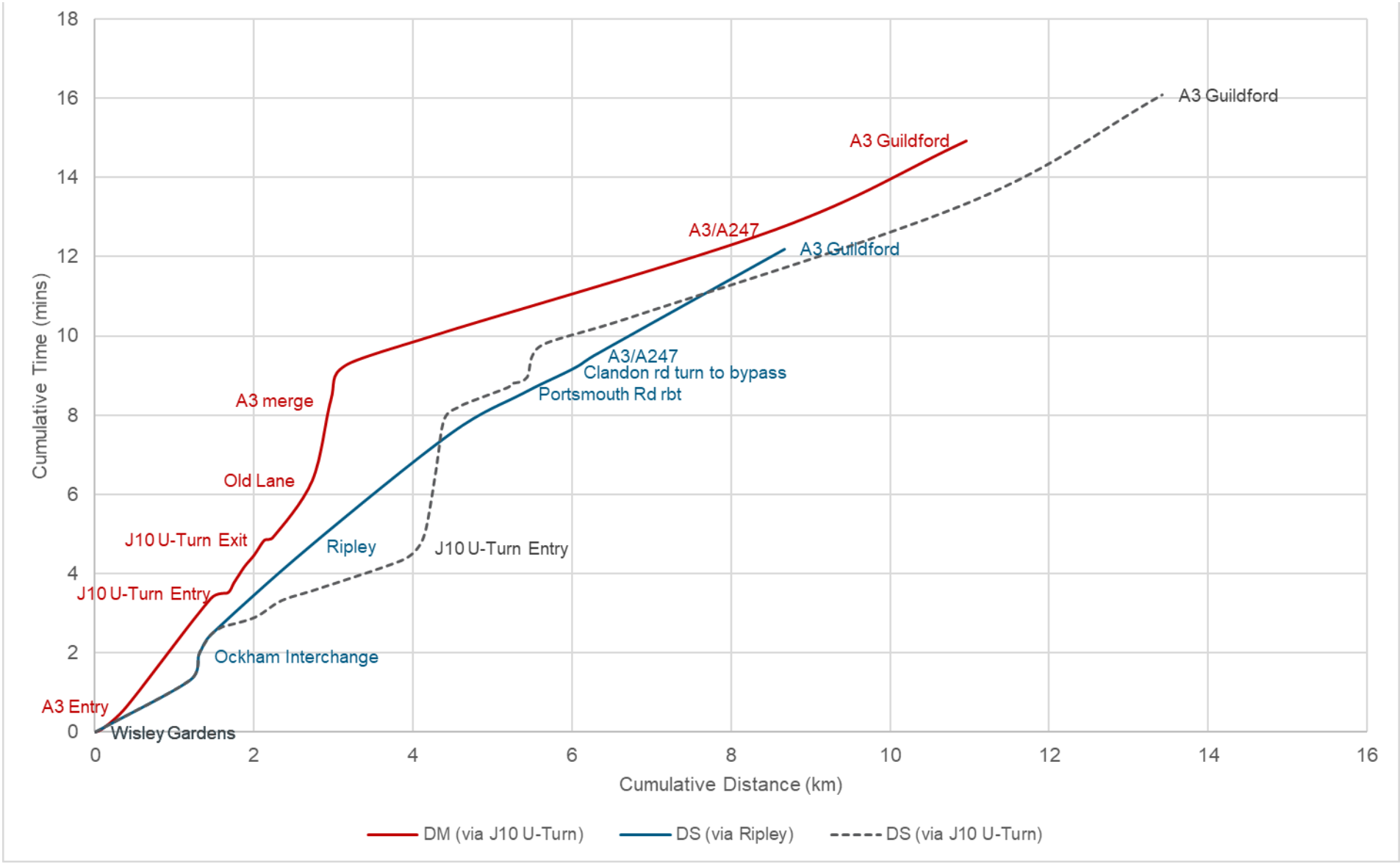


Figure 7.12: Distance-Time: Wisley Gardens to A3 South Guildford (2037 IP)

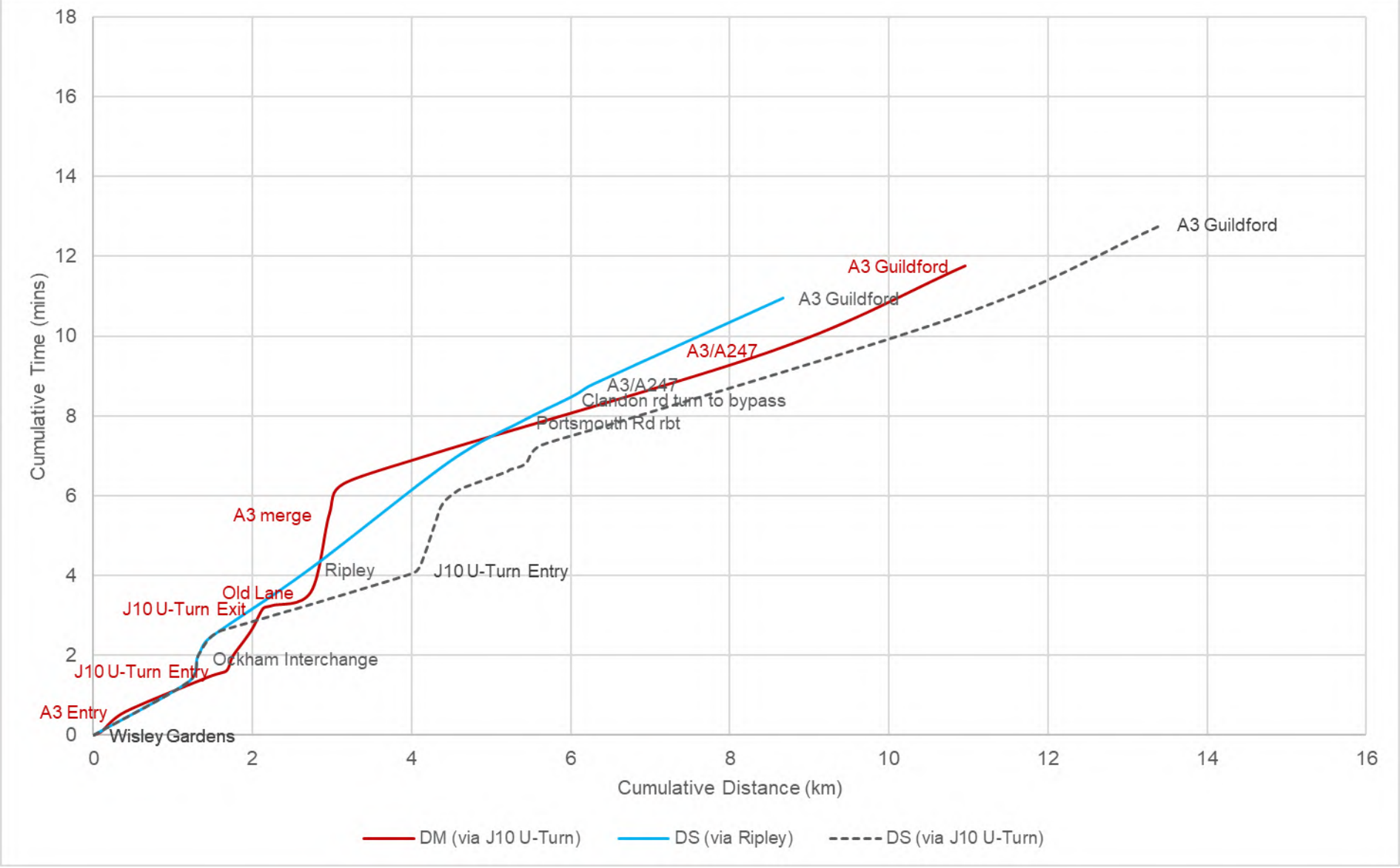


Figure 7.13: Distance-Time: Wisley Gardens to A3 North (2037 AM)

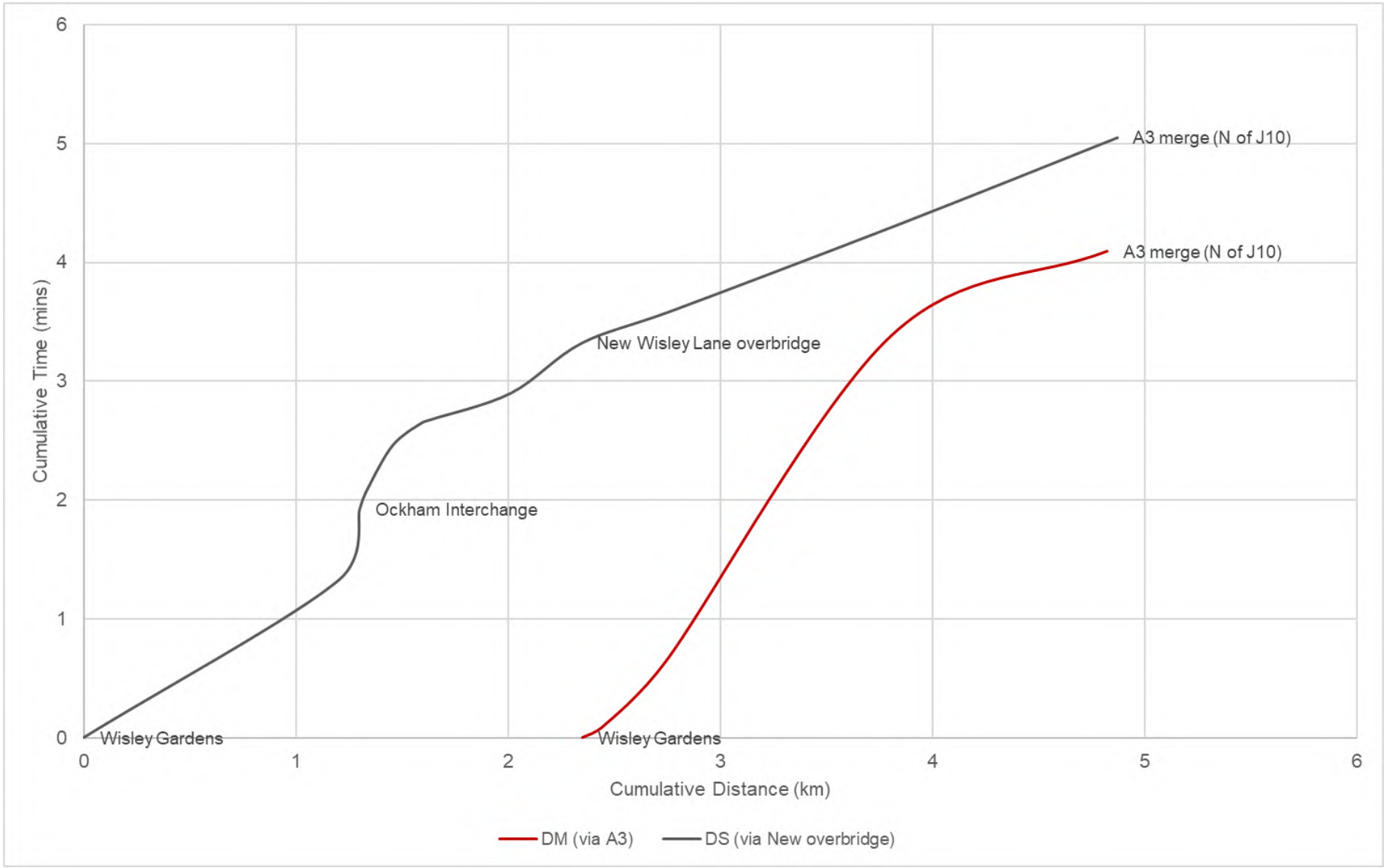


Figure 7.14: Distance-Time: Wisley Gardens to A3 South Guildford (2037 IP)

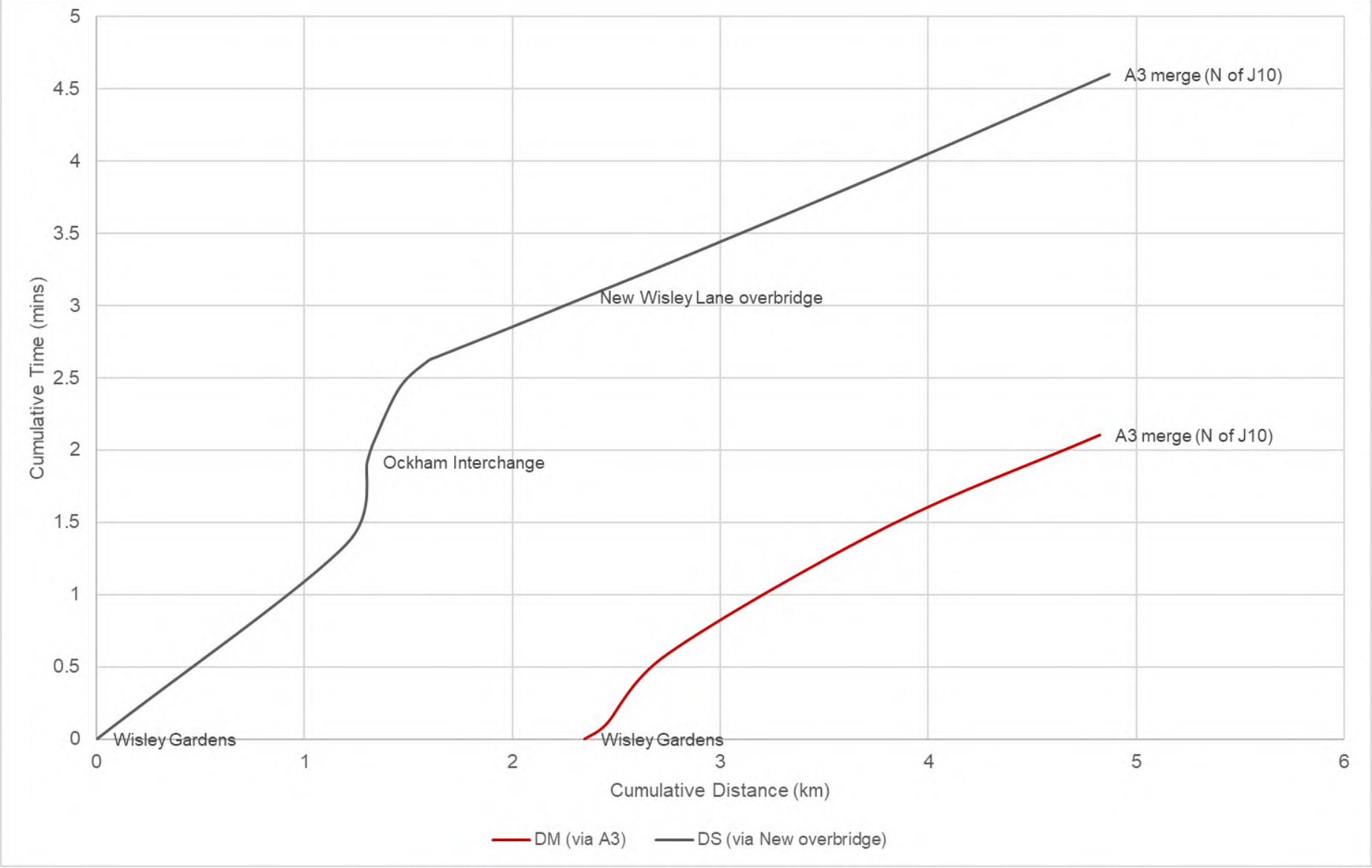


Figure 7.15: Distance-Time: A3 North to Wisley Gardens (2037 AM)

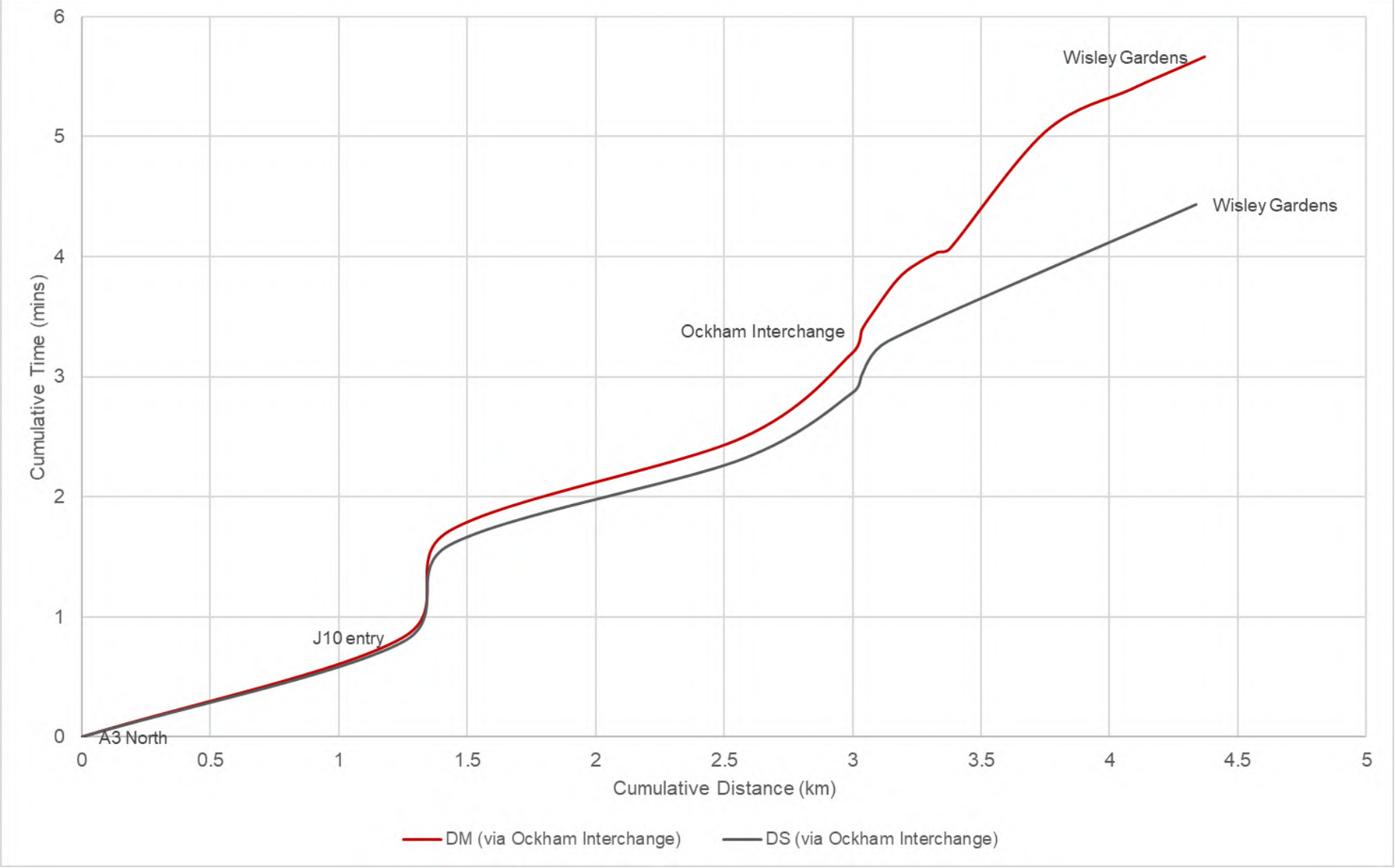


Figure 7.16: Distance-Time: A3 North to Wisley Gardens (2037 IP)

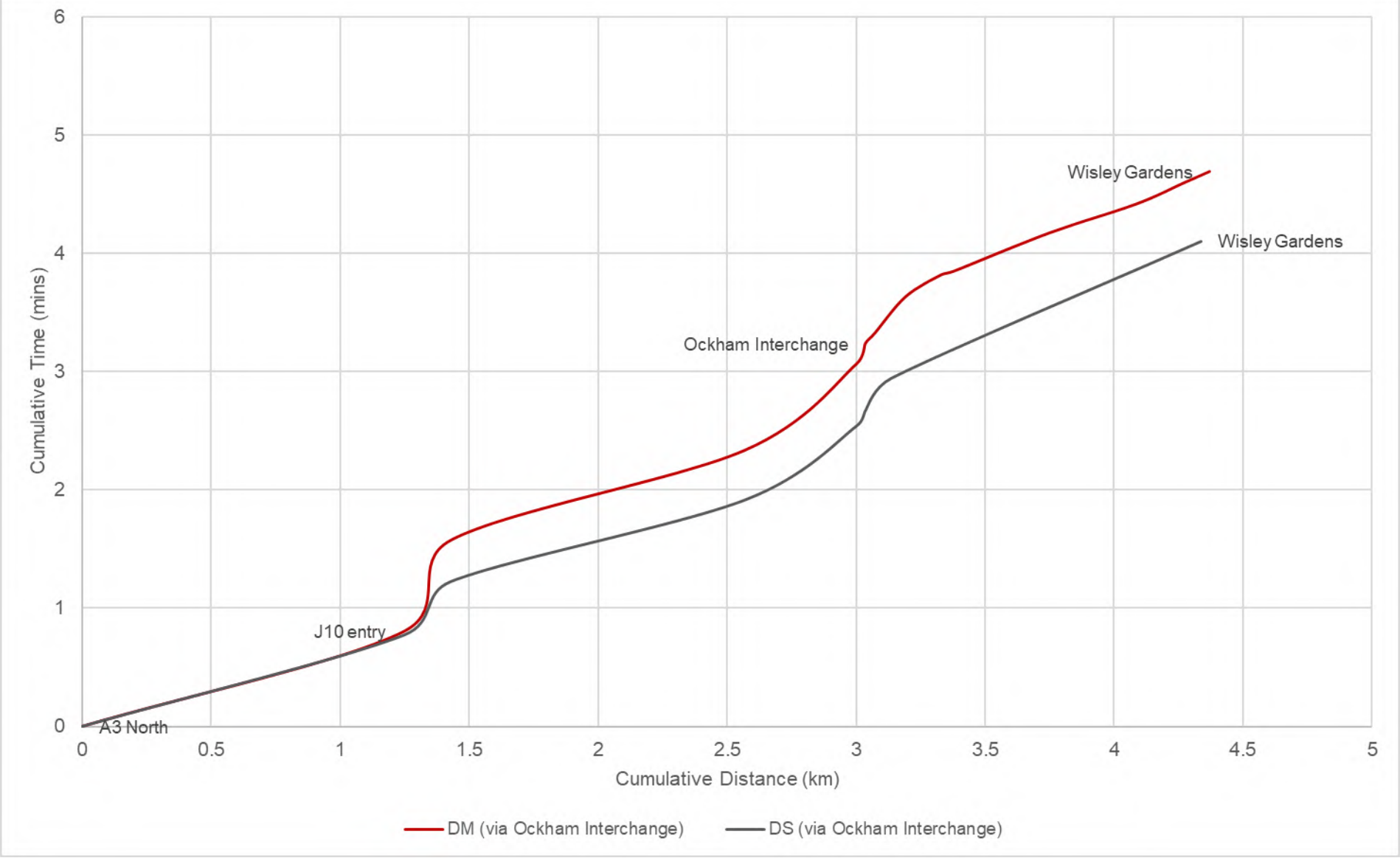


Figure 7.17: Distance-Time: A3 South to Wisley Gardens (2037 AM)

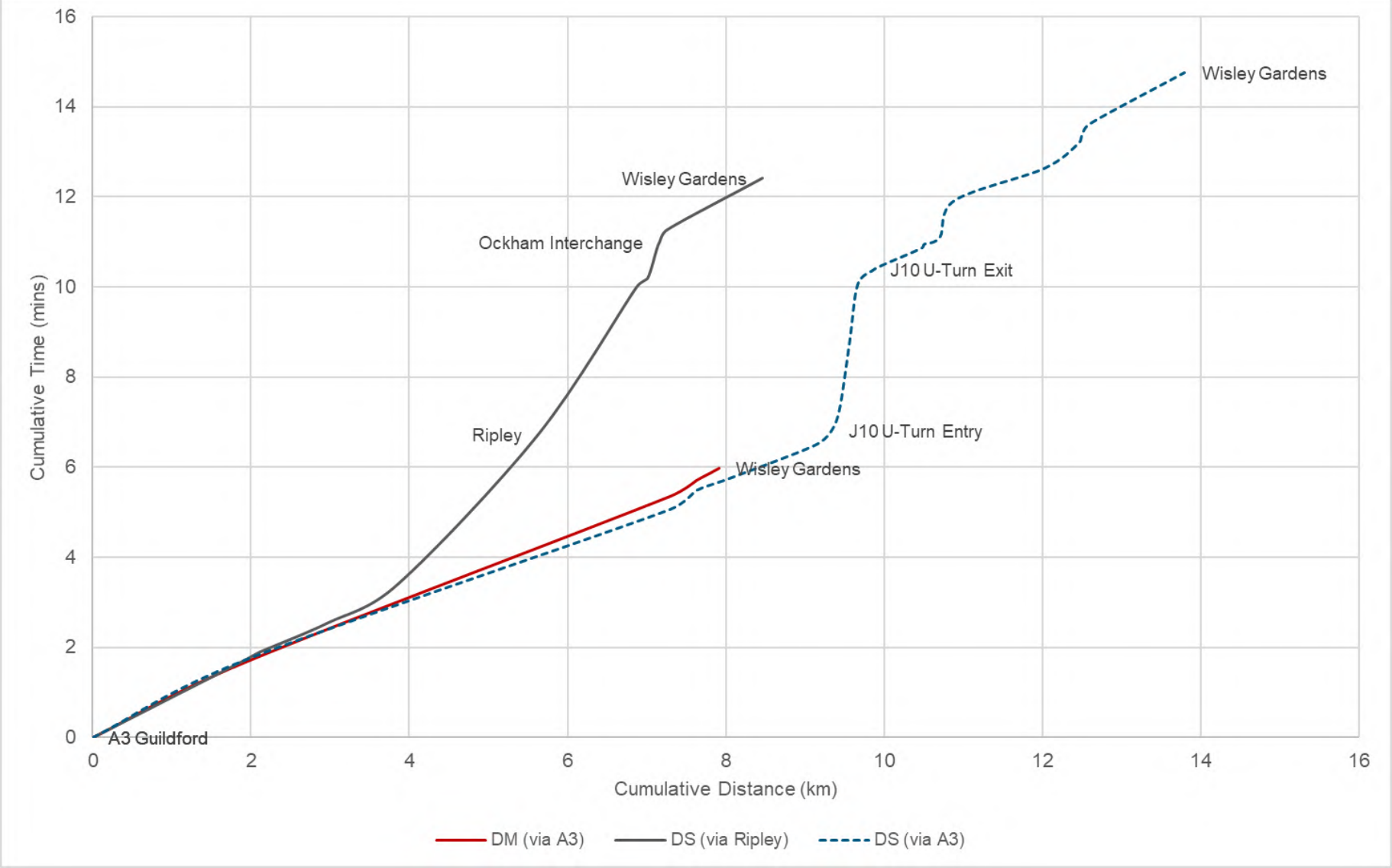
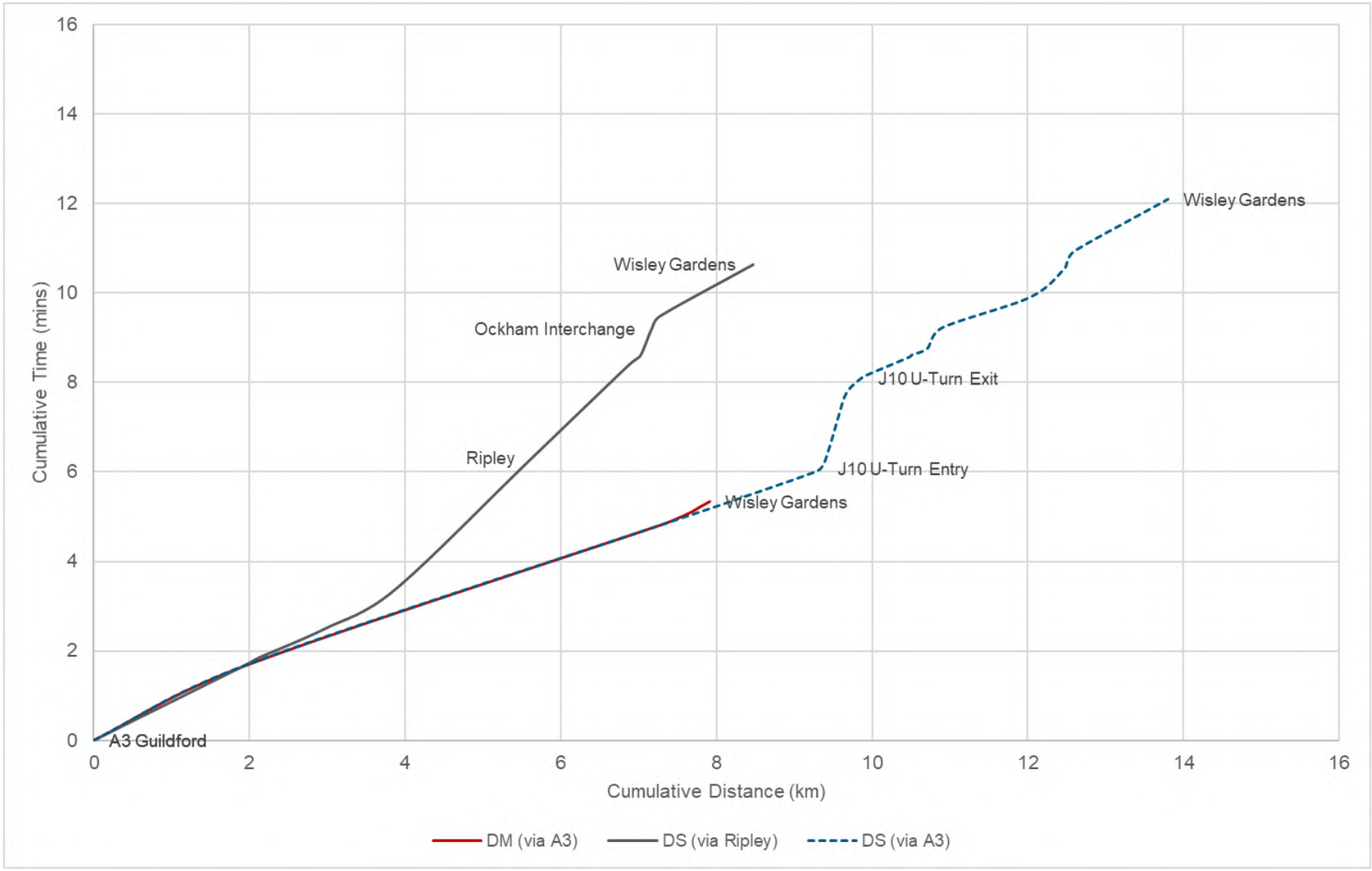


Figure 7.18: Distance-Time: A3 South to Wisley Gardens (2037 IP)



7.8.14 The trip distribution of traffic using Wisley Lane is expected to change due to the scheme and the resultant changes in travel time are shown in Figure 7.19 and Figure 7.20. Trips travelling northbound on Wisley Lane to RHS from “the south”, would be expected to travel on the A3 in the DM scenario. The scheme results in all trips routeing via Ripley as this route becomes the fastest option.

7.8.15 Trips southbound on Wisley Lane from RHS are expected to be much lower (see Table 7-20). The main reduction will be on the A3 northbound and on the M25 anticlockwise as alternate routes via M25 junction 11 become more feasible.

Figure 7.19: Trip Distribution: Wisley Lane (between RHS and A3) 2037 AM

Figure 7.20 Trip Distribution: Wisley Lane (between RHS and A3) 2037 PM

7.9 Seven Hills/Painshill junctions

7.9.1 In the DM scenario, the layout of Painshill/Seven Hills junctions remain the same as in the base network. Painshill and Seven Hills junctions have been modelled in one LinSig model due to the proximity of the two junctions. However, the results are presented separately.

7.9.2 The proposed scheme (see Figure 1.4) involves incorporating a free-flow left turn from the A3 northbound off-slip onto Byfleet Road, and from Byfleet Road onto the A3 northbound on-slip. As part of the scheme, the access to and from Feltonfleet School is taken from Seven Hills Road (south). The right turn from Byfleet Road (west) to Feltonfleet School has been removed, meaning that vehicles travelling from the west of Seven Hills will have to complete a U-turn at Painshill. The scheme proposes an increase in the number of lanes on Byfleet Road between Painshill and Seven Hills, to three lanes in each direction. The Seven Hills (south) approach has two lanes (one long lane and a flare), with the Seven Hills (north) approach modelled as one lane, but with an improved turning radius. The movements from Seven Hills (north) have been limited to left turn only. Signal timings have been optimised accordingly to accommodate the proposed demand.

7.9.3 The traffic flows (see Table 7-23) from the strategic highway model were used to inform the both the Painshill/Seven Hills LinSig and S-Paramics models and the signal timings were optimised accordingly. Detailed localised changes, which were not included in the strategic model, were contained within the operational model.

7.9.4 The strategic model does not have a separate zone to represent Feltonfleet School, and therefore using the S-Paramics base demand for the school, demand was reassigned to ensure that it was not being double counted in the S-Paramics model.

7.9.5 The scheme provides greater operational efficiency which allows for greater volume of trips to use the junction and removes delay from alternate routes.

Table 7-23: Traffic Flows: Painshill/Seven Hills junction (Strategic Model)

Peak	Arm	Base 2015	2022				2037			
			DM	vs Base	DS	vs DM	DM	vs Base	DS	vs DM
Seven Hills junction										
AM	A245 E (Byfleet)	974	1,119	15%	1,165	4%	1,231	26%	1,303	6%
	Seven Hills Rd N	770	702	-9%	725	3%	680	-12%	735	8%
	A245W(Painshill)	2,017	2,023	0%	2,221	10%	2,108	5%	2,231	6%
	Total	3811	3899	2%	4166	7%	4082	7%	4333	6%
PM	A245 E (Byfleet)	1,043	1,119	7%	1,157	3%	1,297	24%	1,458	12%
	Seven Hills Rd N	725	631	-13%	699	11%	615	-15%	736	20%
	A245W(Painshill)	1,791	1,818	2%	1,891	4%	1,565	-13%	1,890	21%
	Total	3559	3568	0%	3747	5%	3477	-2%	4084	17%
Painshill junction										
AM	A3NB off-slip	1,531	1,417	-7%	1,400	-1%	1,449	-5%	1,637	13%
	A245W(SevenHills)	1,612	1,645	2%	1,719	4%	1,685	5%	1,816	8%
	A3 SB off-slip	595	778	31%	838	8%	924	55%	697	-25%
	A245 E (Cobham)	1,080	1,113	3%	1,169	5%	1,131	5%	1,178	4%
	Total	4,818	4,953	3%	5,126	3%	5,189	8%	5,328	3%
PM	A3NB off-slip	1,253	1,345	7%	1,330	-1%	1,347	8%	1,466	9%
	A245W(SevenHills)	1,647	1,653	0%	1,758	6%	1,788	9%	2,065	15%
	A3 SB off-slip	541	522	-4%	572	10%	416	-23%	474	14%
	A245 E (Cobham)	1,173	1,146	-2%	1,216	6%	1,255	7%	1,196	-5%
	Total	4,614	4,666	1%	4,876	5%	4,806	4%	5,201	8%

7.9.6 The overall operational performance of the Painshill/Seven Hills junctions is summarised in Table 7-24 (LinSig model). The change in travel time, from the micro-simulation model, is presented in Table 7-25. More detailed model output is found in Appendix F.

7.9.7 The junction has very limited PRC and several approach lanes are expected to be under operational stress in all time periods in the DM, which include:

- A3 (south) off-slip,
- Byfleet Road and Cobham bridge circulatory,
- A245 Byfleet Road (west), and
- Feltonfleet School (which is required to give way to a high volume of traffic).

7.9.8 The junction is expected to benefit from the free flow left turn from the A3 (south) towards the Seven Hills junction, and the increased number of lanes between Painshill and Seven Hills junctions. There is a marked improvement in the predicted overall PRC when compared against the DM. The proposed scheme significantly reduces the number of approach lanes which are under operational stress and considerably reduces the overall PRC of the junction. There are no approach lanes which exceed capacity.

7.9.9 The results predict a noticeable improvement in the average journey time through the junction in all scenarios. In the morning peak the average delay is expected to reduce from 5 minutes in the DM scenario to 1.5 minutes in the DS scenario and from nearly 3 minutes (DM) to 1.5 minutes (DS) during the evening peak period.

7.9.10 This improvement is primarily for the following trip movements:

- Westbound movements on Byfleet Road (east) at Seven Hills junction benefit from an additional lane between Painshill and Seven Hills junctions and can also receive more green time due to operational effectiveness due to a reduced number of signal stages. This arm is no longer expected to block back to Painshill junction, which creates major operational issues in the DM scenario.
- This westbound benefit at Seven Hills is also combined with the free flow left turn on the A3 (south) off-slip at Painshill, which reduces delay on this movement and at the signalised stop line
- Byfleet Road (west), which receives benefits as there are fewer signal stages in the DS scenario, so therefore there is less lost time to inter-greens and red time. Moreover, there is an additional ahead lane for traffic travelling eastbound. This benefit is in conjunction with the alternate routes for traffic from Woking which previously may have used Newark Lane or Wisley Lane to access London
- Trips from Feltonfleet School are predicted to have significant benefits. In the DM scenario, these trips struggled to gain access to Byfleet Road as they are required to give way to a high opposing flow. The scheme design transfers these vehicles onto Seven Hills Road (south), which is signalled controlled, and provides a consistent opportunity to exit the area.
- These benefits work in combination to improve the operation of the other approach arms

7.9.11 Trips from Seven Hills Road (north) to Seven Hills Road (south), Feltonfleet School and Byfleet Road (west) are expected to have a disbenefit because these vehicles must undertake a U-Turn at Painshill with the scheme, and therefore the trip distance is longer than in the DM scenario. This is considered acceptable as the wider benefits provided by the scheme more than offset this localised disbenefit.

Table 7-24: Operational performance: Painshill/Seven Hills junctions (LinSig)

Peak	Arm	2022		2037	
		DM	DS	DM	DS
Seven Hills junction					
AM	PRC %	-57.5	-3.6	-54.1	-5.9
	Max DoS	141.7	93.3	138.7	95.3
PM	PRC %	-43.7	11.4	-46.6	-0.3
	Max DoS	129.3	80.8	132	90.3
Painshill junction					
AM	PRC %	-19.9	-3.7	-43.7	-2.3
	Max DoS	107.9	93.3	129.3	92
PM	PRC %	-24.1	2.4	-19.1	-2.5
	Max DoS	111.7	87.9	107.2	92.2

Table 7-25: Operational performance: Painshill/Seven Hills junctions (S-Paramics)

Time Period	2022			2037		
	DM	DS	vs DM	DM	DS	vs DM
Average Journey time (mins)						
0700-0800	4m 37s	3m 11s	-1m 26s	5m 22s	3m 5s	-2m 17s
0800-0900	6m 23s	3m 9s	-3m 14s	6m 33s	3m 4s	-3m 29s
1600-1700	3m 52s	2m 51s	-1m 1s	4m 21s	3m 2s	-1m 19s
1700-1800	3m 51s	2m 49s	-1m 2s	4m 19s	3m 6s	-1m 13s
Peak	4m 39s	3m	-1m 39s	5m 7s	3m 4s	-2m 3s
Average delay per vehicle (secs)						
0700-0800	3m 5s	1m 36s	-1m 29s	3m 51s	1m 30s	-2m 21s
0800-0900	4m 51s	1m 34s	-3m 17s	5m 1s	1m 29s	-3 m 33s
1600-1700	2m 21s	1m 16s	-1m 4s	2m 49s	1m 27s	-1m 22s
1700-1800	2m 20s	1m 14s	-1m 6s	2m 47s	1m 31s	-1m 16s
Peak	3m 9s	1m 27s	-1m 42s	3m 35s	1m 29s	-2m 6s

7.9.12 The LoS results have been calculated at Painshill and Seven Hills, the difference between the DM and DS is shown in Table 7-26 and Table 7-27 for 2022 and 2037 respectively. The difference between the DM and DS 2037 0800-0900 is shown in Figure 7.21.

7.9.13 The results show that in most cases there is an improvement in LoS with the DS when compared against the DM.

7.9.14 In 2022 there are generally predicted improvements in the DS at Painshill junction. There is a worsening in the 0800-0900 period for the Byfleet Road eastbound approach which is due to signal timings. However, vehicles do not block back to Seven Hills junction. In 2037 there is a worsening in LoS on the A3 southbound off-slip due to the high demand opposing this arm, which requires more green time, at the expense of the off-slip. All the circulatory stop lines in 2022 and 2037 have an LoS in the DS of between A and C.

7.9.15 At Seven Hills junction, there are generally improvements in LoS due to the scheme. In 2022 and 2037 there is worsening on Seven Hills Road (north) and Seven Hills Road (south), which is due to the signal timings. Due to the high through movements at the junction, more green time is required than for the side arms to the junction. The LoS for several of the stop lines are between D and F at Seven Hills. This is because the junction requires a cycle time of 120 seconds to maximise capacity, but this increases delay for all approaches compared to that for a lower cycle time. Despite this, all approaches are predicted to be within capacity in the DS scenarios.

Figure 7.21: LoS Measurements (08:00 – 09:00 2037 DS): Painshill/Seven Hills junctions

Table 7-26: Level of Service 2022 Do Something - Painshill/Seven Hills junction

		0700-0800	0800-0900	1600-1700	1700-1800
Painshill	A3 Southbound off-slip	-1	-2	1	1
	Cobham Bridge Westbound Approach	0	0	-1	-1
	A3 Northbound off-slip	-3	-4	0	0
	Byfleet Road Eastbound Approach	1	2	-1	0
	Northern Circulatory	0	-1	-1	0
	Eastern Circulatory	0	1	0	0
	Southern Circulatory	-1	-1	0	1
	Western Circulatory	1	1	-1	-1
Seven Hills	Seven Hills North	2	0	-3	0
	Byfleet Road (east- ahead)	-1	-3	0	0
	Byfleet Road (east-right turn)	0	-2	0	0
	Seven Hills Road South	0	1	0	0
	Byfleet Road (west)	-3	-3	-3	-3
	Feltonfleet Access	-5	-5	-5	-5
Value refers to change from DM, colour refers to the LoS of the Do Something					

Table 7-27: Level of Service 2037 Do Something - Painshill/Seven Hills

		0700-0800	0800-0900	1600-1700	1700-1800
Painshill	A3 Southbound off-slip	1	1	3	1
	Cobham Bridge Westbound Approach	0	0	-1	0
	A3 Northbound off-slip	-3	-3	-1	-1
	Byfleet Road Eastbound Approach	0	0	0	1
	Northern Circulatory	-1	-1	-1	0
	Eastern Circulatory	0	0	0	0
	Southern Circulatory	0	0	1	2
	Western Circulatory	1	1	-1	0
Seven	Seven Hills North	2	1	-2	1

		0700-0800	0800-0900	1600-1700	1700-1800
Hills	Byfleet Road (east- ahead)	-2	-2	0	0
	Byfleet Road (east-right turn)	1	-1	0	1
	Seven Hills Road South	0	1	1	0
	Byfleet Road (west)	-3	-3	-3	-3
	Feltonfleet Access	-5	-5	-5	-5

Value refers to change from DM, colour refers to the LoS of the Do Something

7.10 Summary of operational impacts

Overview

7.10.1 The scheme is expected to result in an increase in traffic on the A3 and other links on the Strategic Road Network (SRN) with reductions in traffic on "competing" routes, particularly on the approaches to M25 junction 9 and 11 and many local roads in the region. The plots in Figure 7.3 and Figure 7.4 present the change in traffic flow due to the scheme.

7.10.2 The average travel time for all vehicles entering the operational model region (see Figure 3.6) are expected to improve considerably with the scheme compared to without it. With reductions of up to 8 minutes and 1 minute in the 2022 AM and PM peak periods respectively and up to 18 minutes and 1 minute in the 2037 AM and PM peak periods respectively.

M25 junction 10

7.10.3 Without the scheme, there is expected to be an 11% increase in total daily traffic which travels through M25 junction 10, from 278,000 (modelled in 2015, note marginally higher than observed) to 308,000 (by 2022) and a 29% increase to 359,000 (by 2037). For trips which turn at the junction there is expected to be a marginal reduction by 2022, due to capacity constraints on the M25 restricting these movements and forcing them to use alternate routes. In later years, considerable development growth and capacity constraints on the wider network is expected to result in a 14% increase in daily traffic flow from 106,000 (in 2015) to 121,000 (by 2037).

7.10.4 In 2022, the junction is predicted to operate under considerable operational stress in all time periods in the DM scenario. In the morning peak period the M25 (west) off-slip, the M25 (east) off-slip and the A3 (north) off-slip is predicted to operate over-capacity. The evening peak does not predict operational issues to the same extent as the morning peak, however the results show that the junction is predicted to be operating at/above capacity.

7.10.5 By 2037, the additional growth is predicted to further exacerbate the operational and congestion issues in the DM scenario. There are predicted to be considerable delays and operational issues, particularly in the morning peak

when average delays could reach 5-6 minutes by 2022 increasing to 11-12 minutes by 2037. This delay is a combination of multiple pressures at M25 junction 10 and the operation of Seven Hills junction which is expected to have severe capacity constraint problems and thus block back through to M25 junction 10.

7.10.6 The proposed scheme is expected to alleviate traffic congestion at the junction and considerably improve its operation. One of the main benefits of the scheme is the implementation of free flow/left turn filter lanes which allows for vehicles turning left at the junction to bypass the signals, and therefore any delays associated with the signals. This also reduces the number of vehicles travelling through the signals, which puts less pressure on the circulatory signalised stop lines. The elongation of the roundabout allows for an increased capacity for vehicles travelling through the roundabout. As can be seen from the results, these scheme benefits, in addition to improvements at the Seven Hills/Painshill junctions, generates predicted operational improvement at the M25 junction 10.

7.10.7 The inclusion of the free flow left turns significantly reduces the amount of traffic using the signals and therefore the signals can be optimised more efficiently. There are also improvements in journey times for the free flow left turns as these movements are not affected by the delay associated with the signals.

7.10.8 By 2037, the scheme is expected to provide capacity for an additional 9,000 daily trips through the junction (an increase from 359,000 DM to 368,000 DS) with over 14,000 extra trips turning at it (an increase from 121,000 DM to 135,000 DS). This additional reassignment of traffic (rather than induced trips) is reducing the burden on competing routes, which are also severely congested.

7.10.9 With the scheme, in both 2022 & 2037 the junction is predicted to operate well within capacity, with only minor delays and limited queuing across all arms. This is despite the 900 (PM) to 2,000 (AM) extra vehicles per hour turning (reassigning rather induced) at M25 junction 10 due to the scheme. In both the morning and evening peaks, each arm operates well within operational capacity, which will reduce congestion and should improve road safety.

Ripley junction

7.10.10 The Ripley junction is a staggered priority junction with Newark Lane and Rose Lane providing access to Ripley High Street. There are no changes to this junction proposed as part of the scheme.

7.10.11 Traffic congestion in Ripley during peak periods has been observed to stem from a pinch point on Newark Lane on approach to its junction with the B2215 Ripley High Street. This has the effect of constraining the two-way flow of traffic into and out of Newark Lane, which impairs the ability of traffic to turn right into Newark Lane from Ripley High Street. In doing so, this creates a queue of vehicles that can extend beyond the right turn lane, impeding the progress of southbound through-movements on Ripley High Street.

7.10.12 Traffic often has a choice of routes, for example traffic travelling from Woking to London via the A3 has the choice of travelling either via A245 West Byfleet; Wisley Lane, Newark Lane/Ripley or via Potters Lane. The decision over which route to take is heavily influenced by the journey time and distance of each alternative.

7.10.13 A comparison between the 2022 and 2037 DM and DS scenarios predict a marginal change in the level of traffic travelling through Ripley in both the morning and evening peaks, with a 1% increase in the morning peak and a 7% increase in the evening peak. The DS scenario shows that the change on the links is effectively within a “statistically insignificant change” on nearly all arms.

7.10.14 It is evident that high traffic flows along the High Street limits the available gaps for traffic on Newark Lane.

7.10.15 The results show little difference between the operational performance of Ripley in the DM and DS scenarios.

7.10.16 The change in infrastructure at Wisley Lane in the DS scenario has limited impact on trips expected to use Newark Lane and Ripley, as trips are expected to use alternate routes (such as an improved access on Byfleet road and M25 junction 11, which benefits from the improved M25 junction 10)

7.10.17 The main conclusion is that the impact of the scheme on Ripley is minimal with small changes in traffic flows. A similar overall volume of traffic will continue to drive through Ripley and there is predicted to be limited operational change.

Ockham Park junction

7.10.18 In the 2022 DM scenario the modelling results indicate that the Ockham Park junction is predicted to operate within capacity in both the morning and evening peak. With partial signal controls introduced, the 2037 DM results predict that the Ockham Park junction will operate above capacity, particularly in the morning peak period.

7.10.19 With the introduction of a fully signalised Ockham Park junction in the DS scenario, it is predicted that the junction will operate within capacity. Therefore, the scheme is predicted to provide a significant improvement to capacity to accommodate the proposed future level of demand.

7.10.20 The assessment of journey times through the Ockham Park junction indicates that in 2022 there are minor increases in journey time with the scheme compared to the DM scenario. This is related to the inclusion of signals as part of the scheme, which are not included in the DM scenario. In 2037, journey times through the junction are predicted to improve in the morning peak, when comparing the DS and the DM scenarios, due to congestion in the 2037 DM scenario.

7.10.21 During the evening peak, the introduction of the scheme is predicted to create some minor delays at the Ockham Park junction due to increased traffic throughput at the junction. However, this should be considered in the context of the significant benefits proposed at this junction for more vulnerable road users such as pedestrian and cyclists.

7.10.22 Analysis shows that the change in traffic flows on Ockham Road North due to the scheme are predicted to be no greater than around one PCU per minute, which is unlikely to have a significant impact on the operation of the Ockham Road North link.

Old Lane

7.10.23 It is predicted that as part of the wider scheme more trips will be attracted to use Old Lane, with the acceleration and deceleration lane allowing vehicles to access and exit the on-slip more easily and safely. The increased flows are predicted to turn into Old Lane to travel to the proposed Wisley Airfield development. In addition, the combined improvements at M25 junction 10, and the Old Lane access make this route more attractive for vehicles travelling towards Effingham.

Wisley Lane

7.10.24 Traffic volumes on Wisley Lane are generally expected to decrease as a result of the scheme, this is due to the road realignment to improve road safety but increases the travel distance for trips to/from the A3.

7.10.25 The impact of this change is that traffic is expected to utilise alternate routes, notably A245 Byfleet Road or M25 junction 11, both of which are expected to benefit from wider scheme changes and improvements.

7.10.26 Trips from Wisley Gardens to the A3 south would make a U-Turn at M25 junction 10 in the DM scenario. The new overbridge, in the DS scenario, and routeing via Ripley reduces the distance by 2km and journey times by 2-3 mins in the AM peak and by 1 minute in the inter-peak.

7.10.27 Trips from Wisley Gardens to the A3 north are only expected to increase by 1 minute due to a significant delay reduction on the approach to M25 junction 10 that offsets the additional journey time from the 2.5 km overbridge route in the DS. In the interpeak, the additional time from the increased distance is expected to be 2.5 minutes.

7.10.28 Trips from the A3 to Wisley Gardens are expected to experience a 1 minute reduction in travel time, due to delay reductions at M25 junction 10. In the interpeak this benefit is reduced to 30-40 seconds.

7.10.29 With the scheme, trips from the A3 South to Wisley Gardens are required to route via Ripley or U-Turn at M25 junction 10. This results in either a distance or time increase. Journey times travelling via Ripley in the morning peak will increase from 6 minutes to 12 minutes. The time to travel via a U-Turn at M25 junction 10 will take 15 minutes.

7.10.30 In the interpeak, the time will increase from 5 minutes (DM, via A3) to 11 minutes (DS via Ripley) and 12 minutes (DS via M25 junction 10 U-Turn).

7.10.31 These changes are considered acceptable given the safety benefits of the new road alignment.

Painshill/Seven Hills Road junctions

7.10.32 The DM modelling results suggest that the Painshill/Seven Hills Road junctions are predicted to operate over capacity in all modelled scenarios, with the morning peak predicted to have greater level of total delay than in the evening peak.

7.10.33 In the 2037 morning peak the S-Paramics model predicts that there would be queueing back from the Seven Hills junction into the rest of the network, which would have a negative impact on the operation of the rest of the network.

7.10.34 The implementation of the scheme is predicted to provide significant benefit on journey times and delays through the junction. The incorporation of three lanes between Painshill and Seven Hills junctions allow for greater stacking capacity between the two junctions, in addition for three ahead lanes from the Byfleet Road eastbound approach through the Seven Hills junction. Feltonfleet School benefits from vehicles not having to give way to the heavy demand on Byfleet Road and is controlled by signals. There is a significant benefit associated with the changes in signal staging. In the DS arrangement, only three stages are required, which allows for more green time to be allocated to the traffic movements at Seven Hills junction.

7.11 Construction impacts

7.11.1 This section sets out the provisional plan for construction phasing and provides an estimate of construction traffic by phase. Construction of the works will be supported by a Traffic Management Plan that will set out proposed traffic management measures including details on construction compounds, carriageway and slip lane closures and traffic and NMU diversion routes.

7.11.2 The construction programme is estimated to run for just over three years with a target start date of Winter 2020, which would see construction running to the end of 2023. It is noted that a 2022 opening year has been assumed for traffic modelling purposes.

7.11.3 When traffic modelling was commenced, the forecast year of opening was October 2020. However, following more detailed scheduling of construction works, the forecast year of opening is now anticipated to be 2022. The modelling years have not been changed as traffic growth between 2020 and 2022 is not considered to be materially different enough to alter the conclusions derived from the traffic modelling. Furthermore, HE's recently appointed Delivery Partner may find efficiencies and deliver the scheme in a shorter timeframe.

Construction Phasing

7.11.4 The scheme has been split into two main sections comprising the M25 junction 10 interchange and A3 widening from Ockham to Painshill.

7.11.5 Construction of the M25 junction 10 interchange is anticipated to be carried out in five phases as described below:

- Phase 1: Temporary slip road construction;
- Phase 2: New slip road construction & start constructing new bridges over M25 & construct the inside lanes of the new roundabout
- Phase 3: Continue new bridges construction over M25 & construct the outside lanes of the new roundabout & start removal of temporary slip roads
- Phase 4: Continue removal of temporary slip roads & NMU overbridge finishes & Demolition of existing M25 junction 10 Overbridges & Landscaping
- Phase 5: Commissioning and demobilisation.

7.11.6 Widening of the A3 Ockham to Painshill is anticipated to be carried out in five phases as described below:

- Phase 1: Northbound and southbound widening from 3 lanes to 4 lanes - Ockham Park junction to M25 junction 10; Redhill bridge construction
- Phase 2: Northbound and southbound widening from 3 lanes to 4 lanes - M25 junction 10 to Painshill junction; A3 pavement reconstruction
- Phase 3: A3 re-surfacing (starting at Ockham Park junction and follow to Painshill junction)
- Phase 4: Finishes & Landscaping
- Phase 5: Commissioning and demobilisation.

Construction Traffic

7.11.7 Based on the current programme of works, it is estimated that 300-645 HGV movements a day will occur at peak earthworks periods (March to October) as illustrated in Figure 7.22.

7.11.8 For non-earthworks period (November to February) the expectation is around 100-220 movements a day, depending on the activities that are being carried out simultaneously.

7.11.9 It should be noted that these figures are based on broad assumptions and are subject to significant refinement by contractors once appointed. They should therefore be only used as an indicative guide to construction traffic levels.

Figure 7.22: Estimated total construction HGV movements per day

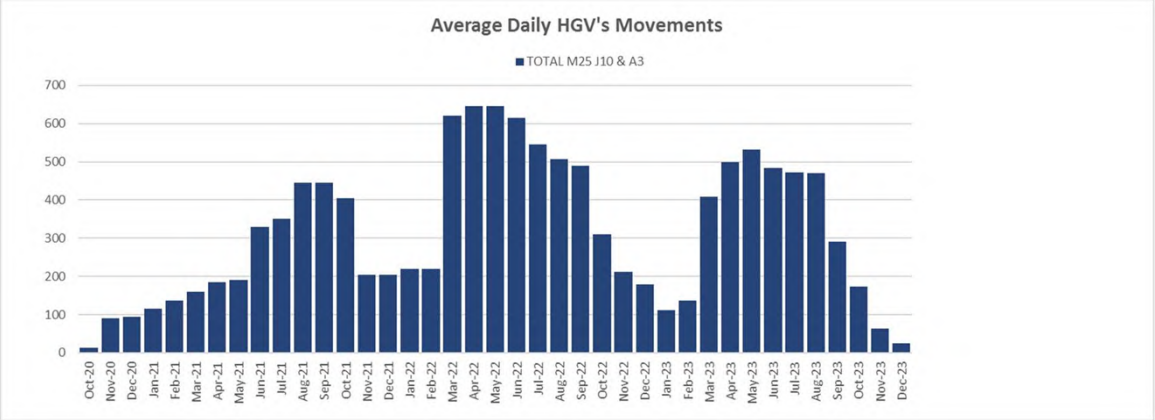


Figure 7.23: Estimated HGV movements per day by construction phase

		2020			2021											2022												2023											
		OCT	NOV	DEZ	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEZ	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEZ	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEZ
M25	Phase 0	7	45	47	58	68	80	92	95	88	5																													
	Phase 1									8	25	250	250	250	132	132	144	86	254	227	150	150	60																	
	Phase 2																	1	128	250	252	289	430	426	278	192	160		28												
	Phase 3																									4	4		4	24	138	138	210	86	78	78	6				
	Phase 4																													2	126	256	260	260	256	186	134	130	20	
	Phase 5																																			12	12	12	12
A3	Phase 0	7	45	47	58	68	80	92	95	88	5																													
	Phase 1									146	315	196	196	154	72	72	76	134	363	288	243	164	88																	
	Phase 2																	2	2	2	48	108	76	64	32	16	16		80	110	144	106	62	6						
	Phase 3																																	132	138	80				
	Phase 4																																			126	126	20	20	
	Phase 5																																			12	12	12	12
TOTAL		14	90	94	116	136	160	184	190	330	350	446	446	404	204	204	220	220	620	645	645	614	545	506	490	310	212	180	112	136	408	500	532	484	472	470	290	174	64	24

Figure 7.24: Estimated HGV movements per day for M25 junction works

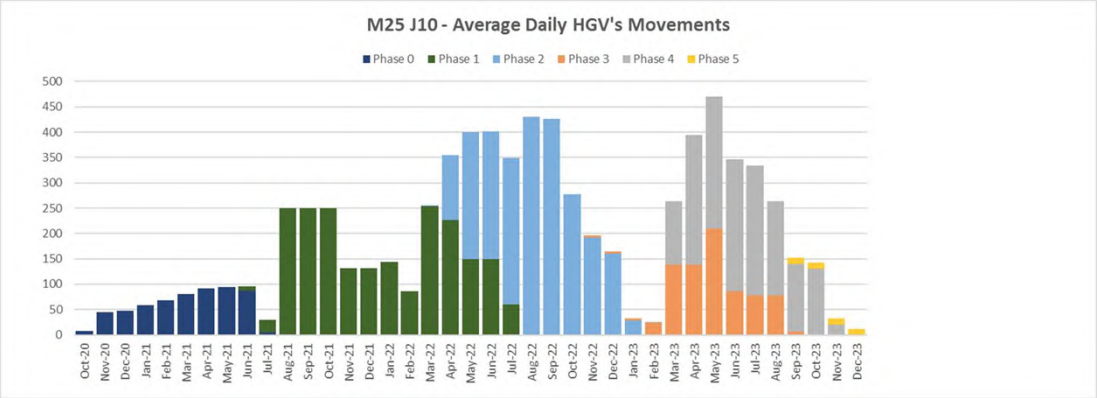
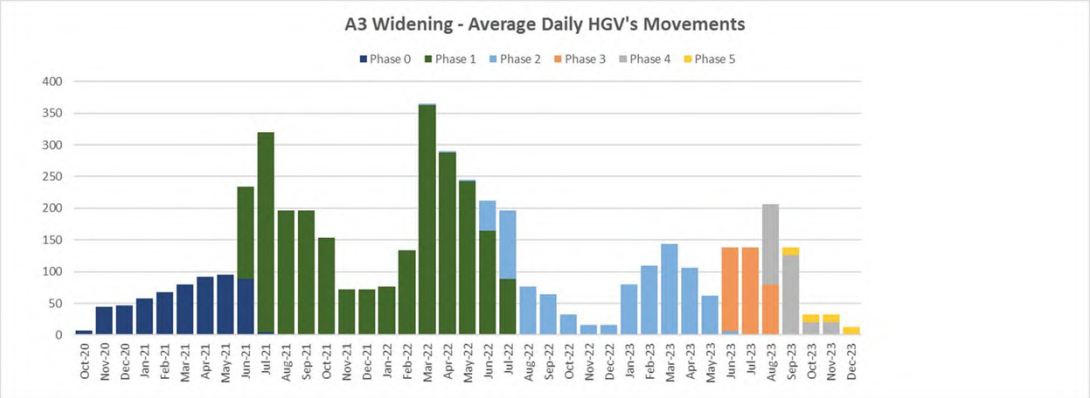


Figure 7.25: Estimated HGV movements per day for A3 widening works



7.11.10 At this stage it is estimated that construction workforce commuting will generate up to approximately 350 vehicles per day in and out of the main compound, which is assumed to be near Ockham Park junction. This is based on an assumed average of 1.5 occupants per vehicle.

Based on this, a range of assumptions have been made to derive an AM and PM peak hour construction traffic distribution, as set out in Table 7-28. The assumptions on traffic movements at the peak of construction activity, currently anticipated to be in April/May 2022, are set out below:

- It has been assumed at this stage that the railhead at Woking is the most likely source to supply the bulk of the material and would require approximately 125 vehicle deliveries (250 movements) per day. Most site construction activities will be undertaken on a 10-hour day basis. Therefore, this equates to 13 HGV movements per hour from Woking railhead to the main compound near to Ockham Park junction, and 13 HGV movements per hour back from the main compound to Woking railhead.
- From the construction peak of 645 total two-way HGV movements, 250 are to/from Woking Railhead. This means that there are 395 other HGV movements relating to construction (approximately 198 arrivals and 198 departures per day).

- It has been assumed that throughout the 10-hour day, there would be a uniform flow of deliveries of approximately 20 HGVs per hour. As it is unknown where the origin/destination of these HGVs is, an equal split has been assumed for all four directional approaches at the M25 junction 10 (A3 north, M25 east, A3 south, M25 west), meaning that in the morning and evening peak hours five HGV's go to/from each of these destinations.
- It is estimated that construction workforce commuting will generate up to approximately 350 vehicles per day in and out of the main compound. The workforce will be transported from the main compound to the satellite compounds in vans, crew cab pick-up trucks and mini buses etc.
- It has been assumed that half of the workforce arrive in the morning peak hour and half depart in the evening peak hour (175 vehicle trips in each peak hour). An even split has been assumed for the origins/destinations of these construction workforce commuting vehicle trips via the A3 north, M25 east, A3 south, and M25 west. This equates to approximately 44 vehicle arrivals in the AM peak and 44 departures in the PM peak on each of the four routes.
- The workers then travel between the main compound to the satellite compounds. It has been assumed that there is an even split between the three satellite compounds. In the morning peak there is a total of 263 workers arriving at the main compound (175 vehicles*1.5 occupants per vehicle). It has been assumed that the transfer vehicles from the main compound to the site will on average carry 8 occupants. This equates to 33 trips from the main compound to all the satellite compounds combined (263/8), or 11 trips from the main compound to each individual satellite compound. In the evening peak, it is assumed that the 11 trips will be required from each satellite compounds to the main compound.
- It has been assumed that there are 5 sets of transport available to shuttle workers from the main compound to the satellite compounds. This means that the number of trips back from the satellite compound to the main compound is 28, presuming that when the last workers have arrived at the satellite compound the transfer vehicle can stay at the satellite compound. Between the three satellite compounds, this is split evenly.

7.11.11 Table 7-28 shows the estimated volume of construction traffic in number of vehicles on each mainline approach to the M25 junction 10, with Table 7-29 setting this out in PCUs.

Table 7-28: Estimated construction traffic flows (vehicles)

Movement	Construction Traffic Flow (vehicles)	
	AM Peak	PM Peak
M25 J9 – J10 (CW)	58	16
M25 J10 – J9 (ACW)	16	58
M25 J11 – J10 (ACW)	55	19
M25 J10 – J11 (CW)	12	63
A3 South of J10 (NB)	107	243
A3 South of J10 (SB)	234	115

Movement	Construction Traffic Flow (vehicles)	
	AM Peak	PM Peak
A3 North of J10 (NB)	16	58
A3 North of J10 (SB)	58	16

Table 7-29: Estimated construction traffic flows (PCUs)

Movement	Construction Traffic Flow (PCUs)	
	AM Peak	PM Peak
M25 J9 – J10 (CW)	64	22
M25 J10 – J9 (ACW)	22	64
M25 J11 – J10 (ACW)	68	42
M25 J10 – J11 (CW)	25	86
A3 South of J10 (NB)	144	292
A3 South of J10 (SB)	271	164
A3 North of J10 (NB)	22	64
A3 North of J10 (SB)	64	22

Impact Assessment

7.11.12 The 2022 DM traffic flows in Table 7-30 have been used as a baseline to assess the percentage impact of estimated construction traffic, as shown in Table 7-31. This indicates that construction traffic will have the greatest impact on the A3 to the south of the M25 junction as this is where main compound is proposed.

7.11.13 However, on all approaches to M25 junction 10, it is estimated than construction traffic will make up less than 6% of mainline flow and this is based on the estimated peak time of construction activity during April/May 2022.

7.11.14 It should be noted that this two-month period in 2022 is when construction traffic is anticipated to be at its highest level with other time periods during construction predicted to see significantly less construction vehicle activity.

Table 7-30: 2022 DM Traffic Flow

Movement	2022 Do Minimum Traffic Flow	
	AM Peak	PM Peak
M25 J9 – J10 (CW)	6816	6333
M25 J10 – J9 (ACW)	6175	7023
M25 J11 – J10 (ACW)	7319	8255
M25 J10 – J11 (CW)	7448	7016
A3 South of J10 (NB)	5286	5037
A3 South of J10 (SB)	4680	4947
A3 North of J10 (NB)	4153	4227
A3 North of J10 (SB)	3598	3924

Table 7-31: Construction traffic impacts

Movement	2022 DM Traffic Flow	
	AM Peak	PM Peak
M25 J9 – J10 (CW)	0.9%	0.4%
M25 J10 – J9 (ACW)	0.4%	0.9%
M25 J11 – J10 (ACW)	0.9%	0.5%
M25 J10 – J11 (CW)	0.3%	1.2%
A3 South of J10 (NB)	2.7%	5.8%
A3 South of J10 (SB)	5.8%	3.3%
A3 North of J10 (NB)	0.5%	1.5%
A3 North of J10 (SB)	1.8%	0.6%

Construction Traffic Mitigation

7.11.15 To minimise the impact of construction traffic on the local highway network, the following documents will be produced:

- Construction Traffic Management Plan
- Buildability Report
- Construction Environmental Management Plan
- Construction Workforce Travel Plan.

7.12 Road Safety Audit

7.12.1 This section is informed by the Stage 1 Road Safety Audit (RSA) and associated Audit Response for M25 junction 10 scheme. The full audit is included in Appendix I.

7.12.2 Table 7-32 provides the safety audit comments alongside the Audit response to the concerns highlighted. The results of the RSA will inform design changes and improvements to the scheme as it progresses.

Table 7-32 Road Safety Audit Decision Log

RSA issue	RSA recommendation	Audit response
PROBLEM 1 **Location**: Various – M25 junction 10, circulatory carriageway, approaches and exits **Summary:** Lane Widths and alignments and the risk of collisions **Problem:** The lane widths appear to be very narrow at several locations around the roundabout and the approaches and exits. This might lead to a risk of collisions involving larger vehicles encroaching into adjacent lanes, particularly where the carriageway curves around the roundabout.	Swept paths around the roundabout and on the approaches and exits should be thoroughly checked. The lane widths and alignments should be appropriate to safely accommodate the vehicles expected to use the junction.	**Agreed.** Swept paths models have been run and checked. The lane widths on the circulatory carriageway and approach are sufficiently wide to safely accommodate the vehicles expected to use the junction. The model that was run on the exits to the circulatory carriageway indicate overrun of the nearside kerb and the exits will be widened to accommodate the vehicles expected to use the junction. The locations of the lane overruns are shown in Appendix A of the RSA (Appendix I)
PROBLEM 2 **Location:** M25 junction 10, exit to A3 north-eastbound **Summary:** Reverse curve on exit road where Vehicles might be accelerating **Problem:** The exit from the roundabout towards the A3 north-eastbound goes through a reverse curve at a location where drivers might start to accelerate towards the A3 and where vehicles in the outside lane are deflected towards the nearside in advance of the lane merge ahead. This presents a risk of loss of control collisions or nose-to-tail collisions if drivers brake heavily or change course suddenly to avoid conflict.	The lane arrangements and alignment on the exit should be amended to provide smooth transitions between curves thereby reducing the risk of loss of control incidents.	**Agreed.** The slip road alignment on this exit has been amended to eliminate the reverse curve. The new alignment can be seen in Appendix B of the RSA (Appendix I)
PROBLEM 3 **Location:** M25 junction 10, dedicated left-turn lanes **Summary:** Visibility of narrow medians at dedicated left-turn lanes **Problem:** The proposed medians segregating the dedicated left-turn lanes from the circulatory carriageway are relatively narrow and might be inconspicuous to drivers on the circulatory carriageway. This might particularly be the case for those approaching the medians tangentially from the circulatory carriageway signal stop lines. If drivers on the circulatory carriageway fail to recognise the presence or alignment of a median, they might mount the kerb or, in extreme cases, might cross the median into the left-turn lane at risk of colliding with vehicles in that lane. Alternatively, drivers on the circulatory carriageway, if they misjudge the alignment, might brake suddenly or make sudden course changes to avoid collision. This would present an increased risk of nose-to-tail or side-swipe collisions.	Measures to highlight the presence and alignment of the left-turn lane medians should be provided.	**Agreed.** Flexible bollards will be included in the design within the medians segregating the dedicated left-turn lanes from the circulatory carriageway. This will allow drivers to clearly recognize the presence of the median.
PROBLEM 4 **Location:** Gated access link between Old Byfleet Road and Seven Hills Road (South) **Summary:** Risk of conflicts and resulting collisions at eastern end of access link and risk of rat-running **Problem:** Drivers turning into Old Byfleet Road from the A245 and intending to enter the new access link (when open to traffic), might choose to take a straight course across Old Byfleet Road. This would present a risk of conflict with oncoming traffic heading towards the A245 or with vehicles exiting the access link (see Figure 2-1). In addition, in the absence of confirmed information relating to predicted flows and use of this access link there is potential for a number of hazards associated with this link road. For example: • *If heavy turning flows occur, at school opening and closing times for example, traffic might queue back onto Old Byfleet Road or the A245 presenting a risk of nose-to-tail collisions or overtaking collisions;* • *if the gates are left open throughout the school day, it seems likely that some unauthorised drivers might use the link to bypass traffic queues at the Seven Hills Road traffic signals. Increased flows in this regard might increase all the aforementioned risks under this Problem.*	The junction and access road layouts should be re-designed to discourage or prevent a direct course from A245 into the access link. The operational arrangements regarding the use of the link road, including how it will be marshalled, managed and 'policed', should be firmly established. These arrangements should then be used to design out the risk of queuing problems and turning conflicts presented by the layout.	**Agreed.** The design of this junction has been changed following targeted consultation with Feltonfleet School and Surrey County Council. The redesign eliminates this problem. Details of the redesign are shown in Appendix C of the RSA (Appendix I)
PROBLEM 5 **Location:** G – Access junction between A245 and Old Byfleet Road **Summary:** Short corner radius and the risk of collisions involving turning vehicles **Problem:** The corner of the western side of the junction between Old Byfleet Road and the A245 has a very short radius. As a result, vehicles turning left out of the junction and onto the acceleration lane might be likely to encroach into the A245 nearside lane and be at risk of being struck by fast-moving traffic. The risks might be exacerbated when there is a stationary bus in the bus stop as vehicles emerging from Old Byfleet Road might stop whilst partially in the acceleration lane and partially in the A2455 nearside lane if they cannot get past the bus due to through traffic	The junction should be provided with a longer radius to allow for the swept path of vehicles turning left out of Old Byfleet Road.	**Agreed.** The design of this junction has been changed following targeted consultation with Feltonfleet School and Surrey County Council. The redesign eliminates this problem. The details of the redesign are shown in Appendix C of the RSA (Appendix I)

8. Summary and conclusions

8.1 Overview

8.1.1 Highways England has identified in their Road Investment Strategy (RIS) that there is a requirement to increase traffic capacity at the junction 10 of the M25 to reduce traffic congestion and delay, which is forecast to significantly worsen in the future due to traffic growth.

8.1.2 Atkins has been appointed by Highways England to undertake transport modelling and network assessment study to progress the preferred option through the Development Phase of the HE's Project Control Framework (PCF) to submission of a draft Development Consent Order (DCO).

8.1.3 The purpose of the TA is to assess the impact of the proposed improvement scheme on the strategic and local highway network, road safety and local sustainable modes of transport.

8.1.4 The proposed scheme provides increased capacity at the M25 roundabout by elongating the existing roundabout, providing additional lanes to provide more circulatory capacity and enabling more traffic to discharge the roundabout whilst providing dedicated free–flowing left turns. The elongated roundabout would use the existing bridges under the A3 and new bridges over the M25, with additional lanes and capacity between the traffic signals and dedicated left–turn filters at the traffic signals.

8.1.5 The main features of the scheme are as follows:

- Alteration and upgrading of the existing M25 junction 10 roundabout, including elongation and widening of the circulatory carriageway, realignment, lengthening and widening of the junction entry and exit slip roads and demolition of redundant bridge structures.
- Provision of four new dedicated free-flow/left turn filter slip lanes at M25 junction 10, to enable left-turning traffic to pass through the junction unimpeded by traffic signals.
- Conversion of the existing hard shoulders on the M25 through junction 10, to provide an additional running lane for traffic in both directions, including emergency refuge areas and associated modifications to M25 gantries, signage and road markings.
- Widening of the A3 to dual four lanes between the Ockham Park junction and the Painshill junction, except where the A3 crosses over M25 junction 10, which will remain two lanes in each direction as at present.
- Widening of the A245 Byfleet Road to dual three lanes between the Painshill junction and Seven Hills Road to the west.
- Provision of two new dedicated slip lanes at the Painshill junction, to enable traffic leaving the A3 northbound carriageway to join the westbound A245 Byfleet Road and traffic on the A245 eastbound carriageway to join the A3 northbound, without having to enter the signalised roundabout.
- Improvement of the Ockham Park junction, including installation of traffic signals on and at the entries to the junction's gyratory carriageway and new and improved facilities and crossings for pedestrians, cyclists and horse-riders.

- Modification of A3 side road junctions, including improvement of the Old Lane junction, closure of the Wisley Lane junction and construction of a new road, bridging over the A3. to connect Wisley Lane with the A3 at the Ockham Park junction; and closure of the Elm Lane junction and provision of an alternative access to Elm Corner via Old Lane and an improved section of Byway Open to All Traffic.
- Closure of private accesses from the A3 mainline carriageways and the provision of substitute local access arrangements, including a substitute access for properties on the west side of the A3 connecting to Redhill Road and Seven Hills Road, a substitute access for properties on the edge of Painshill Park via the A3 southbound on-slip and a substitute access for properties at Wisley Common from Old Lane and crossing the A3 via the replacement Cockcrow Overbridge.
- Provision of new and improved facilities for pedestrians, cyclists and horse riders, including a new 5.5km long route between the Ockham Park and Painshill junctions, new and replacement bridges for the benefit of non-motorised users to cross both the M25 and the A3, and new and upgraded Public Rights of Way in the vicinity of the M25 junction 10.
- Extensive areas of habitat creation and enhancement and other environmental mitigation works, including measures to compensate for the impacts of the scheme on the Thames Basin Heaths Special Protection Area and on Bolder Mere, the provision of replacement common land and public open space and the provision of a new wildlife crossing over the A3 as part of a replacement Cockcrow overbridge.

8.2 Policy context

8.2.1 It is considered that the proposed scheme is compliant with national, regional and local policies.

8.2.2 The provision of the scheme would support the NPPF economic objectives and strategic policies to make adequate provision for transport infrastructure whilst providing the opportunity to promote sustainable transport through the provision of new and improved walking and cycling routes within the extents of the scheme.

8.2.3 Local planning policies support the implementation of enhancements to the M25 and A3 to accommodate future planned growth, tackle congestion and improve road safety, which are consistent with the scheme objectives.

8.3 Road safety

8.3.1 The scheme improvements are expected to reduce accidents through the removal of several conflicting movements at the junctions. Elongating and widening the roundabout at M25 junction 10 and providing free-flow left turns will increase the junction's safety, thus better facilitating weaving movements and reducing the risk of collisions. The A3 improvements, such as the closing of direct accesses to the A3 from side-roads and increasing the number of lanes on the A3 mainline will contribute to increased road safety.

8.3.2 The DfT's COBA-LT software has been used to capture the accident impacts over the 60-year period following implementation the scheme of the M25 junction

10 scheme, covering the affected road network. Across the whole of the affected road network the scheme is anticipated to result in a reduction in accidents compared to the without intervention scenario, as set out below:

- Reduce accidents among users of M25 junction 10 by 30%
- Reduce accidents in the assessment area excluding M25 junction 10 by 6%.

8.3.3 A review of collision data involving NMUs has revealed a pattern involving cyclists where four collisions were recorded on the southbound off-slip from the A3 meets the Ockham Park junction for the five-year period between 2013-2017. This node is currently uncontrolled with traffic coming off the A3 approaching the Ockham Park junction at speed and not necessarily coming to a complete stop at the give-way line, which may be the reason for collisions involving cyclists. The scheme will introduce signal controls at this junction, which will regulate the flow of traffic and improve road safety, particularly for vulnerable users such as cyclists.

8.3.4 The Stage 1 Road Safety Audit identified the following five safety concerns with the scheme as outlined below:

- Narrow lane width and alignments at M25 junction 10.
- Reverse curve on exit road from M25 junction 10 to A3 northbound.
- Poor visibility of narrow medians on dedicated left-turn lanes at M25 junction 10.
- Risk of conflicting movements and collisions at junction of A245 and Old Byfleet Road.
- Short radius for turning vehicles at junction between A245 and Old Byfleet Road.

8.3.5 Following the Stage 1 Road Safety Audit, an Audit Response was issued to address the concerns highlighted. The responses are outlined below:

- Swept path models used to ensure lane widths on approach and carriageway are wide enough to safely accommodate vehicles.
- Slip road alignment on exit road from M25 junction 10 to A3 has been amended to eliminate the reverse curve.
- Inclusion of flexible bollards within the medians segregating the dedicated left-turn lanes from the circulatory carriageway.
- Following consultation with the neighbouring Feltonfleet School and Surrey County Council, the junction design has been updated to mitigate the risk of conflicting movements.
- As above, the design of this junction has been updated resulting in safety improvements.

8.4 Sustainable transport

Impact on pedestrian and cycle routes

8.4.1 The resultant network of PRoW and local road connections provided by the scheme will achieve the scheme objective to support walking and cycling by

incorporating safe, convenient, accessible and attractive routes for pedestrians, cyclists and equestrians and improving crossing facilities by providing:

- A discrete route usable by pedestrians, equestrians and cyclists along the A3 corridor between Ockham Park and Painshill junctions that will be set away from the A3 carriageways, be easier, safer and more attractive to use than the existing roadside shared-surface paths and be maintained to a standard suitable for all NMUs, including road cyclists.
- Four new or replacement bridges usable by pedestrians, equestrians and cyclists to cross all four arms of the A3 and M25 near to junction 10 – Cockcrow, Sandpit Hill, Redhill and Clearmount bridges – connected by a network of bridleways or restricted byways, which will remove the severance caused by the existing crossings of these roads at junction 10 and the existing inadequate connection of PRoW to bridges.
- A connected PRoW network that provides a right of access from roads or bridleways into and, usually, across all the existing and proposed areas of common land.
- A connected PRoW network that provides a right of access from roads, bridleways or footpaths into and, usually, across all the existing and proposed areas of public open space.
- A bridleway crossing of the A3 at Wisley Lane, which will remove the partial severance caused by the existing sub-standard footbridge.
- Improved facilities usable by pedestrians, equestrians and cyclists to cross under the A3 at Ockham Park junction, which will remove the partial severance caused by the existing arrangements.

Impact on bus routes

8.4.2 The diversion of the 715 bus route via the Ockham Park junction will result in an small increase in bus journey time. However, the relocation of the bus stops to a new facility on Wisley Lane will reduce the pedestrian walk time to RHS Wisley, particularly for those using the southbound service, who will no longer have to negotiate the footbridge to access the 715 service.

8.4.3 There are no proposed changes to the existing bus stops at the Ockham Park interchange in either direction.

8.4.4 At the Painshill junction the existing bus stop on the northbound off-slip will be retained but the southbound on-slip bus stop will be relocated further south and positioned at the junction of the proposed Painshill Local Access Road which adjoins the A3 on the southbound on-slip.

8.4.5 The C1/C2 bus not affected by the scheme as it passes through the Painshill junction along the A245. However, the improvements being proposed as part of the scheme to reduce delays on the highway network will be of benefit of bus service operational efficiency and reliability.

8.5 Current and future network performance

Current network

8.5.1 A site visit was undertaken on Wednesday 21 June and Thursday 22 June 2017, covering the morning peak period of 0600-1000 and the evening peak period of 1500-1900. The purpose of the site visit was to understand how the network operates during the peak period, in addition to how the demand in the network varies over time.

8.5.2 The M25 is generally congested, with significant excess travel times during the peak morning and evening hours. On the A3 it was observed there was notable congestion in the morning peak back from the M25 junction 10, along the A3 through Ockham Park junction.

8.5.3 In both the morning and evening at the Seven Hills and Painshill junctions, congestion was observed on the eastbound approach to Seven Hills junction, extending back some way along Byfleet Road.

8.5.4 Traffic congestion in Ripley during peak periods was observed to stem from a pinch point on Newark Lane on approach to its junction with the B2215 Ripley High Street. This has the effect of constraining the two-way flow of traffic into and out of Newark Lane, which impairs the ability of traffic to turn right into Newark Lane from Ripley High Street and in doing so creates a queue of vehicles that can extend beyond the right turn lane, impeding the progress of southbound through-movements on Ripley High Street.

Future network

8.5.5 Network-wide statistics have been extracted from the traffic models to provide an understanding of the operation of the entire modelled network. The results show a forecast improvement in average network journey time with the implementation of the scheme in the DS scenario in all time periods when compared against the DM scenario (no scheme).

M25 junction 10

8.5.6 The DM junction modelling results show that the M25 junction 10 is predicted to operate over capacity during peak times with large delays.

8.5.7 The scheme would offer significant improvements to capacity with the alteration and upgrading of the existing M25 junction 10 roundabout, including elongation and widening of the circulatory carriageway, realignment, lengthening and widening of the junction entry and exit slip roads. As a result, the junction is predicted to operate within capacity both in the 2022 opening year and 2037 design year, with minor delays and limited queuing across all arms.

8.5.8 The implementation of the scheme is predicted to decrease average journey times through the junction in all weekday time periods considered (0700-0900 and 1600-1700).

Ripley junction

8.5.9 The Ripley junction is a staggered priority junction with Newark Lane and Rose Lane providing access to Ripley High Street. There are no changes to this junction proposed as part of the scheme.

8.5.10 Without the scheme in the Do Minimum scenario, the Ripley junction is predicted to operate close to capacity on the Newark Lane approach in 2022. In 2037, the Rose Lane approach sees a decrease in operational capacity.

8.5.11 With the scheme in the Do Something scenario, the junction is predicted to operate close to capacity with minor increases in delay across the junction when compared to Do Something scenario. However, it is acknowledged that the software used to assess capacity cannot accurately represent the reduction in the width of the road on Newark Lane and so journey times through the junction are considered a better indicator of traffic impact.

8.5.12 Journey time analysis shows a similar level of predicted average journey times through the Ripley junction in the DM and DS scenarios, with increases or similar average journey times in 2022 and decreases or similar average journey times in 2037.

8.5.13 The comparison between the 2022 and 2037 without scheme and with scheme scenarios predict a marginal change in the level of traffic travelling through Ripley in both the morning and evening peaks, with a 1% increase in the morning peak and a 7% increase in the evening peak. The with scheme scenario shows that the change on the links is effectively within a “statistically insignificant change” on nearly all arms.

8.5.14 Flows on Newark Lane are expected to decrease by a significant proportion in both the without scheme and further in the with scheme scenario, except for the 2022 evening peak scenario. It is evident that high traffic flows along the High Street limits the available gaps for traffic on Newark Lane in the AM peak, thereby causing trips to reroute to avoid the longer delay.

Ockham Park junction

8.5.15 In the 2022 Do Minimum, the Ockham Park junction layout is to remain the same as the base. In the 2037 Do Minimum the proposed WSP scheme from Wisley Airfield application is implemented, which proposes signal controls on some of the approaches, namely the A3 (north) off-slip, the link to Wisley Airfield and Portsmouth Road.

8.5.16 In the 2022 DM scenario, the Ockham Park junction is predicted to operate within capacity in both the morning and evening peak, with low levels of queueing and delays. With partial signal controls introduced, the 2037 DM scenario results predict that the Ockham Park junction will operate above capacity, especially in the morning peak period.

8.5.17 The scheme proposes an improvement of the Ockham Park junction, including installation of traffic signals on all the approaches to the junction and new and improved facilities and crossings for pedestrians, cyclists and horse-riders.

8.5.18 With the introduction of a fully signalised Ockham Park junction in the DS scenario, it is predicted that the junction will operate within capacity. Therefore, the scheme will provide a significant improvement in capacity when compared to the DM scenario, particularly in 2037.

8.5.19 The assessment of journey times through the Ockham Park junction indicates that in 2022, when comparing the DS and the DM scenarios, journey times though the junction are similar in the morning peak. There are some increases in

the DS, which is due to the implementation of signals in the DS scenario, which are not in the 2022 DM scenario.

8.5.20 In 2037, journey times through the junction are predicted to improve in the morning peak, when comparing the DS with the DM scenarios. This is due to the scheme increasing capacity within the local highway network.

8.5.21 During the evening peak, the introduction of the scheme is predicted to create some minor delays at the Ockham Park junction due to increased traffic throughput at the junction and the introduction of traffic signals on all approaches. However, this should be considered in the context of the significant benefits proposed at this junction for more vulnerable road users such as pedestrian and cyclists.

Old Lane

8.5.22 It is predicted that more trips will be attracted to use Old Lane, with the acceleration and deceleration lane allowing vehicles to access and exit the on-slip more easily and safely. The increased flows are predicted to turn into Old Lane to travel to the proposed Wisley Airfield development. In addition, the combined improvements at M25 junction 10, and the Old Lane access make this route more attractive for vehicles travelling towards Effingham.

Wisley Lane

8.5.23 Analysis shows a reduction in trips on Wisley Lane in the DS scenario compared to the DM scenario, with the closure of the direct access to the A3 expected to result in these trips diverting via alternate routes, such as M25 junction 11 or via Newark Lane through Ripley. This diversion is expected to result in some minor increase in demand between Ripley and the Ockham Park junction.

Painshill / Seven Hills Road junctions

8.5.24 The DM modelling results suggest that the Painshill/Seven Hills Road junctions are predicted to operate over capacity in all modelled scenarios with the morning peak predicted to have greater level of total delay than in the evening peak. These junctions have been modelled as a network in both the DM and DS scenarios. The 2037 DM morning peak is predicted to block back into the network, increasing congestion.

8.5.25 The scheme will provide two new dedicated slip lanes at the Painshill junction, to enable traffic leaving the A3 northbound carriageway to join the westbound A245 Byfleet Road and traffic on the A245 eastbound carriageway to join the A3 northbound, without having to enter the signalised roundabout. The proposals also include the widening of the A245 Byfleet Road to dual three lanes between the Painshill junction and Seven Hills Road to the west.

8.5.26 The modelling results suggest significant predicted improvements in operation with the implementation of the scheme. With the introduction of the scheme, the average journey time and delay through the junctions is predicted to decrease in all scenarios.

Construction Traffic Impact

8.5.27 On all approaches to M25 junction 10, it is estimated than construction traffic will make up less than 6% of mainline flow and this is based on the estimated peak time of construction activity during April/May 2022.

8.5.28 It should be noted that this two-month period in 2022 is when construction traffic is anticipated to be at its highest level with other time periods during construction predicted to see significantly less construction vehicle activity.

8.6 Conclusions

8.6.1 With respect to the key objectives, the scheme will improve overall journey time reliability and reduce delay on the local highway network. It is anticipated that the introduction of the scheme will improve road safety for all users.

8.6.2 The scheme will provide significantly enhanced facilities for pedestrians, cyclists and horse riders through new provision and improvements to the network of PRoW and local road connections and meet the key objective to incorporate safe, convenient, accessible and attractive routes.

8.6.3 In terms of operational traffic impacts on the highway network, the scheme will provide significant improvements to capacity and reduce delay at the M25 junction 10 and the Painshill and Seven Hills Road junctions. The introduction of the scheme is predicted to create some minor delays at the Ockham Park junction, but this should be considered in the context of the significant benefits proposed at this junction for more vulnerable road users.

8.6.4 On the local road network, there are minor flow differences forecast through Ripley junction, with similar predicted journey times in the with and without scheme scenarios. It is also noted that although overall traffic flows at the Ripley junction are predicted to increase with the scheme in place, background growth in traffic due to development associated with Local Plan allocations is predicted to constitute the largest proportion of the cumulative impact on forecast traffic flows at the Ripley junction.

8.6.5 On other local roads, it is considered that the change in traffic flow due to the scheme is unlikely to have an adverse impact on their operation.

8.6.6 It is considered that the proposed scheme is compliant with national, regional and local policies.

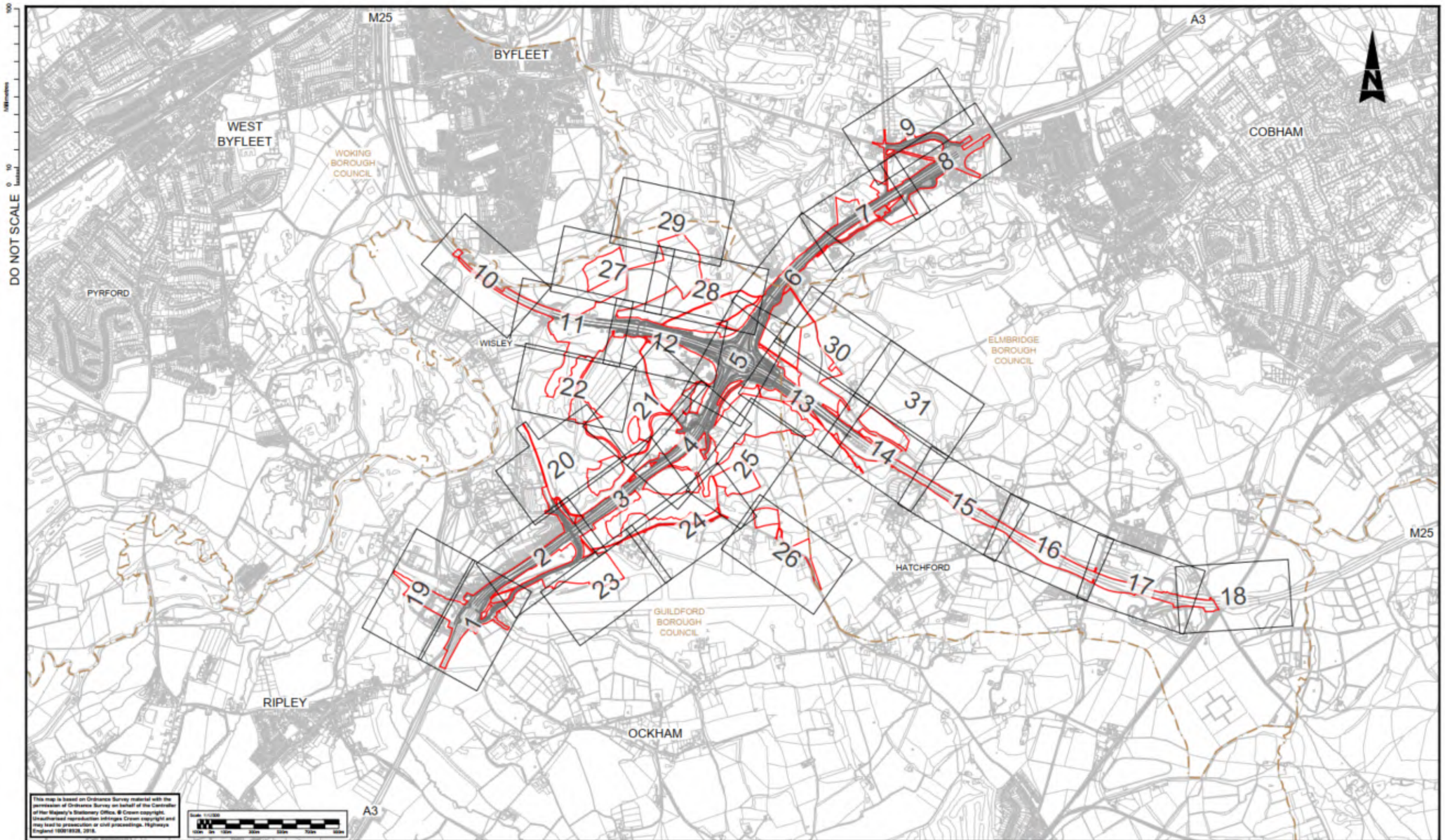
8.6.7 The provision of the scheme would support the NPPF economic objective and strategic policy to make adequate provision for transport infrastructure and support the key scheme objective to support economic growth in the area.

8.6.8 The scheme also complies with local planning policies to support the implementation of enhancements to the M25 and A3 to accommodate future planned growth, tackle congestion and improve road safety, which are consistent with the scheme objectives.

8.6.9 Given the overall benefits of the scheme, its compliance with national, regional and local policies and the fact that it achieves the stated scheme objectives, it is considered that there is no reason why the scheme should not be approved on transport grounds

Appendices

Appendix A. Scheme Plans



LEGEND:

2 — SHEET NUMBER FOR SCHEME LAYOUT IN THIS AREA

DEVELOPMENT CONSENT ORDER (DCO) BOUNDARY

LOCAL AUTHORITY BOUNDARY

Description	Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date
DCO APPLICATION	A4	0	DD	NK	JW	CT	07/06/19

Drawing Suitability: DCO APPLICATION | Status: A4

Project Title: M25 junction 10/A3 Wisley interchange

Drawing Title: SCHEME LAYOUT PLANS REGULATION 5(2)(o) KEY PLAN

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Client: Working on behalf of highways england

Drawing Number: TR010030/APP/2.8 | Rev: 0

HE Rev: HE551522 | Scale: 1:12500 | Original Size: A1

This Drawing is saved on ProjectWise. Plotted: 13/06/2019 08:46:30 By: ARROS099

DO NOT SCALE

HIGHWAYS

- THE PROPOSED SCHEME
- PROPOSED NEW OR DIVERTED FOOTPATH / FOOTWAY
- PROPOSED NEW CYCLE TRACK
- PROPOSED NEW OR DIVERTED BRIDLEWAY
- PROPOSED NEW FOOTWAY/CYCLE TRACK
- EXISTING FOOTPATH TO BE STOPPED UP
- EXISTING SHARED USE ROUTE TO BE EXTINGUISHED
- EXISTING BRIDLEWAY TO BE STOPPED UP
- EXISTING PERMISSIVE ROUTE TO BE ABANDONED
- EXISTING ON ROAD CYCLE LANE TO BE EXTINGUISHED AND REPLACED WITH NEW OFF ROAD FACILITY
- EXISTING FOOTPATH
- EXISTING SHARED USE ROUTE
- EXISTING BRIDLEWAY
- EXISTING PERMISSIVE ROUTE
- EXISTING CYCLE TRACK
- EXISTING BYWAY
- NEW PORTAL SIGN GANTRY (TYPICALLY WITH VARIABLE MESSAGE SIGN)
- NEW CANTILEVER VARIABLE MESSAGE SIGN
- EXISTING PORTAL SIGN GANTRY TO BE UPGRADED (TYPICALLY WITH VARIABLE MESSAGE SIGN)
- EXISTING CANTILEVER VARIABLE MESSAGE SIGN TO BE UPGRADED
- CHAINAGE
- EMERGENCY REFUGE AREA
- LOW NOISE SURFACE PAVEMENT
- PRIVATE MEANS OF ACCESS TO BE EXTINGUISHED

DRAINAGE

- PROPOSED PRE EARTHWORK DITCH
- PROPOSED CULVERT
- DRAINAGE ATTENUATION POND
- PROPOSED SOAKAWAY
- PROPOSED HEADWALL
- PROPOSED OUTFALL
- PROPOSED SURFACE COLLECTION SYSTEM
- PROPOSED FILTER DRAIN
- FLOW DIRECTION
- PROPOSED CARRIER DRAIN

ENGINEERING & CONSTRUCTION

- EXISTING MAJOR CONTOURS (5m INTERVAL)
- CUTTING
- EMBANKMENT
- NEW OR MODIFIED BRIDGE/CULVERT STRUCTURE
- PROPOSED NEW LIGHTING COLUMN (FOR HEIGHT OF COLUMN REFER TO DRAWING TR010030/APP/2.9 TYPICAL DETAIL ROAD LIGHTING COLUMN AND FOUNDATIONS)
- EXISTING LIGHTING COLUMN TO BE RETAINED (SYMBOL INDICATE VARIOUS TYPE)
- SECURE GATE OR BARRIERS
- ROAD TO BE STOPPED UP AND PAVEMENT TO BE REMOVED
- RW — EXISTING RETAINING WALL TO BE RETAINED
- RW — PROPOSED NEW RETAINING WALL

BOUNDARIES

- DCO BOUNDARY
- ELMBRIDGE BC / GUILDFORD BC — LOCAL AUTHORITY BOUNDARY

ENVIRONMENT

- PROPOSED TREE AND SHRUB PLANTING
- PROPOSED WOOD PASTURE PLANTING
- PROPOSED SCRUB PLANTING
- PROPOSED HEATHLAND ESTABLISHMENT
- PROPOSED OPEN GRASSLAND
- PROPOSED MARGINAL AND EMERGENT PLANTING
- PROPOSED MANAGEMENT OF GRASSLAND TO ENHANCE BIODIVERSITY
- PROPOSED MANAGEMENT OF EXISTING WOODLAND TO RESTORE HEATHLAND AND / OR ENHANCE BIODIVERSITY
- EXISTING WOODLAND AND TREES
- EXISTING WATERBODIES
- REPLACEMENT LAND
- SPA COMPENSATION LAND (C2) — SEE NOTE-1
- SPA ENHANCEMENT AREA (E2) — SEE NOTE-1
- BOLDER MERE MITIGATION AND ENHANCEMENT AREA
- AREA FOR TREE PRESERVATION ORDER TO BE PROTECTED
- STRATFORD BROOK ENVIRONMENTAL MITIGATION AREA
- LOCATION OF ANCIENT WOODLAND SOIL TRANSLOCATION
- ES — PROPOSED ENVIRONMENTAL BARRIERS
- PROPOSED HIGHWAY FENCE
- ADF — PROPOSED ANTI - DAZZLE FENCE

SUBJECTED TO APPROVAL IN ACCORDANCE WITH THE REQUIREMENT OF DCO SCHEDULE 2

- RESTORATION OF TEMPORARY POSSESSION LAND
- RESTORATION OF CONSTRUCTION COMPOUNDS

NOTE

1. FOR FURTHER DETAILS OF REFERENCE NUMBER REFER TO HABITATS REGULATIONS ASSESSMENT REPORT (APPLICATION DOCUMENT REFERENCE TR010030/APP/5.3) AND ENVIRONMENTAL STATEMENT (APPLICATION DOCUMENT REFERENCE TR010030/APP/6.3).

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

Description	Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date
DCO APPLICATION	A4	0	DD	NK	JW	CT	07/06/19

Drawing Suitability: DCO APPLICATION | Status: A4

Project Title: M25 junction 10/A3 Wisley interchange

Drawing Title: SCHEME LAYOUT PLANS REGULATION 5(2)(o) KEY LEGEND

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Drawing Number: TR010030/APP/2.8 | Rev: 0

M Pin: HE551522 | Scale: 1:12500 | Original Size: A1

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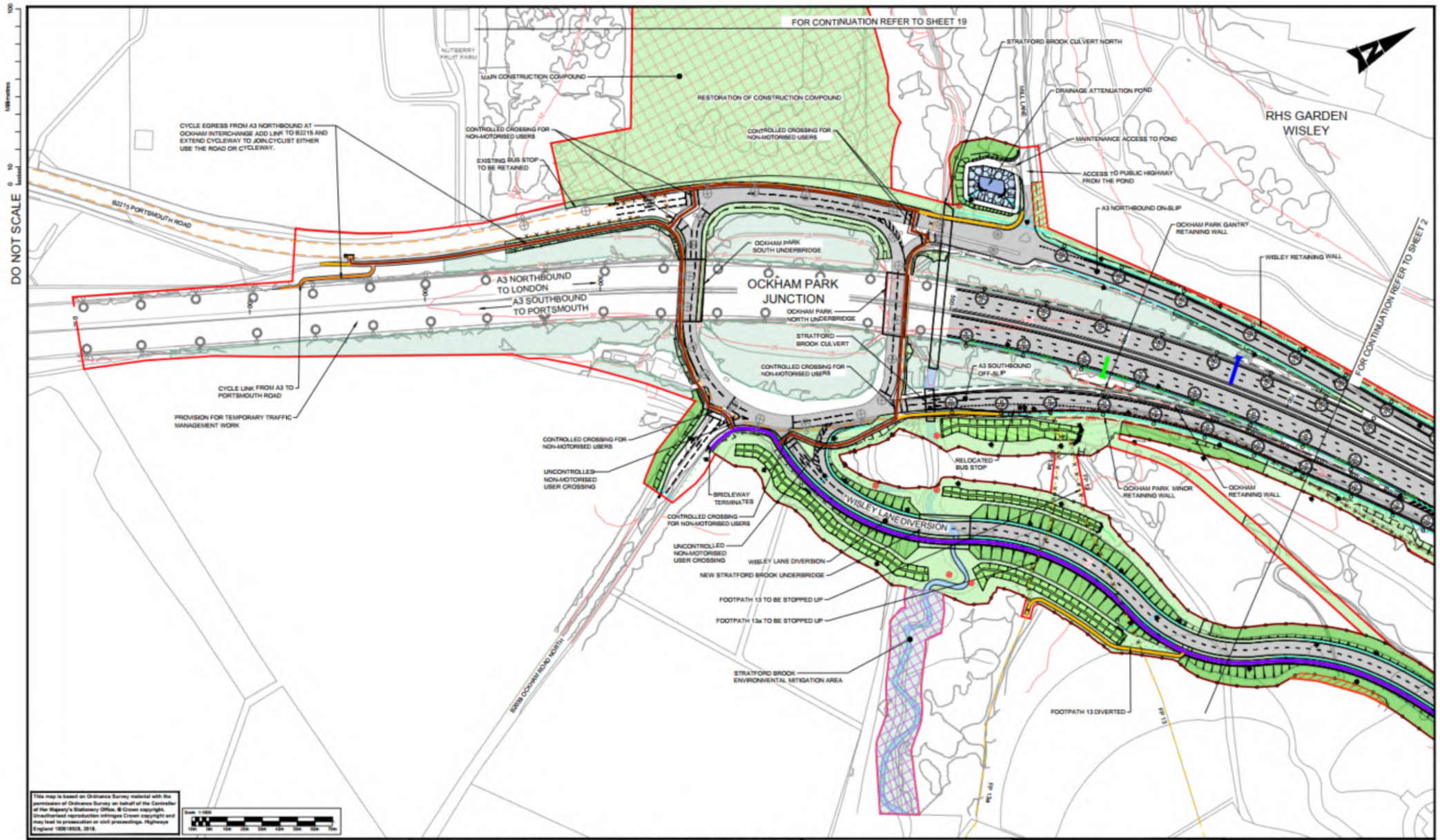

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NOTES

1. THESE PLANS SHOULD BE READ IN CONJUNCTION WITH TR010030/APP/2.8 KEY PLAN AND TR010030/APP/2.5 KEY LEGEND.
2. THESE PLANS SHOULD BE READ IN CONJUNCTION WITH OTHER PLANS AND DOCUMENTS IN THE DEVELOPMENT CONSENT ORDER (DCO). THE PROPOSED SCHEME WILL BE SUBJECT TO DETAILED DESIGN DEVELOPMENT WITHIN THE LIMITS OF DEVIATION, AS SHOWN ON THE TR010030/APP/2.3 WORKS PLANS.
3. THE ALIGNMENT OF UTILITY DIVERSIONS ARE SHOWN ON THE TR010030/APP/2.3 WORKS PLANS.
4. FOR CROSS-SECTIONS REFER TR010030/APP/2.9 DRAWINGS.
5. THE INFORMATION SHOWN ON THE PLANS IS COMMENSURATE WITH THE PRELIMINARY DESIGN STATUS OF THE PROJECT.

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
CONSTRUCTION OF STRUCTURE OVER LIVE CARRIAGEWAY

Maintenance / Cleaning
NONE

Use
NONE

Decommissioning / Demolition
NONE

SHEET LAYOUT
N.T.S

Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date
DCO APPLICATION						
A4	0	DD	NK	JW	CT	07/06/19

DCO APPLICATION | A4

M25 junction 10/A3 Wisley interchange

SCHEME LAYOUT PLANS
REGULATION 5(2)(o)

SHEET 1 OF 31

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TR010030/APP/2.8 | 0

HE Proj: HE551522 | Scale: 1:1000 | Original Size: A1

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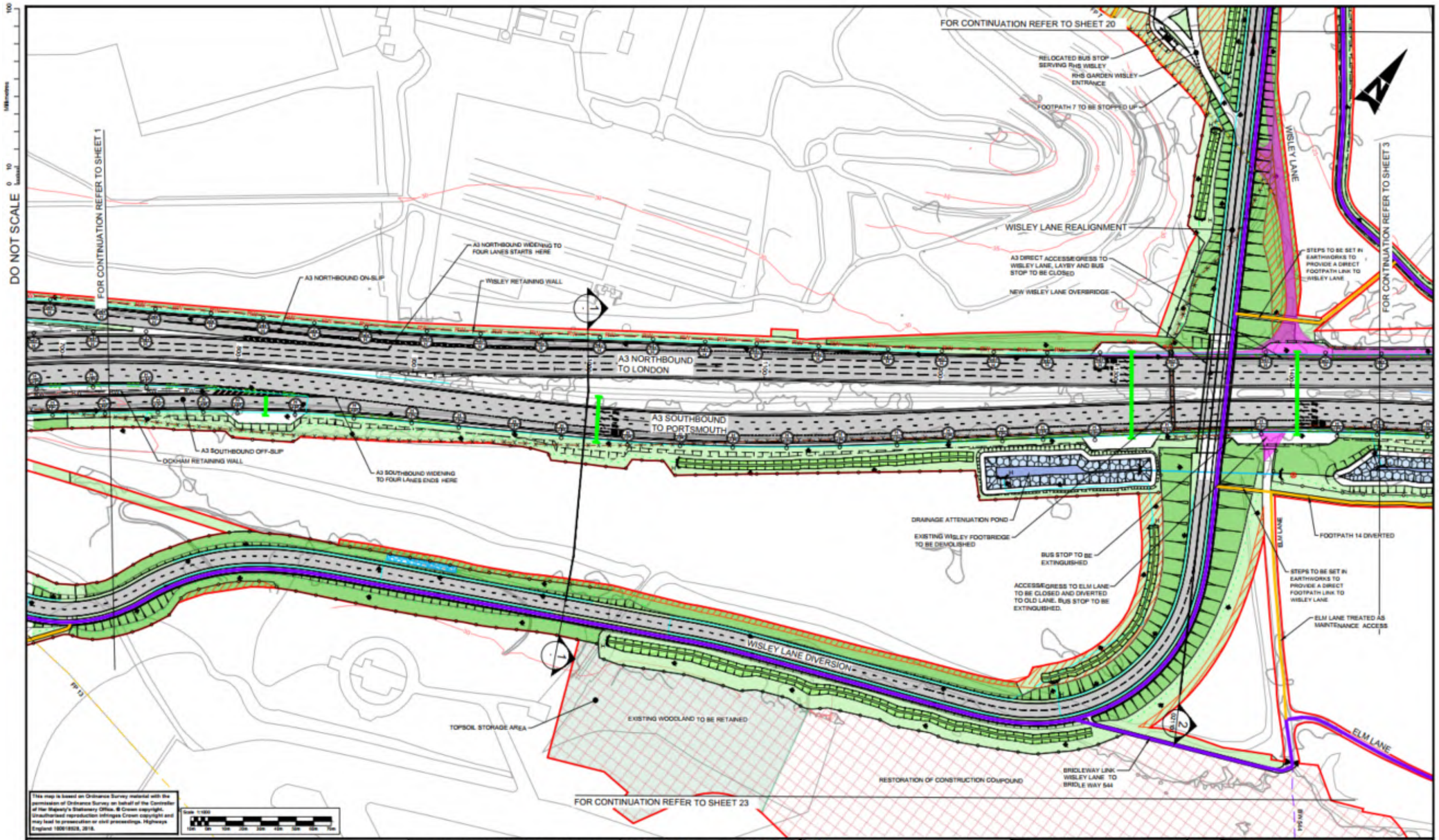

NOTES

1. THESE PLANS SHOULD BE READ IN CONJUNCTION WITH TR010030/APP/2.8 KEY PLAN AND TR010030/APP/2.8 KEY LEGEND.
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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	CONSTRUCTION OF STRUCTURE OVER LIVE CARRIAGEWAY
Maintenance / Cleaning	NONE
Use	NONE
Decommissioning / Demolition	EXISTING WISELY FOOTBRIDGE TO BE DEMOLISHED

SHEET LAYOUT
N.T.S

Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date
DCO APPLICATION						
A4	0	DD	NK	JW	CT	07/06/19

Drawing Suitability: DCO APPLICATION
Status: A4
Project Title: M25 junction 10/A3 Wisley interchange
Drawing Title: SCHEME LAYOUT PLANS REGULATION 5(2)(o) SHEET 2 OF 31
Drawing Number: TR010030/APP/2.8
Rev: 0
HE Film: HES1522
Scale: 1:1000
Original Size: A1

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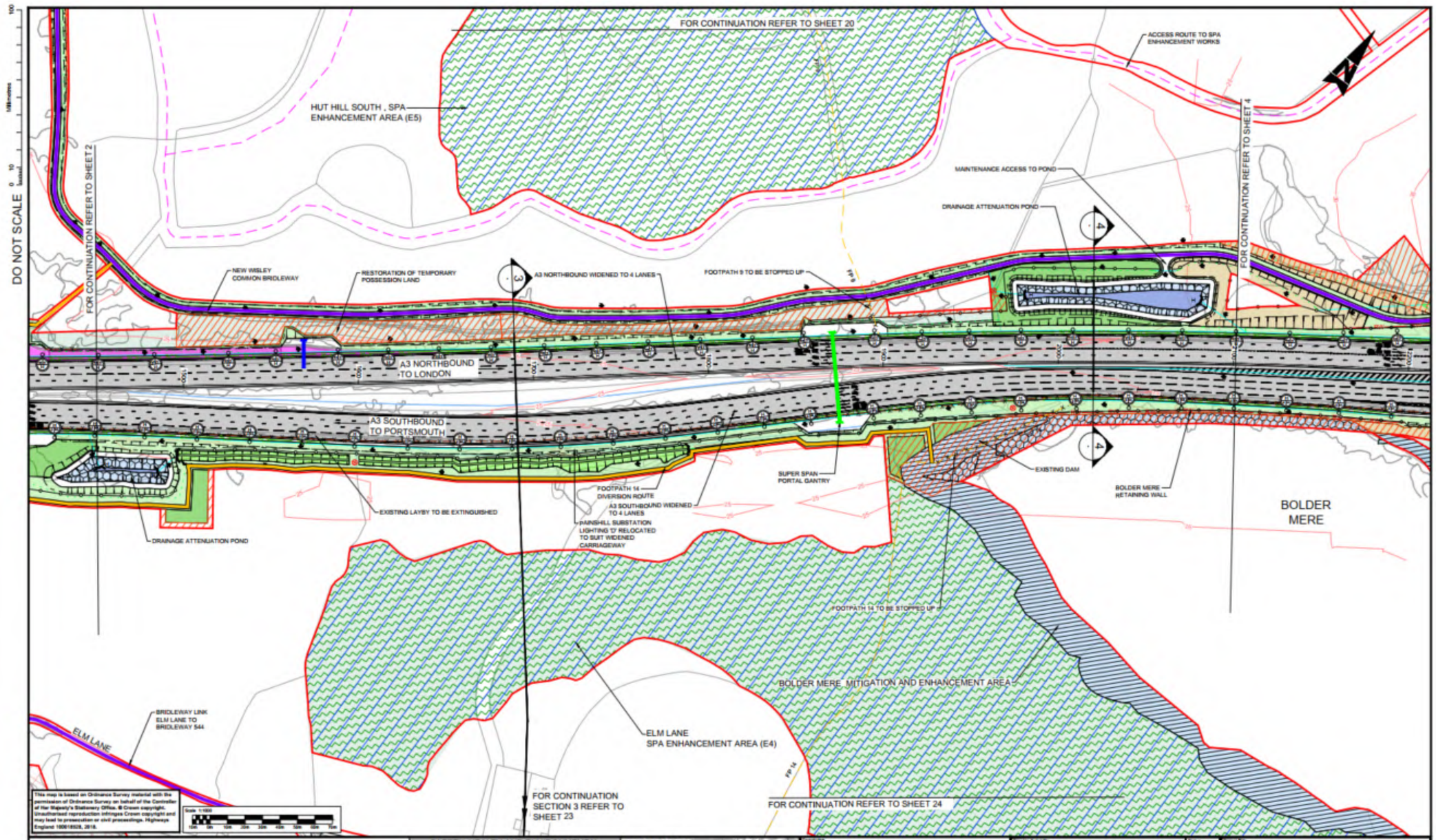

NOTES

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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
CONSTRUCTION OF RETAINING WALL AT BOLDER MERE LANE. CONSTRUCTION OF STRUCTURE OVER LIVE CARRIAGEWAY.

Maintenance / Cleaning
NONE

Use
NONE

Decommissioning / Demolition
NONE

SHEET LAYOUT
N.T.S

Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date
DCO APPLICATION						
A4	0	DD	NK	JW	CT	07/06/19

Drawing Suitability: DCO APPLICATION | Status: A4 | Scale: A4

Project Title: M25 junction 10/A3 Wisley interchange

Drawing Title: SCHEME LAYOUT PLANS REGULATION 5(2)(o)

SHEET 3 OF 31

Drawing Number: TR010030/APP/2.8 | Rev: 0

Original Size: A1

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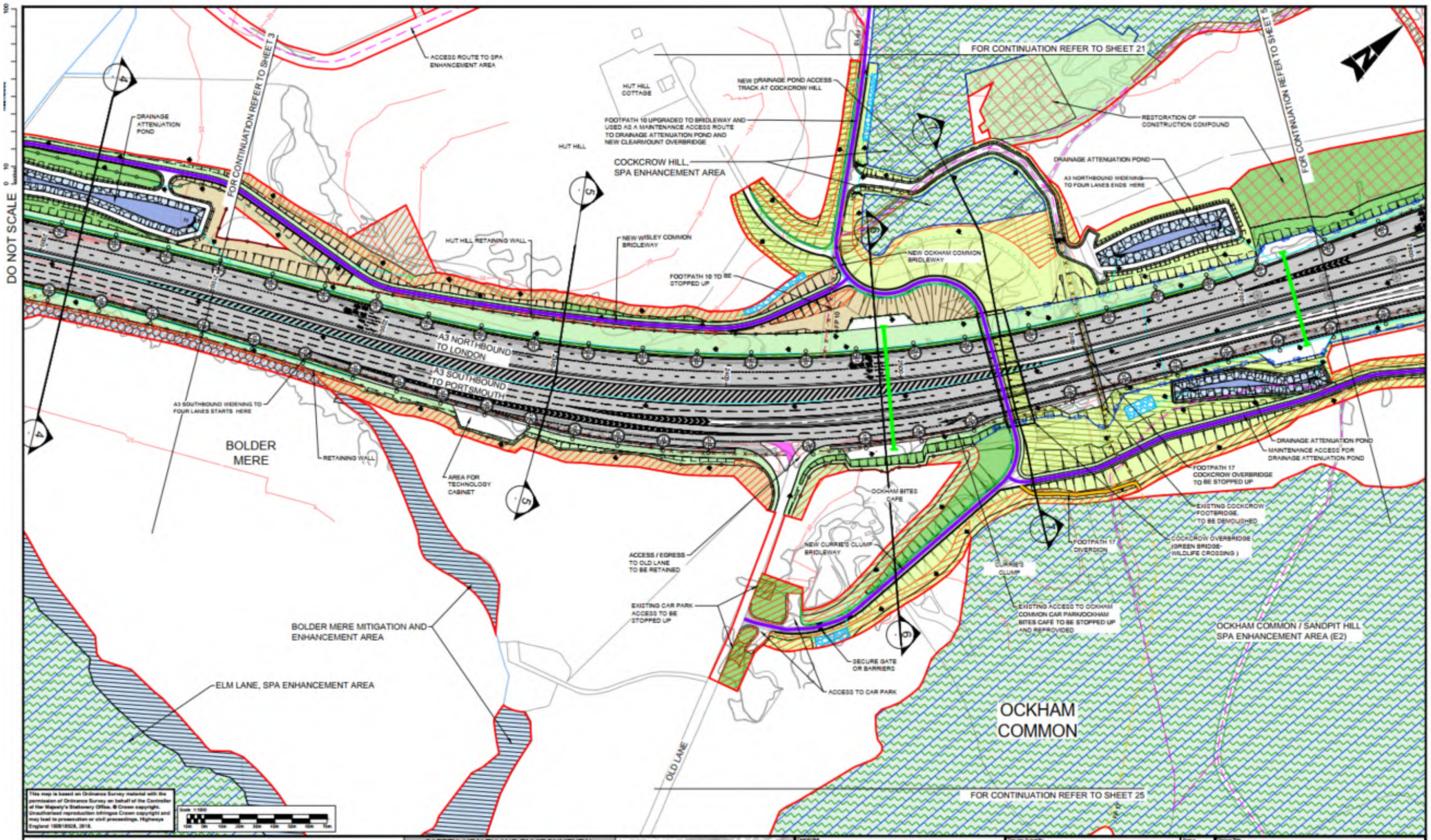

NOTES

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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
CONSTRUCTION OF STRUCTURE OVER LIVE CARRIAGEWAY

Maintenance / Cleaning
NONE

Use
NONE

Decommissioning / Demolition
EXISTING WIDELY FOOTBRIDGE TO BE DEMOLISHED

SHEET LAYOUT
N.T.S

Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date
DCO APPLICATION						
A4	0	DD	NK	JW	CT	07/06/19

Drawing Suitability: DCO APPLICATION
Status: A4
Project Title: M25 junction 10/A3 Wisley interchange
Drawing Title: SCHEME LAYOUT PLANS REGULATION 5(2)(o) SHEET 4 OF 31
Drawing Number: TR010030/APP/2.8
Rev: 0
Original Size: A1
Scale: 1:1000

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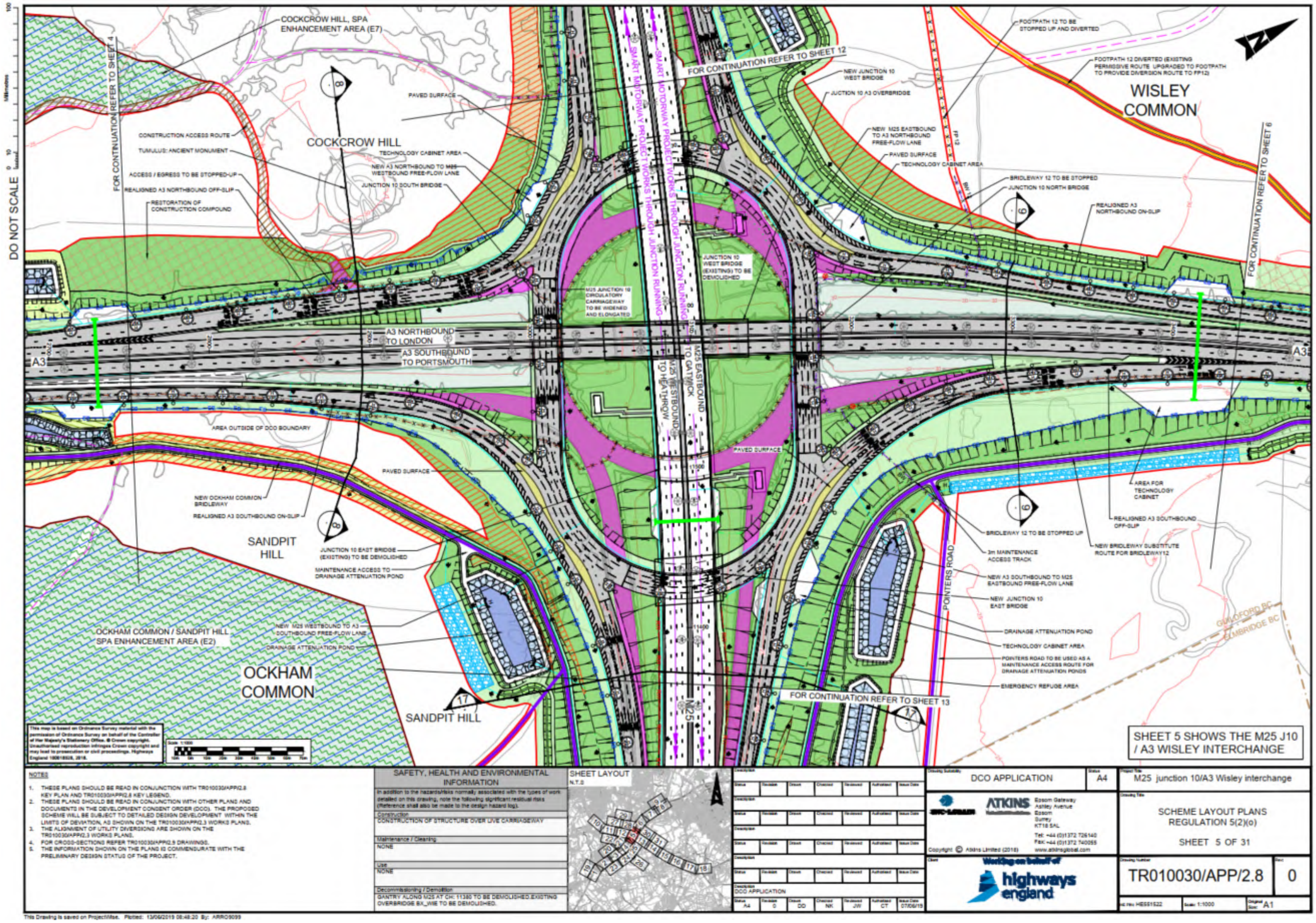

NOTES

1. THESE PLANS SHOULD BE READ IN CONJUNCTION WITH TR010030/APP/2.8 KEY PLAN AND TR010030/APP/2.6 KEY LEGEND.
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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
CONSTRUCTION OF STRUCTURE OVER LIVE CARRIAGEWAY

Maintenance / Cleaning
NONE

Use
NONE

Decommissioning / Demolition
GANTRY ALONG M25 AT CH: 11380 TO BE DEMOLISHED.EXISTING OVERBRIDGE &A_WAE TO BE DEMOLISHED.

SHEET LAYOUT
N.T.S

Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date
DCO APPLICATION						
A4	0	DD	NK	JW	CT	07/06/19

Drawing Suitability: DCO APPLICATION
Status: A4
Project Title: M25 junction 10/A3 Wisley interchange
Drawing Title: SCHEME LAYOUT PLANS REGULATION 5(2)(o) SHEET 5 OF 31
Drawing Number: TR010030/APP/2.8
Rev: 0
Scale: 1:1000
Original Size: A1

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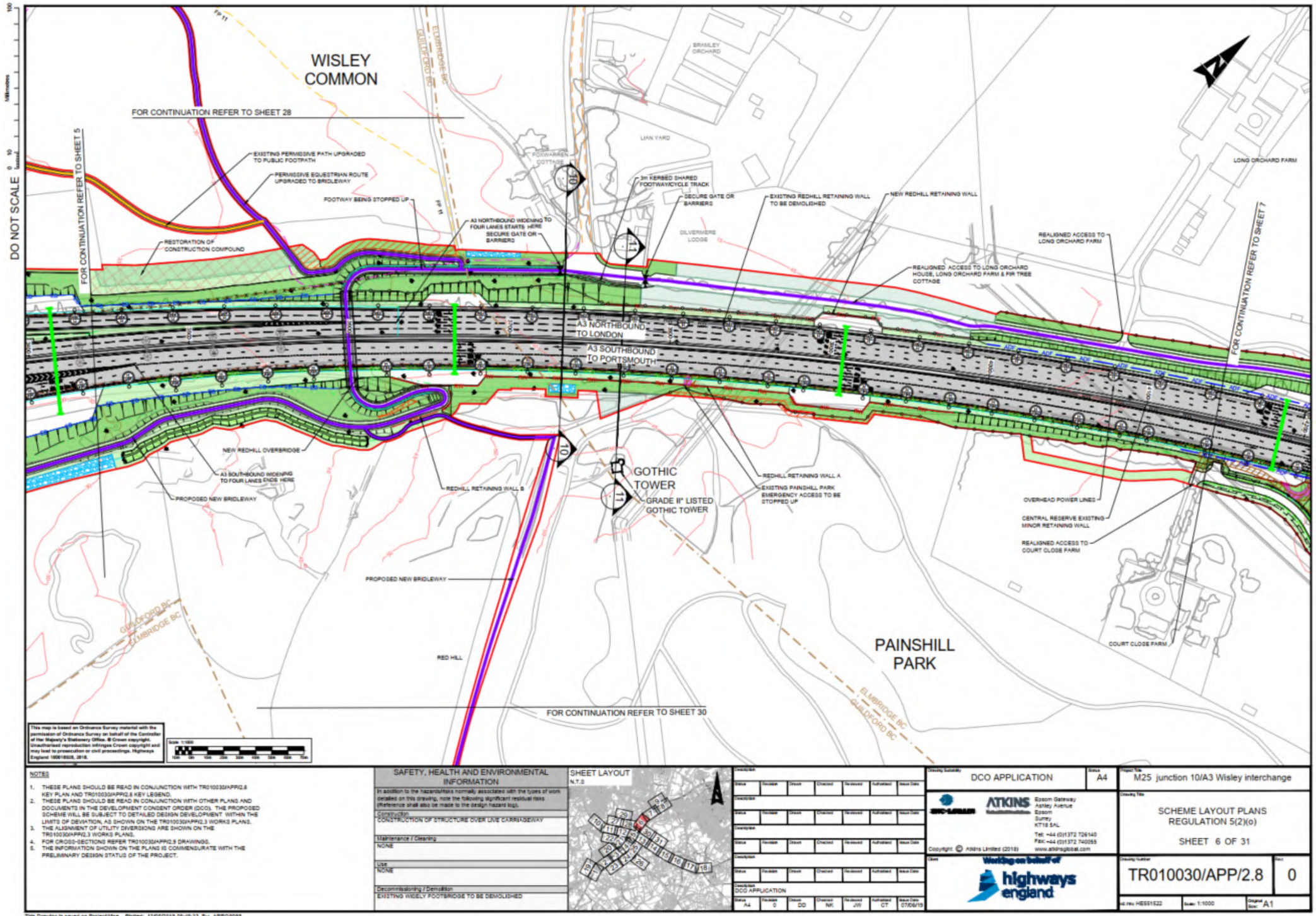

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Scale 1:1000

NOTES

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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: CONSTRUCTION OF STRUCTURE OVER LIVE CARRIAGEWAY

Maintenance / Cleaning: NONE

Use: NONE

Decommissioning / Demolition: EXISTING WIDELY FOOTBRIDGE TO BE DEMOLISHED

SHEET LAYOUT
N.T.S

Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date
DCO APPLICATION						
A4	0	DD	NK	JW	CT	27/06/19

Drawing Suitability: DCO APPLICATION
Status: A4
Project Title: M25 junction 10/A3 Wisley interchange
Drawing Title: SCHEME LAYOUT PLANS REGULATION 5(2)(o)
SHEET 6 OF 31
Drawing Number: TR010030/APP/2.8
Rev: 0
HE Proj No: HE551522
Scale: 1:1000
Original Size: A1

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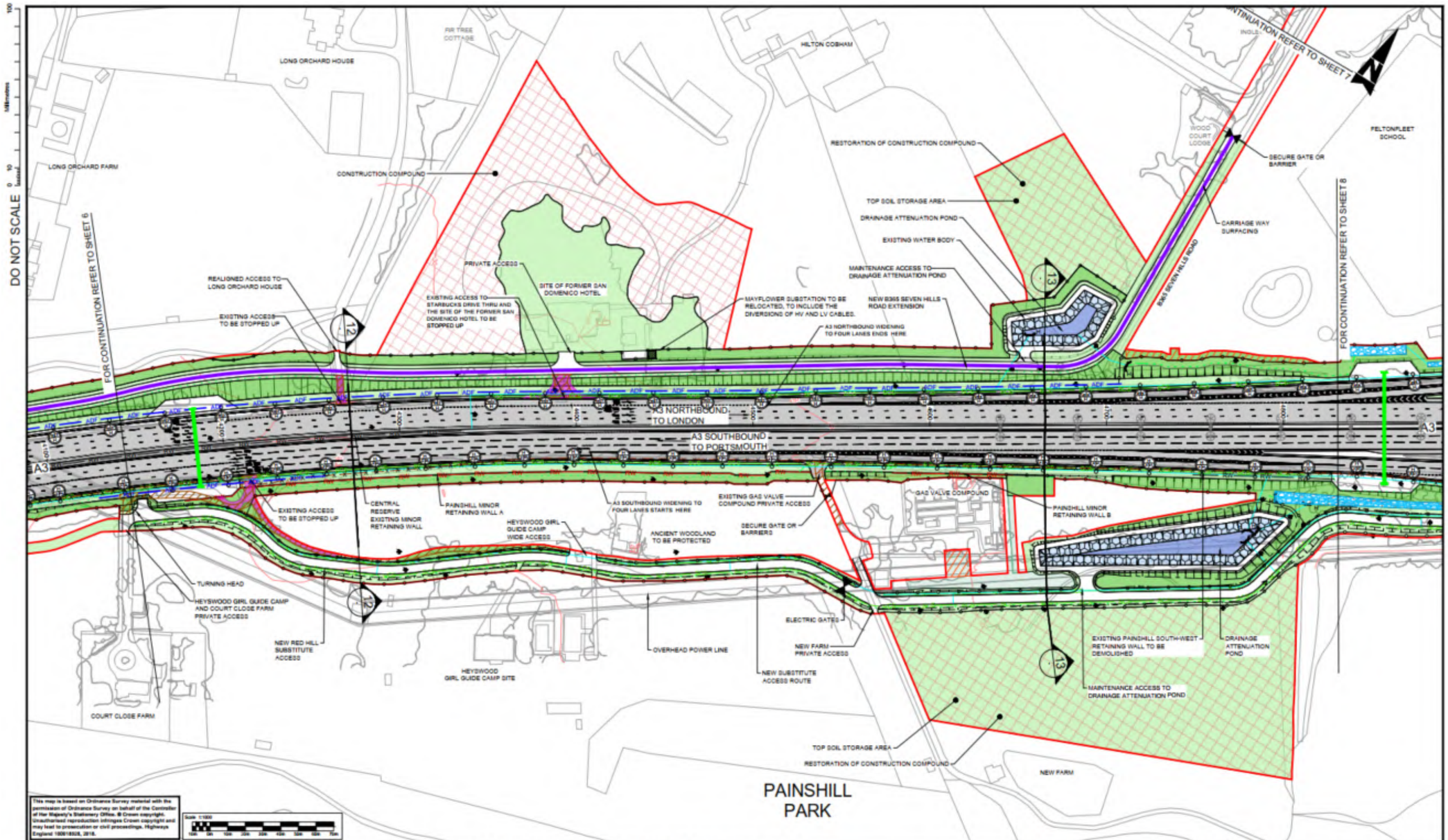

NOTES

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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
OVERHEAD POWER LINES FROM A3 NB CH:3850.00 TO CH:3950.00. CONSTRUCTION OF STRUCTURE OVER LIVE CARRIAGEWAY.

Maintenance / Cleaning
NONE

Use
NONE

Decommissioning / Demolition
EXISTING GANTRY AT A3 NB CH:4180 AND EXISTING PAINSHILL SOUTHWEST RETAINING WALL TO BE DEMOLISHED.

SHEET LAYOUT
N.T.S

Description	Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date
DCO APPLICATION	A4	0	DD	NK	JW	CT	07/06/19

Drawing Suitability: DCO APPLICATION | Status: A4 | Scale: A1

Project Title: M25 junction 10/A3 Wisley interchange

Drawing Title: SCHEME LAYOUT PLANS REGULATION 5(2)(o)

SHEET 7 OF 31

Drawing Number: TR010030/APP/2.8 | Rev: 0

HE No: HE551522 | Scale: 1:1000 | Original Size: A1

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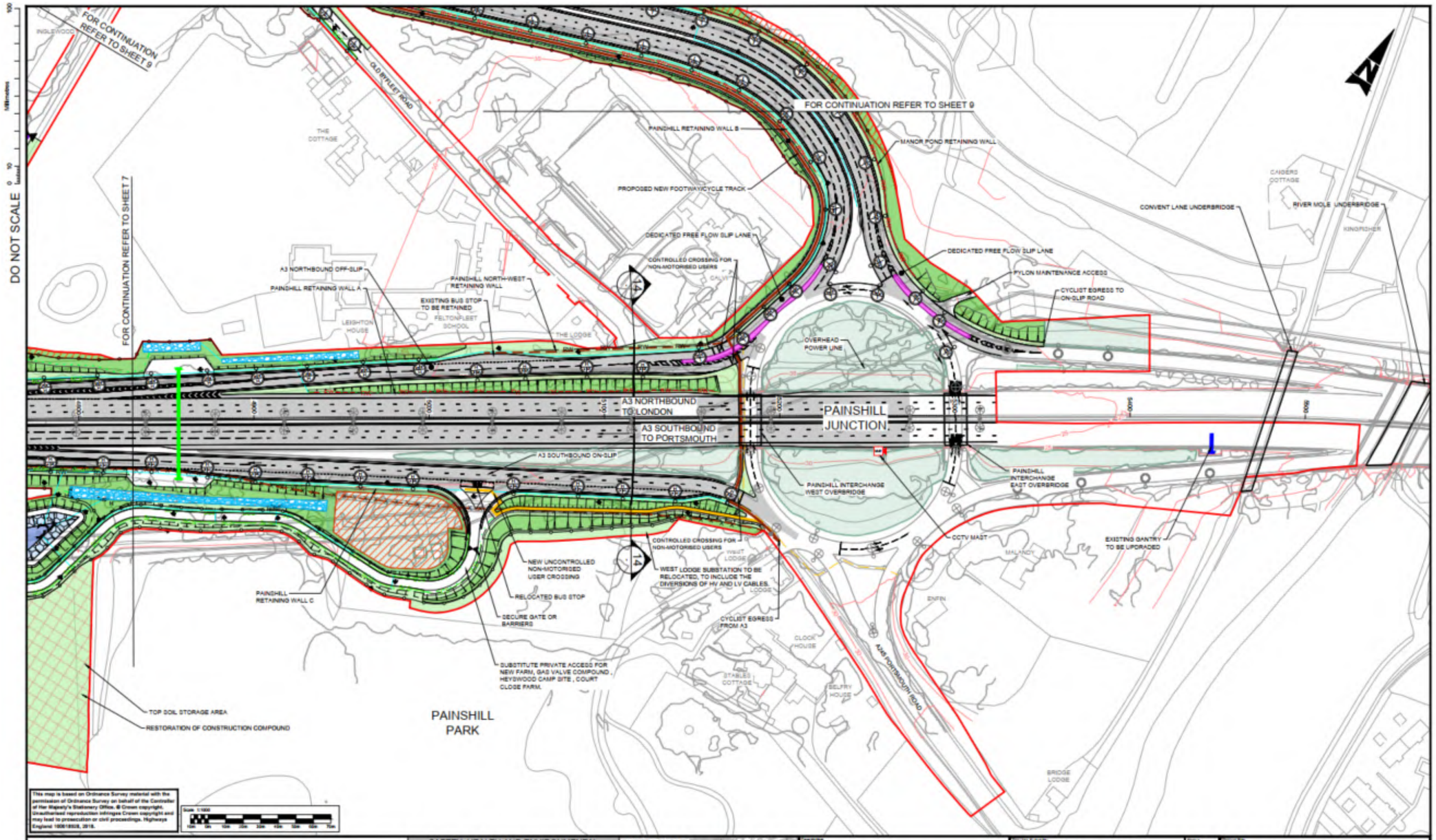

NOTES

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3. THE ALIGNMENT OF UTILITY DIVERSIONS ARE SHOWN ON THE TR010030/APP/2.3 WORKS PLANS.
4. FOR CROSS-SECTIONS REFER TR010030/APP/2.5 DRAWINGS.
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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
OVERHEAD POWER LINES FROM A3 NB CH:3800.00 TO CH:4000.00. CONSTRUCTION OF STRUCTURE OVER LIVE CARRIAGEWAY.

Maintenance / Cleaning
NONE

Use
NONE

Decommissioning / Demolition
NONE

SHEET LAYOUT
N.T.S

Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date
DCO APPLICATION						
A4	0	DD	NK	JW	CT	07/06/19

Drawing Suitability: DCO APPLICATION
Status: A4
Project Title: M25 junction 10/A3 Wisley interchange
Drawing Title: SCHEME LAYOUT PLANS REGULATION 5(2)(o)
SHEET 8 OF 31
Drawing Number: TR010030/APP/2.8
Rev: 0
Scale: 1:1000
Original Size: A1
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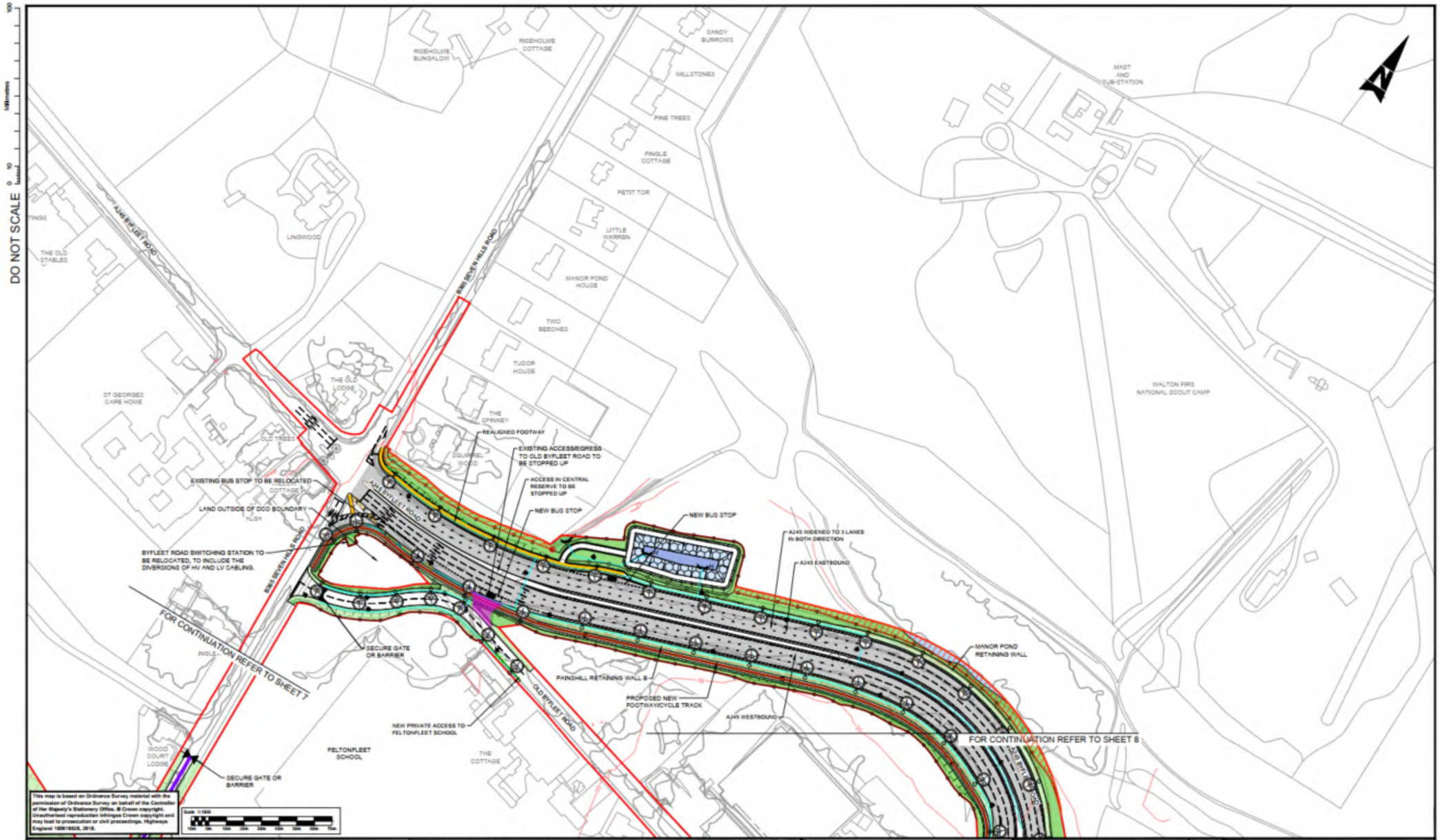

NOTES

1. THESE PLANS SHOULD BE READ IN CONJUNCTION WITH TR010030/APP/2.8 KEY PLAN AND TR010030/APP/2.8 KEY LEGEND.
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4. FOR CROSS-SECTIONS REFER TR010030/APP/2.9 DRAWINGS.
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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

SHEET LAYOUT N.T.S

Drawn	Designed	Checked	Reviewed	Authorised	Issue Date
DCO APPLICATION					
A4	0	DO	NK	JW	CT	07/06/19

DCO APPLICATION | Status A4

M25 junction 10/A3 Wisley interchange

SCHEME LAYOUT PLANS REGULATION 5(2)(o)

SHEET 9 OF 31

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TR010030/APP/2.8 | 0

HE Proj: HE551522 | Scale: 1:1000 | Original Size: A1

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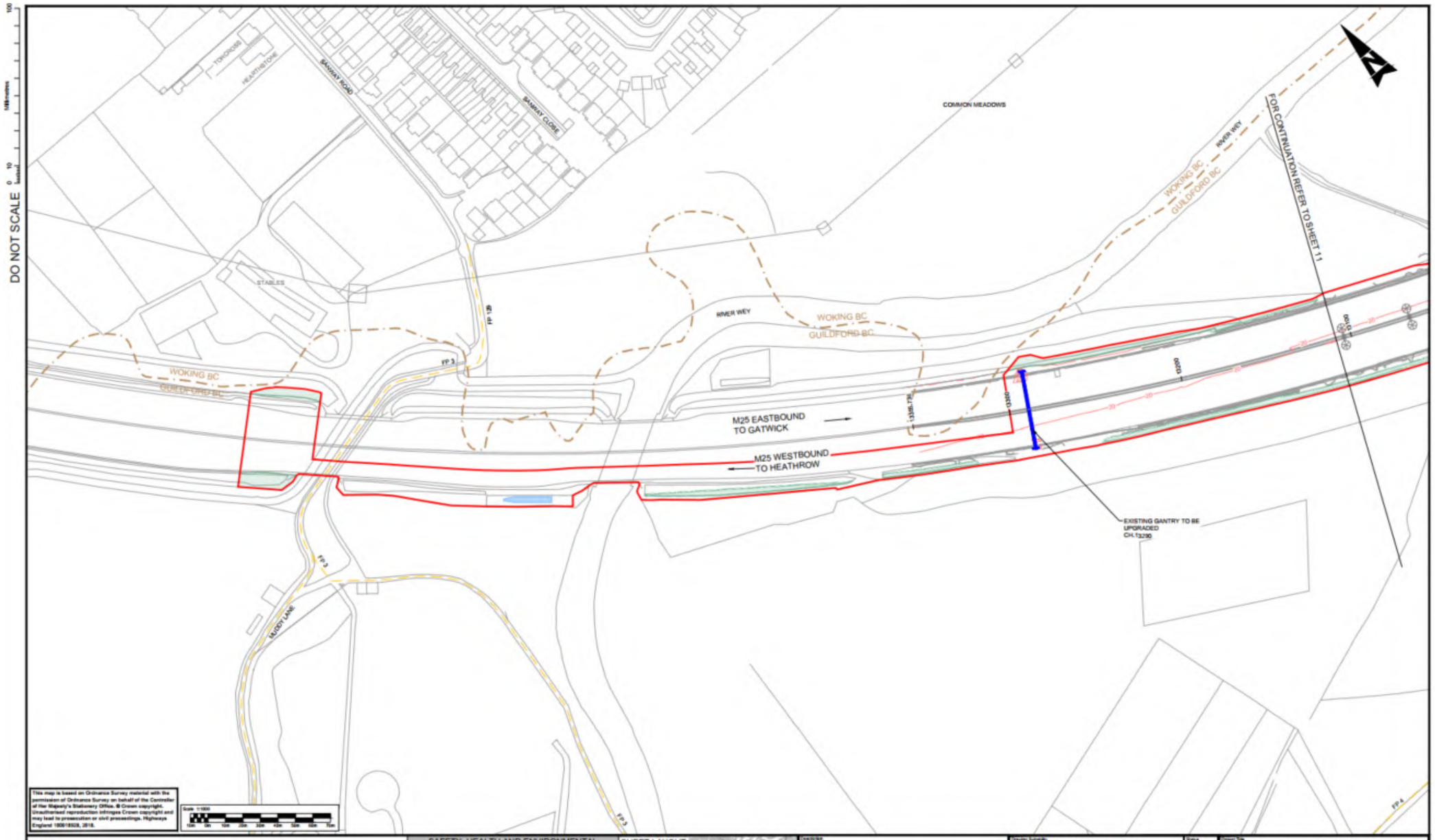

NOTES

1. THESE PLANS SHOULD BE READ IN CONJUNCTION WITH TR010030/APP/2.8 KEY PLAN AND TR010030/APP/2.6 KEY LEGEND.
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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

SHEET LAYOUT
N.T.S

Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date
A4	0	DD	NK	JW	CT	07/06/19

Description: DCO APPLICATION

Drawing Suitability: DCO APPLICATION | Status: A4

Project Title: M25 junction 10/A3 Wisley interchange

Drawing Title: SCHEME LAYOUT PLANS REGULATION 5(2)(o)

SHEET 10 OF 31

Drawing Number: TR010030/APP/2.8 | Rev: 0

M: PIN: HE551522 | Scale: 1:1000 | Original Size: A1

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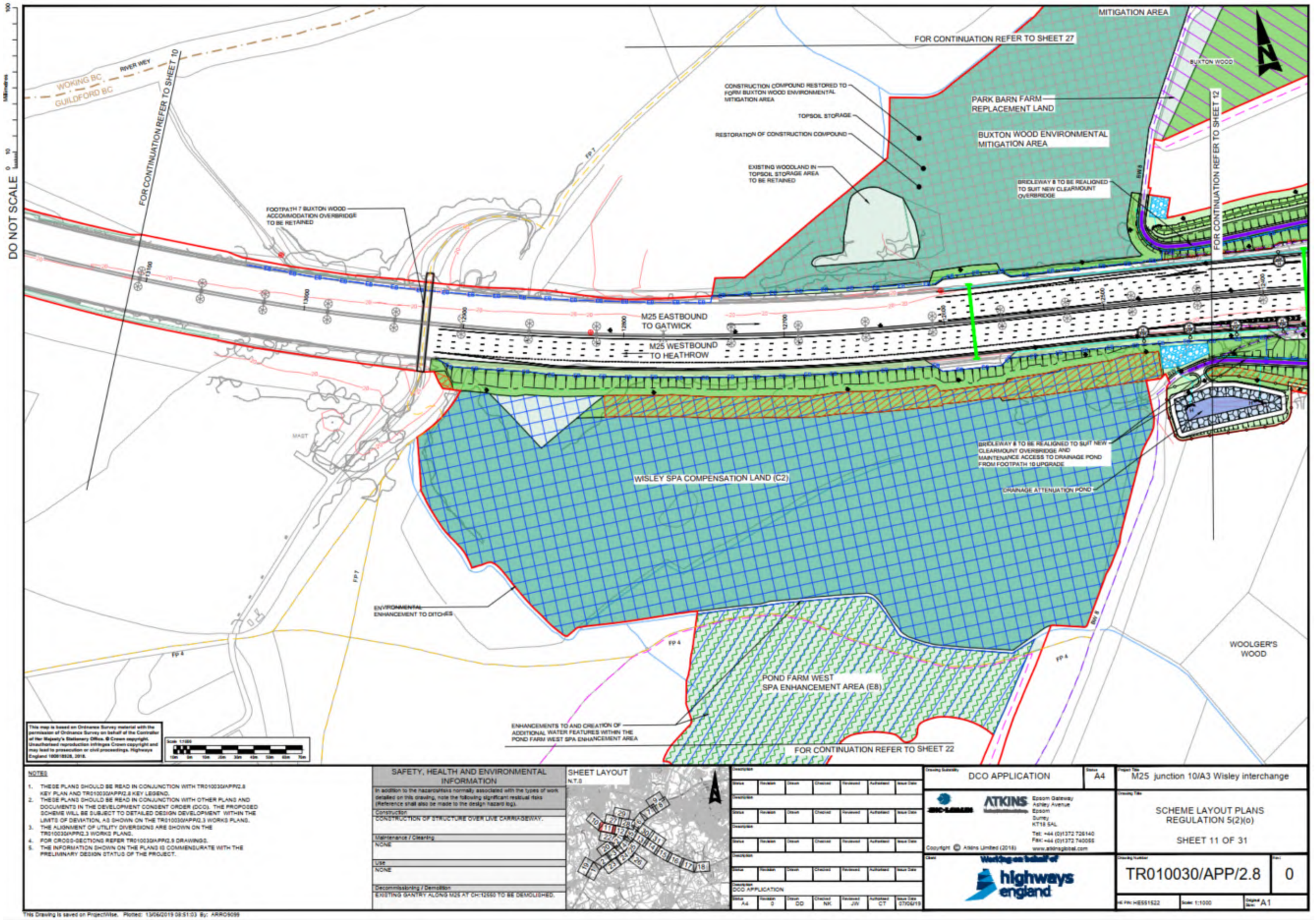

NOTES

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4. FOR CROSS-SECTIONS REFER TR010030/APP/2.9 DRAWINGS.
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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	CONSTRUCTION OF STRUCTURE OVER LIVE CARRIAGEWAY.
Maintenance / Cleaning	NONE
Use	NONE
Decommissioning / Demolition	EXISTING GANTRY ALONG M25 AT CH12550 TO BE DEMOLISHED.

SHEET LAYOUT
N.T.S

Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date
A4	0	DD	NK	JW	CT	07/06/19

DCO APPLICATION

Drawing Suitability: DCO APPLICATION | Status: A4

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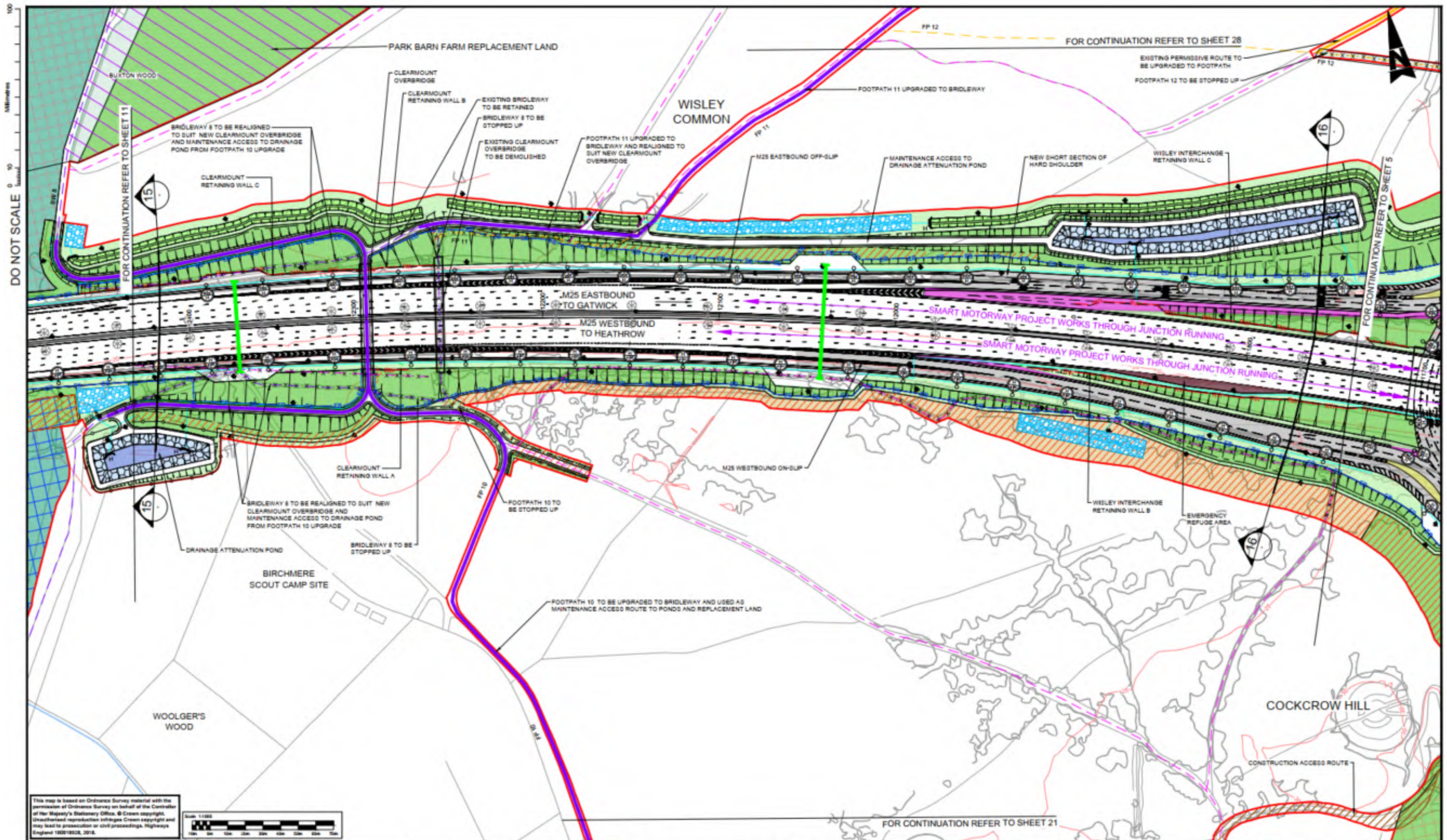
Project Title: M25 junction 10/A3 Wisley interchange

Drawing Title: SCHEME LAYOUT PLANS REGULATION 5(2)(o)

SHEET 11 OF 31

Drawing Number: TR010030/APP/2.8 | Rev: 0

HE P/N: HE551522 | Scale: 1:1000 | Original Size: A1



NOTES

1. THESE PLANS SHOULD BE READ IN CONJUNCTION WITH TR010030/APP/2.8 KEY PLAN AND TR010030/APP/2.8 KEY LEGEND.
2. THESE PLANS SHOULD BE READ IN CONJUNCTION WITH OTHER PLANS AND DOCUMENTS IN THE DEVELOPMENT CONSENT ORDER (DCO). THE PROPOSED SCHEME WILL BE SUBJECT TO DETAILED DESIGN DEVELOPMENT WITHIN THE LIMITS OF DEVIATION, AS SHOWN ON THE TR010030/APP/2.3 WORKS PLANS.
3. THE ALIGNMENT OF UTILITY DIVERSIONS ARE SHOWN ON THE TR010030/APP/2.3 WORKS PLANS.
4. FOR CROSS-SECTIONS REFER TR010030/APP/2.5 DRAWINGS.
5. THE INFORMATION SHOWN ON THE PLANS IS COMMENSURATE WITH THE PRELIMINARY DESIGN STATUS OF THE PROJECT.

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: CONSTRUCTION OF STRUCTURE OVER LIVE CARRIAGEWAY.
Maintenance / Cleaning: NONE
Use: NONE
Decommissioning / Demolition: EXISTING GANTRY ALONG M25 AT CH:11870 AND EXISTING CLEARMOUNT FOOTBRIDGE TO BE DEMOLISHED.

SHEET LAYOUT
N.T.S

Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date
A4	0	DD	NK	JW	CT	27/06/19

Description: DCO APPLICATION

Drawing Suitability: DCO APPLICATION | Status: A4 | Project Title: M25 junction 10/A3 Wisley interchange

Drawing Title: SCHEME LAYOUT PLANS REGULATION 5(2)(o) SHEET 12 OF 31

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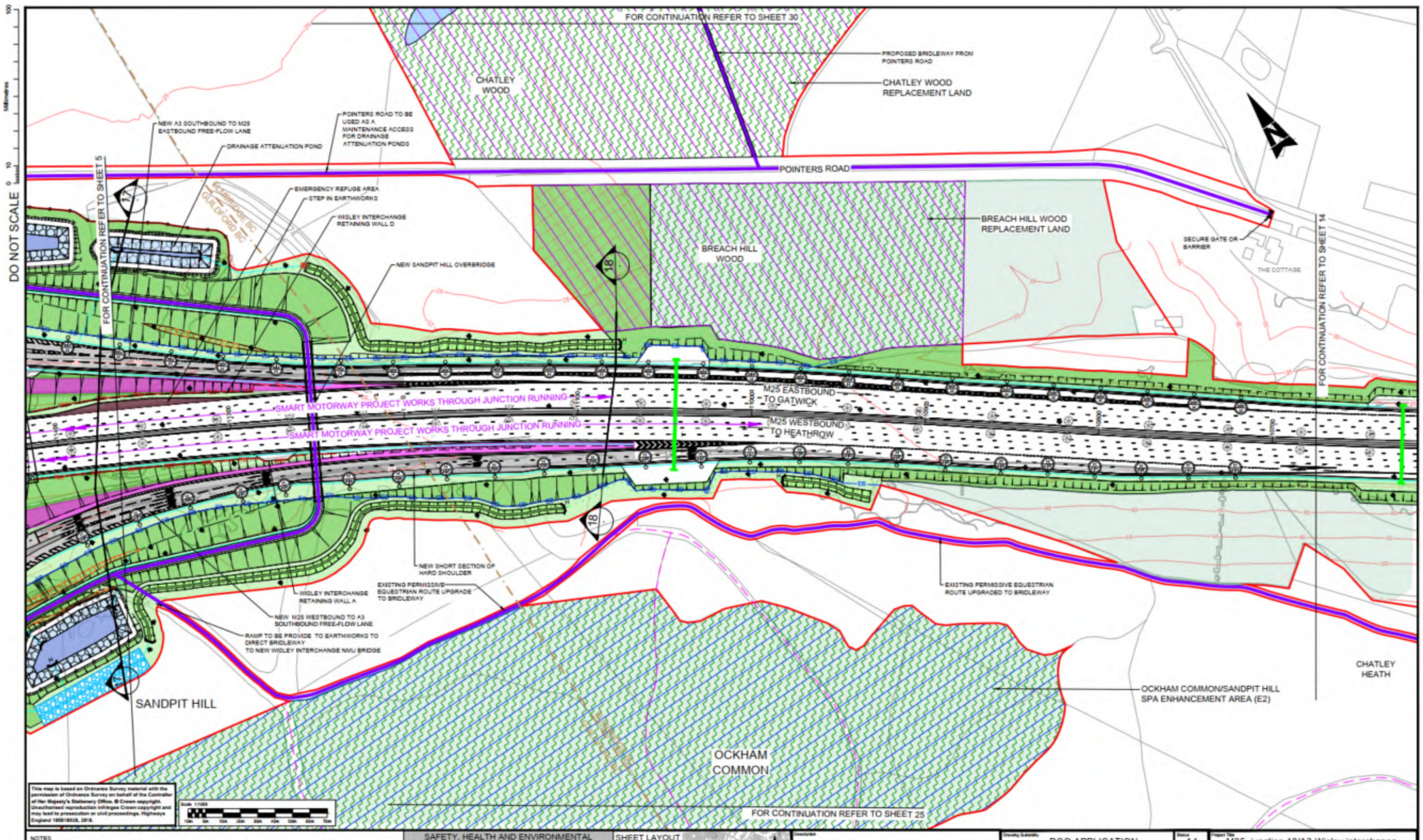
Client: Working on behalf of highways england

Drawing Number: TR010030/APP/2.8 | Rev: 0

HE P/N: HES51522 | Scale: 1:1000 | Original Size: A1



NOTES

1. THESE PLANS SHOULD BE READ IN CONJUNCTION WITH TR010030/APP/2.8 KEY PLAN AND TR010030/APP/2.8 KEY LEGEND.
2. THESE PLANS SHOULD BE READ IN CONJUNCTION WITH OTHER PLANS AND DOCUMENTS IN THE DEVELOPMENT CONSENT ORDER (DCO). THE PROPOSED SCHEME WILL BE SUBJECT TO DETAILED DESIGN DEVELOPMENT WITHIN THE LIMITS OF DEVIATION, AS SHOWN ON THE TR010030/APP/2.3 WORKS PLANS.
3. THE ALIGNMENT OF UTILITY DIVERSIONS ARE SHOWN ON THE TR010030/APP/2.3 WORKS PLANS.
4. FOR CROSS-SECTIONS REFER TR010030/APP/2.9 DRAWINGS.
5. THE INFORMATION SHOWN ON THE PLANS IS COMMENSURATE WITH THE PRELIMINARY DESIGN STATUS OF THE PROJECT.

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	CONSTRUCTION OF STRUCTURE OVER LIVE CARRIAGEWAY.
Maintenance / Cleaning	NONE
Use	NONE
Decommissioning / Demolition	GANTRIES ALONG M25 AT CH10870 AND CH11390 TO BE DEMOLISHED.

SHEET LAYOUT N.T.S.

Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date
A4	0	DD	NK	JW	CT	07/06/19

DCO APPLICATION

Drawing Suitability: DCO APPLICATION | Status: A4 | Scale: A1

Project Title: M25 junction 10/A3 Wisley interchange

Drawing Title: SCHEME LAYOUT PLANS REGULATION 5(2)(o)

SHEET 13 OF 31

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Client: Working on behalf of highways england

Drawing Number: TR010030/APP/2.8 | Rev: 0

HE PIN: HE551522 | Scale: 1:1000 | Original Size: A1

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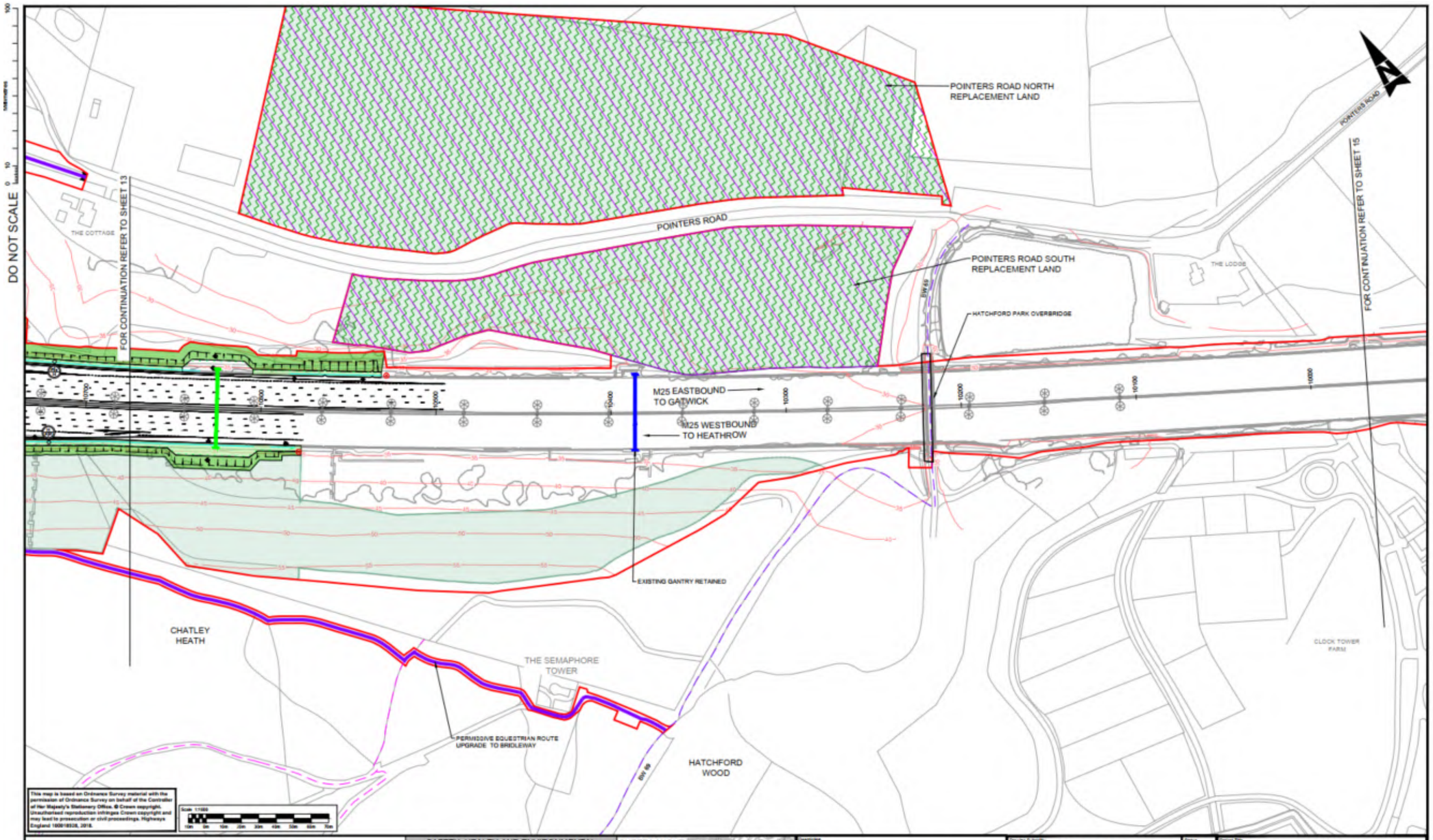

NOTES

1. THESE PLANS SHOULD BE READ IN CONJUNCTION WITH TR010030/APP/2.8 KEY PLAN AND TR010030/APP/2.8 KEY LEGEND.
2. THESE PLANS SHOULD BE READ IN CONJUNCTION WITH OTHER PLANS AND DOCUMENTS IN THE DEVELOPMENT CONSENT ORDER (DCO). THE PROPOSED SCHEME WILL BE SUBJECT TO DETAILED DESIGN DEVELOPMENT WITHIN THE LIMITS OF DEVIATION, AS SHOWN ON THE TR010030/APP/2.3 WORKS PLANS.
3. THE ALIGNMENT OF UTILITY DIVERSIONS ARE SHOWN ON THE TR010030/APP/2.3 WORKS PLANS.
4. FOR CROSS-SECTIONS REFER TR010030/APP/2.9 DRAWINGS.
5. THE INFORMATION SHOWN ON THE PLANS IS COMMENSURATE WITH THE PRELIMINARY DESIGN STATUS OF THE PROJECT.

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	CONSTRUCTION OF STRUCTURE OVER LIVE CARRIAGEWAY.
Maintenance / Cleaning	NONE
Use	NONE
Decommissioning / Demolition	GANTRY ALONG M25 AT CH:10380 TO BE DEMOLISHED.

SHEET LAYOUT
N.T.S

Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date
A4	0	DD	NK	JW	CT	07/06/19

Description: DCO APPLICATION

Drawing Suitability: DCO APPLICATION | Status: A4 | Project Title: M25 junction 10/A3 Wisley interchange

Drawing Title: SCHEME LAYOUT PLANS REGULATION 5(2)(o)
SHEET 14 OF 31

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Client: Working on behalf of highways england

Drawing Number: TR010030/APP/2.8 | Rev: 0

M4 PIN: HE551522 | Scale: 1:1000 | Original Size: A1

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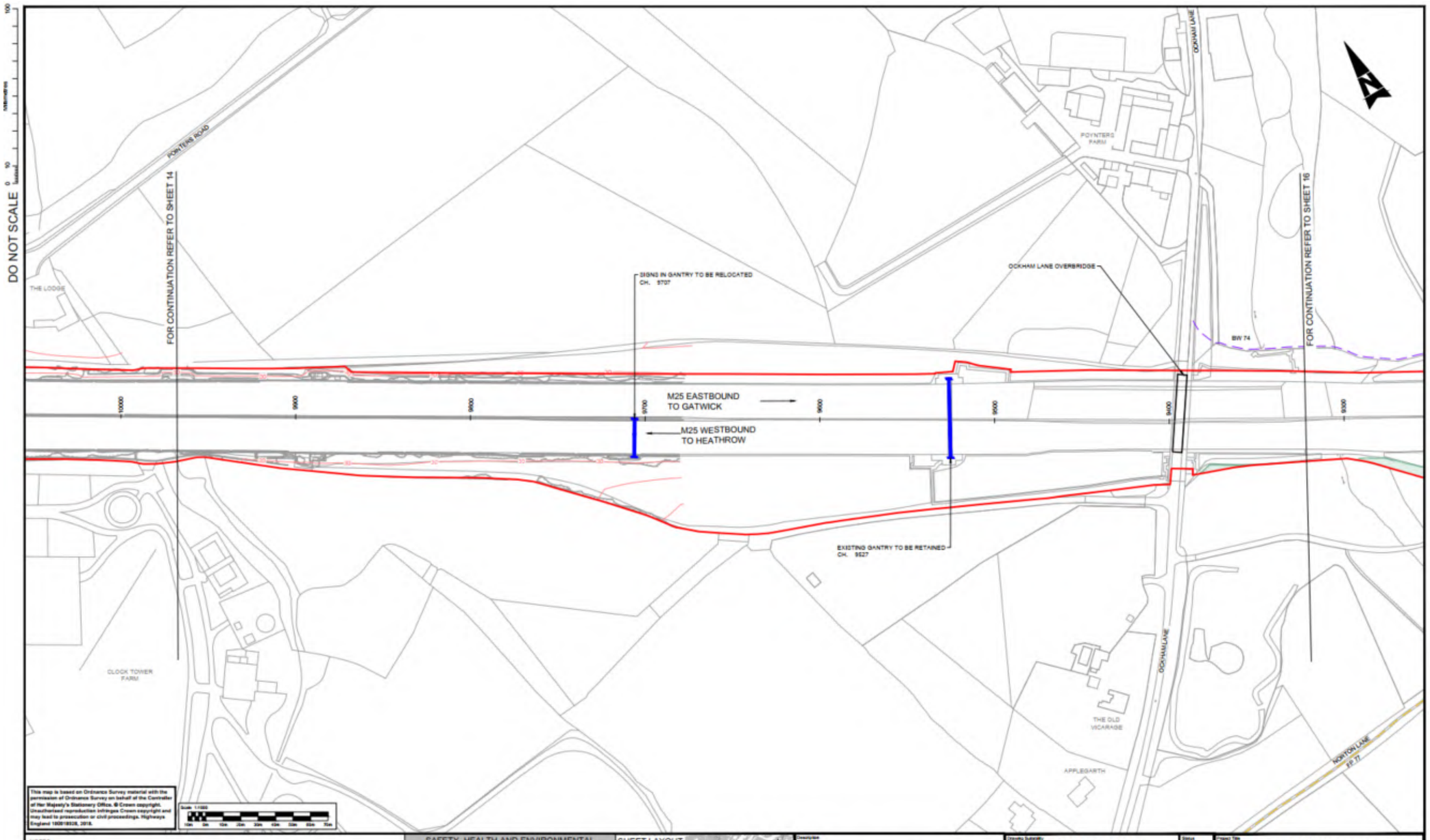

NOTES

1. THESE PLANS SHOULD BE READ IN CONJUNCTION WITH TR010030/APP/2.8 KEY PLAN AND TR010030/APP/2.8 KEY LEGEND.
2. THESE PLANS SHOULD BE READ IN CONJUNCTION WITH OTHER PLANS AND DOCUMENTS IN THE DEVELOPMENT CONSENT ORDER (DCO). THE PROPOSED SCHEME WILL BE SUBJECT TO DETAILED DESIGN DEVELOPMENT WITHIN THE LIMITS OF DEVIATION, AS SHOWN ON THE TR010030/APP/2.3 WORKS PLANS.
3. THE ALIGNMENT OF UTILITY DIVERSIONS ARE SHOWN ON THE TR010030/APP/2.3 WORKS PLANS.
4. FOR CROSS-SECTIONS REFER TR010030/APP/2.5 DRAWINGS.
5. THE INFORMATION SHOWN ON THE PLANS IS COMMENSURATE WITH THE PRELIMINARY DESIGN STATUS OF THE PROJECT.

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
GANTRY ALONG AT CH:9583 TO BE DEMOLISHED.

SHEET LAYOUT
N.T.S

Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date
A4	0	DD	NK	JW	CT	07/06/19

Description: DCO APPLICATION

Drawing Suitability: DCO APPLICATION | Status: A4 | Project Title: M25 junction 10/A3 Wisley interchange

Drawing Title: SCHEME LAYOUT PLANS REGULATION 5(2)(o)
SHEET 15 OF 31

Drawing Number: TR010030/APP/2.8 | Rev: 0

HE PIN: HE551522 | Scale: 1:1000 | Original Size: A1

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Client: Working on behalf of highways england

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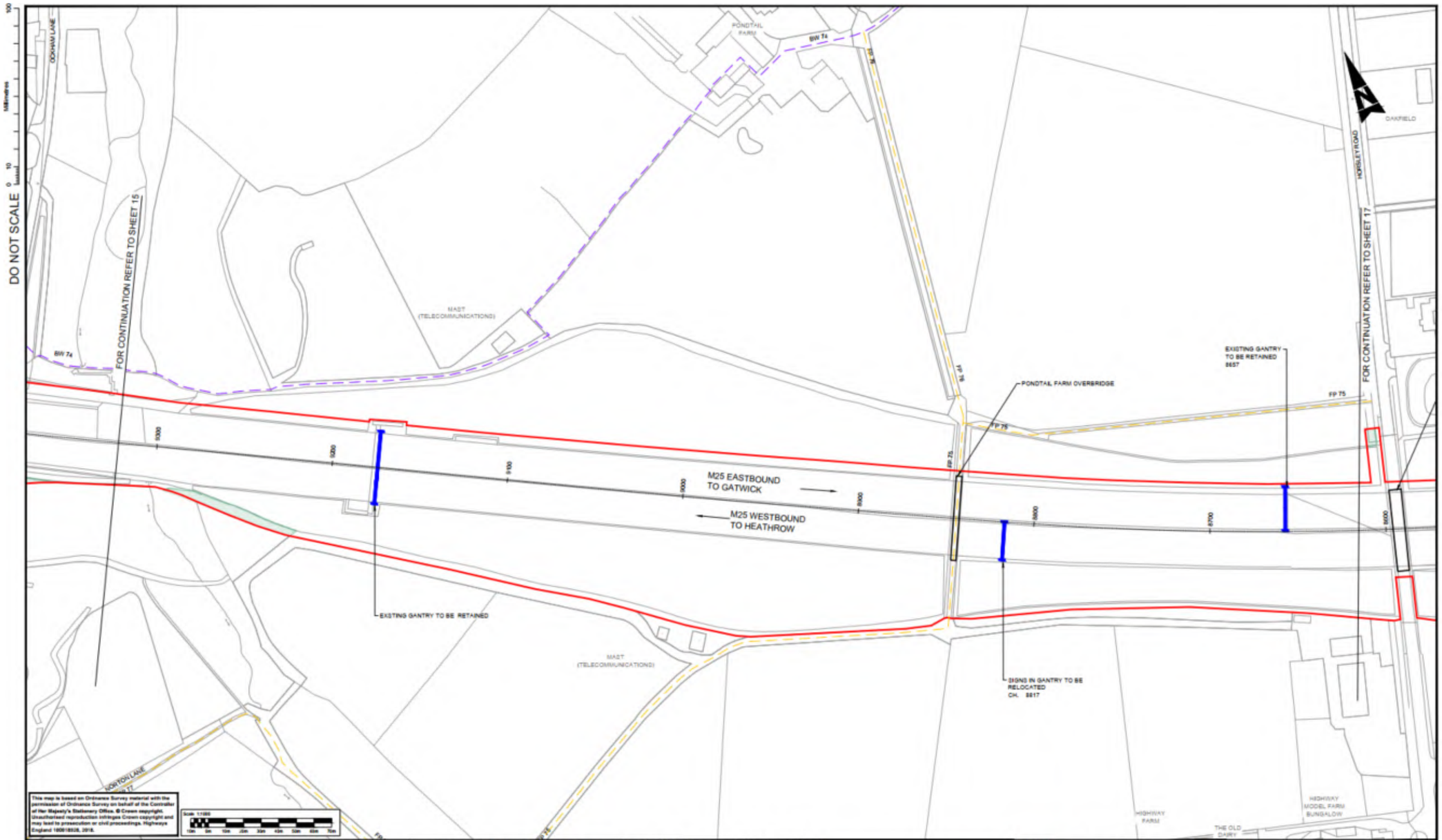

NOTES

1. THESE PLANS SHOULD BE READ IN CONJUNCTION WITH TR010030/APP/2.8 KEY PLAN AND TR010030/APP/2.8 KEY LEGEND.
2. THESE PLANS SHOULD BE READ IN CONJUNCTION WITH OTHER PLANS AND DOCUMENTS IN THE DEVELOPMENT CONSENT ORDER (DCO). THE PROPOSED SCHEME WILL BE SUBJECT TO DETAILED DESIGN DEVELOPMENT WITHIN THE LIMITS OF DEVIATION, AS SHOWN ON THE TR010030/APP/2.3 WORKS PLANS.
3. THE ALIGNMENT OF UTILITY DIVERSIONS ARE SHOWN ON THE TR010030/APP/2.3 WORKS PLANS.
4. FOR CROSS-SECTIONS REFER TR010030/APP/2.5 DRAWINGS.
5. THE INFORMATION SHOWN ON THE PLANS IS COMMENSURATE WITH THE PRELIMINARY DESIGN STATUS OF THE PROJECT.

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

SHEET LAYOUT
N.T.S

Description	Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date
DCO APPLICATION	A4	0	DD	NK	JW	CT	07/06/19

DCO APPLICATION | A4 | M25 junction 10/A3 Wisley interchange

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Client: Working on behalf of highways england

SCHEME LAYOUT PLANS REGULATION 5(2)(o)

SHEET 16 OF 31

Drawing Number: TR010030/APP/2.8 | Rev: 0

HE Pin: HE551522 | Scale: 1:1000 | Original Size: A1

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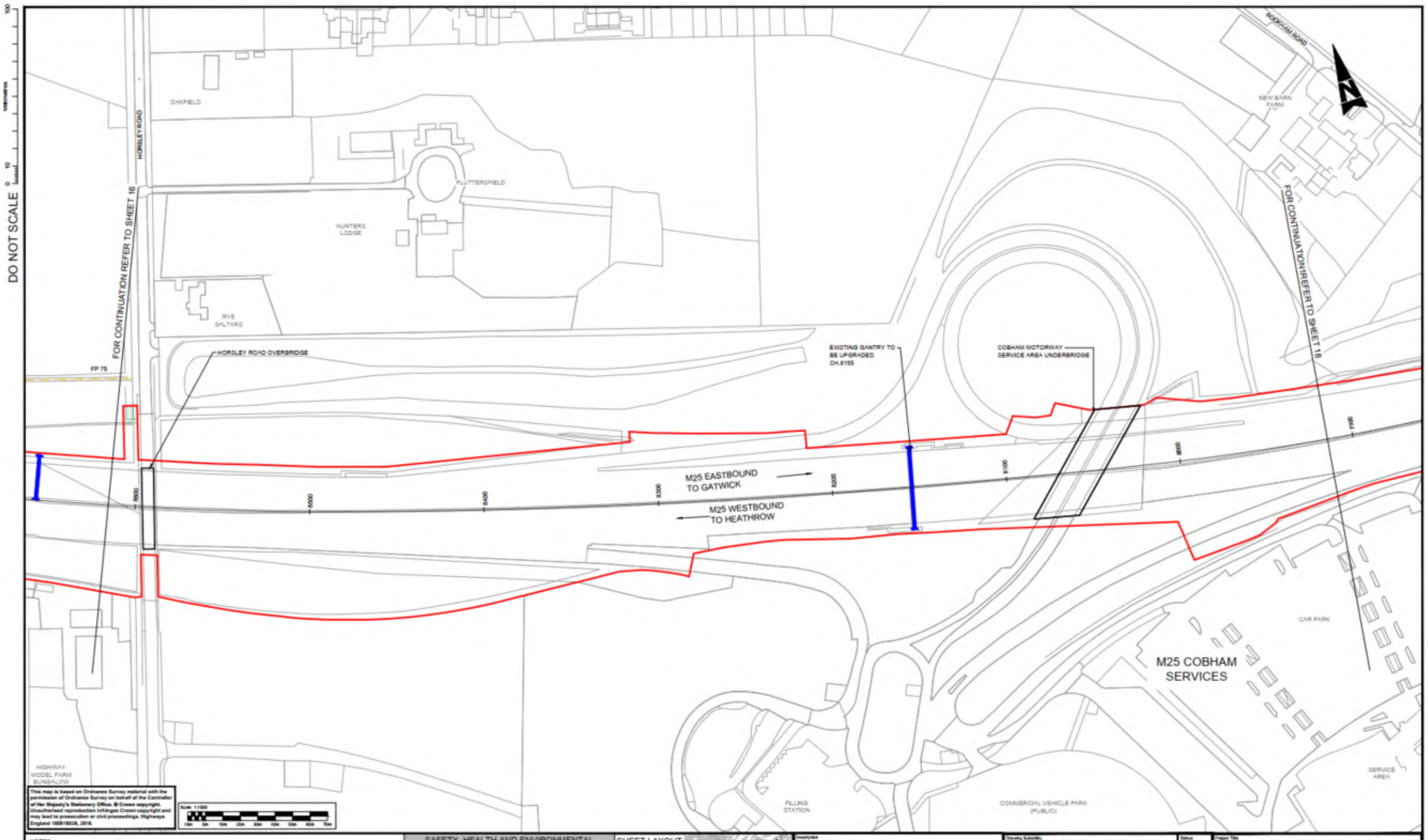

NOTES

1. THESE PLANS SHOULD BE READ IN CONJUNCTION WITH TR010030/APP/2.8 KEY PLAN AND TR010030/APP/2.8 KEY LEGEND.
2. THESE PLANS SHOULD BE READ IN CONJUNCTION WITH OTHER PLANS AND DOCUMENTS IN THE DEVELOPMENT CONSENT ORDER (DCO). THE PROPOSED SCHEME WILL BE SUBJECT TO DETAILED DESIGN DEVELOPMENT WITHIN THE LIMITS OF DEVIATION, AS SHOWN ON THE TR010030/APP/2.3 WORKS PLANS.
3. THE ALIGNMENT OF UTILITY DIVERSIONS ARE SHOWN ON THE TR010030/APP/2.3 WORKS PLANS.
4. FOR CROSS-SECTIONS REFER TR010030/APP/2.9 DRAWINGS.
5. THE INFORMATION SHOWN ON THE PLANS IS COMMENSURATE WITH THE PRELIMINARY DESIGN STATUS OF THE PROJECT.

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

SHEET LAYOUT
N.T.S

Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date
A4	0	DD	NK	JW	CT	07/06/19

DCO APPLICATION

Drawing Suitability: DCO APPLICATION | Status: A4 | Project Title: M25 junction 10/A3 Wisley interchange

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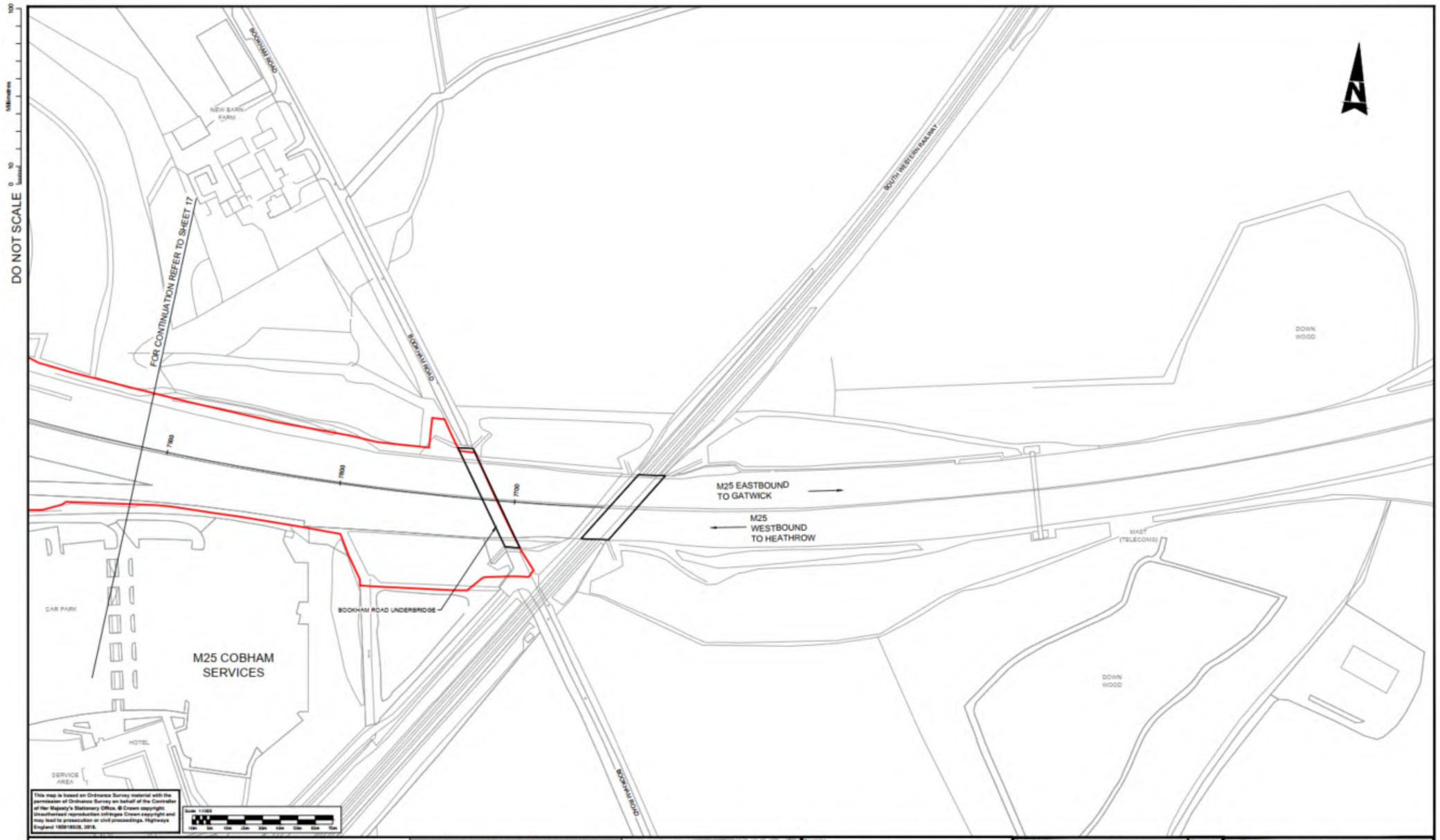
Drawing Title: SCHEME LAYOUT PLANS REGULATION 5(2)(o)

SHEET 17 OF 31

Client: Working on behalf of highways england

Drawing Number: TR010030/APP/2.8 | Rev: 0

HE PIN: HE551522 | Scale: 1:1000 | Original Size: A1



NOTES

1. THESE PLANS SHOULD BE READ IN CONJUNCTION WITH TR010030/APP/2.6 KEY PLAN AND TR010030/APP/2.8 KEY LEGEND.
2. THESE PLANS SHOULD BE READ IN CONJUNCTION WITH OTHER PLANS AND DOCUMENTS IN THE DEVELOPMENT CONSENT ORDER (DCO). THE PROPOSED SCHEME WILL BE SUBJECT TO DETAILED DESIGN DEVELOPMENT WITHIN THE LIMITS OF DEVIATION, AS SHOWN ON THE TR010030/APP/2.3 WORKS PLANS.
3. THE ALIGNMENT OF UTILITY DIVERSIONS ARE SHOWN ON THE TR010030/APP/2.3 WORKS PLANS.
4. FOR CROSS-SECTIONS REFER TR010030/APP/2.9 DRAWINGS.
5. THE INFORMATION SHOWN ON THE PLANS IS COMMENSURATE WITH THE PRELIMINARY DESIGN STATUS OF THE PROJECT.

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

SHEET LAYOUT
N.T.S

Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date
A4	0	DD	NK	JW	CT	07/06/19

DCO APPLICATION

Drawing Suitability: DCO APPLICATION | Status: A4 | Project Title: M25 junction 10/A3 Wisley interchange

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Drawing Title: SCHEME LAYOUT PLANS REGULATION 5(2)(o)
SHEET 18 OF 31

Client: Working on behalf of highways england

Drawing Number: TR010030/APP/2.8 | Rev: 0

HE No: HE551522 | Scale: 1:1000 | Original Size: A1

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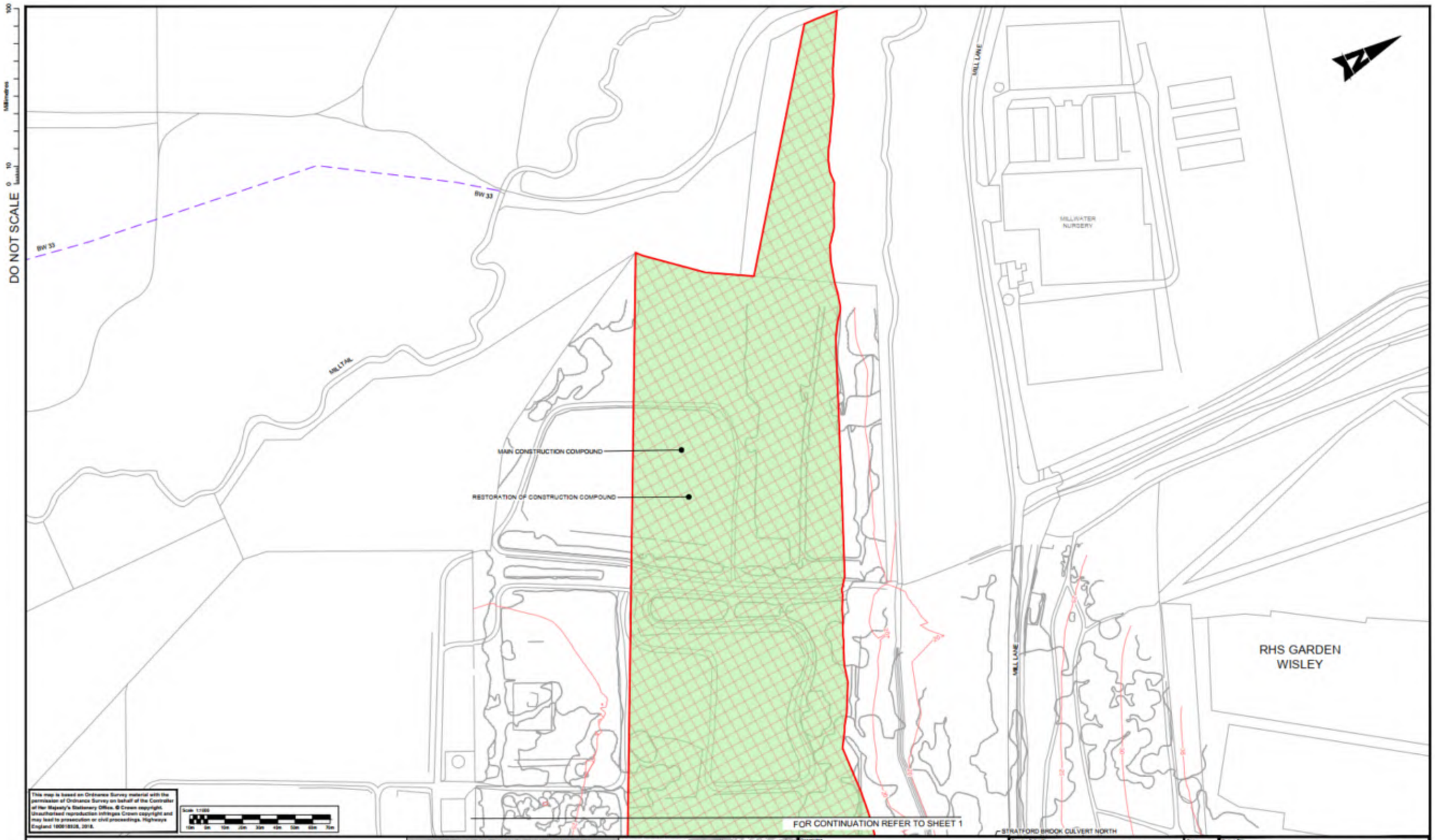

NOTES

1. THESE PLANS SHOULD BE READ IN CONJUNCTION WITH TR010030/APP/2.8 KEY PLAN AND TR010030/APP/2.8 KEY LEGEND.
2. THESE PLANS SHOULD BE READ IN CONJUNCTION WITH OTHER PLANS AND DOCUMENTS IN THE DEVELOPMENT CONSENT ORDER (DCO). THE PROPOSED SCHEME WILL BE SUBJECT TO DETAILED DESIGN DEVELOPMENT WITHIN THE LIMITS OF DEVIATION, AS SHOWN ON THE TR010030/APP/2.3 WORKS PLANS.
3. THE ALIGNMENT OF UTILITY DIVERSIONS ARE SHOWN ON THE TR010030/APP/2.3 WORKS PLANS.
4. FOR CROSS-SECTIONS REFER TR010030/APP/2.5 DRAWINGS.
5. THE INFORMATION SHOWN ON THE PLANS IS COMMENSURATE WITH THE PRELIMINARY DESIGN STATUS OF THE PROJECT.

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

SHEET LAYOUT
N.T.S

Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date
A4	0	DD	NK	JW	CT	07/06/19

Description: DCO APPLICATION

DCO APPLICATION | A4

M25 junction 10/A3 Wisley interchange

SCHEME LAYOUT PLANS
REGULATION 5(2)(o)

SHEET 19 OF 31

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TR010030/APP/2.8 | 0

HI PIN: HES51522 | Scale: 1:1000 | Original Size: A1

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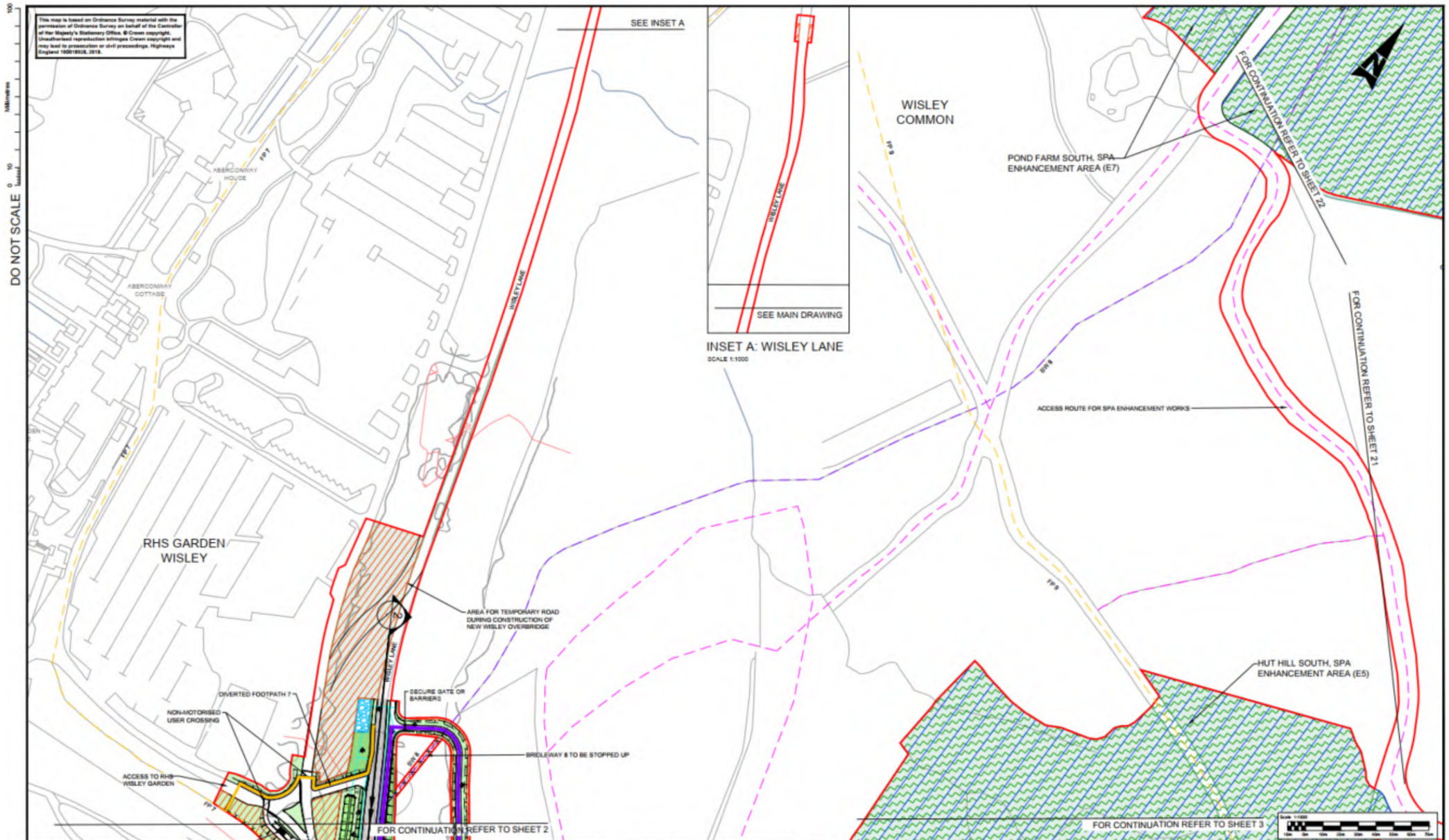

NOTES

1. THESE PLANS SHOULD BE READ IN CONJUNCTION WITH TR010030/APP/2.8 KEY PLAN AND TR010030/APP/2.9 KEY LEGEND.
2. THESE PLANS SHOULD BE READ IN CONJUNCTION WITH OTHER PLANS AND DOCUMENTS IN THE DEVELOPMENT CONSENT ORDER (DCO). THE PROPOSED SCHEME WILL BE SUBJECT TO DETAILED DESIGN DEVELOPMENT WITHIN THE LIMITS OF DEVIATION, AS SHOWN ON THE TR010030/APP/2.3 WORKS PLANS.
3. THE ALIGNMENT OF UTILITY DIVERSIONS ARE SHOWN ON THE TR010030/APP/2.3 WORKS PLANS.
4. FOR CROSS-SECTIONS REFER TR010030/APP/2.9 DRAWINGS.
5. THE INFORMATION SHOWN ON THE PLANS IS COMMENSURATE WITH THE PRELIMINARY DESIGN STATUS OF THE PROJECT.

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

SHEET LAYOUT
N.T.S

Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date
DCO APPLICATION						
A4	0	DD	NK	JW	CT	07/06/19

DCO APPLICATION | A4

M25 junction 10/A3 Wisley interchange

SCHEME LAYOUT PLANS
REGULATION 5(2)(o)

SHEET 20 OF 31

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TR010030/APP/2.8 | 0

HE PIN: HE551522 | Scale: 1:1000 | Original Size: A1

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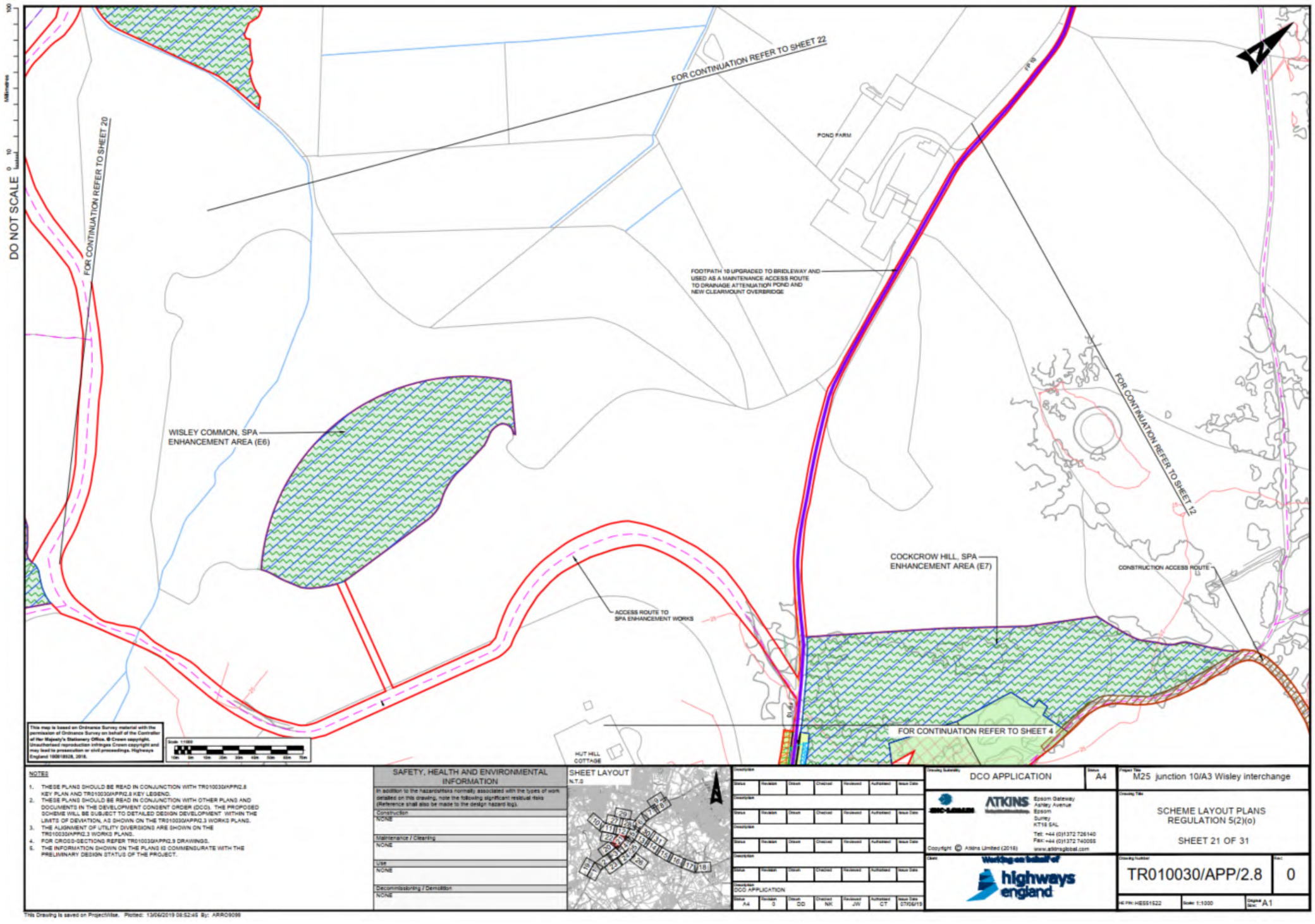

NOTES

1. THESE PLANS SHOULD BE READ IN CONJUNCTION WITH TR010030/APP/2.8 KEY PLAN AND TR010030/APP/2.8 KEY LEGEND.
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3. THE ALIGNMENT OF UTILITY DIVERSIONS ARE SHOWN ON THE TR010030/APP/2.3 WORKS PLANS.
4. FOR CROSS-SECTIONS REFER TR010030/APP/2.9 DRAWINGS.
5. THE INFORMATION SHOWN ON THE PLANS IS COMMENSURATE WITH THE PRELIMINARY DESIGN STATUS OF THE PROJECT.

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

SHEET LAYOUT
N.T.S

Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date
DCO APPLICATION						
A4	0	DD	NK	JW	CT	27/06/19

DCO APPLICATION | A4

M25 junction 10/A3 Wisley interchange

SCHEME LAYOUT PLANS
REGULATION 5(2)(o)

SHEET 21 OF 31

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TR010030/APP/2.8 | 0

HE PIN: HE551522 | Scale: 1:1000 | Original Size: A1

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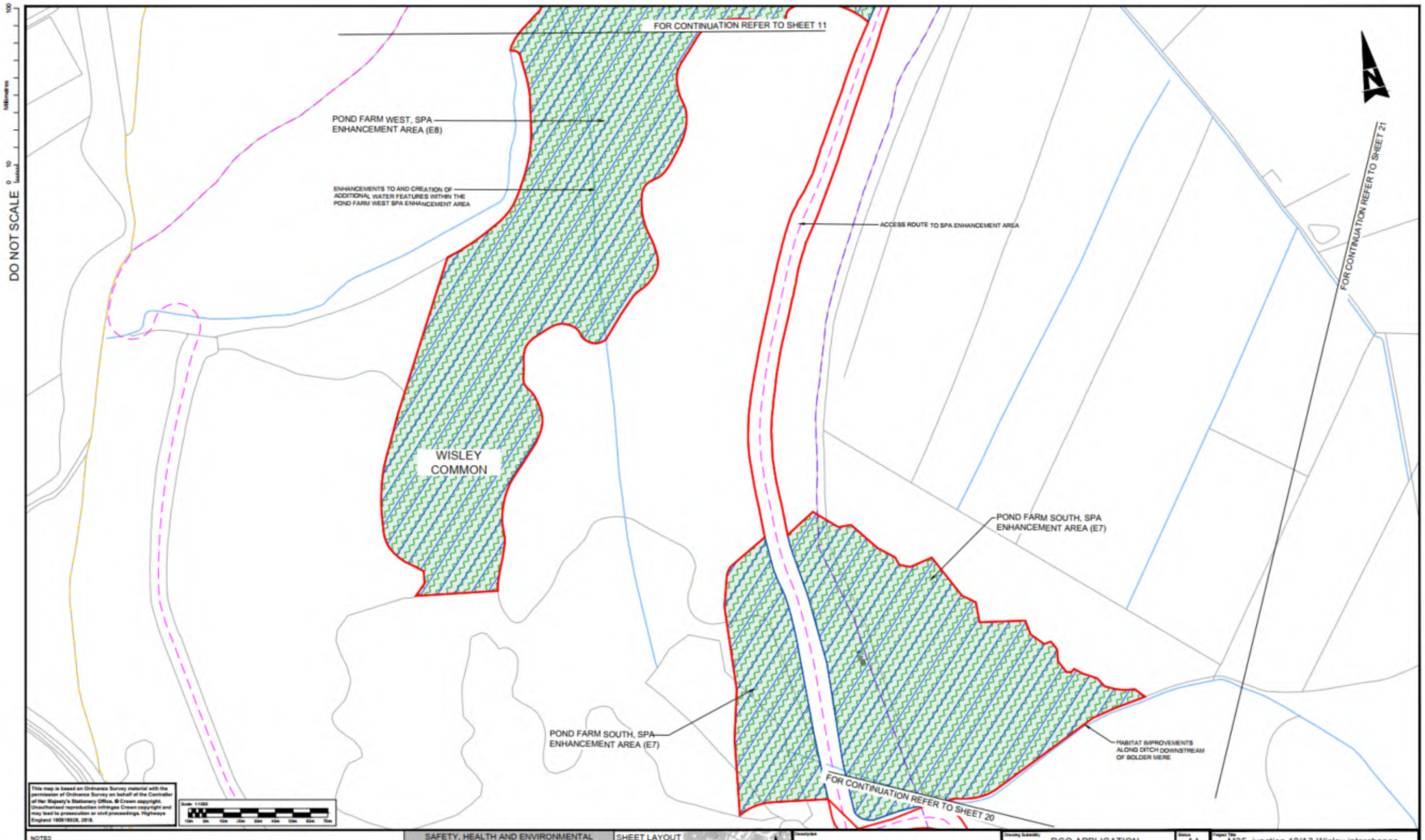

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NOTES

1. THESE PLANS SHOULD BE READ IN CONJUNCTION WITH TR010030/APP/2.8 KEY PLAN AND TR010030/APP/2.8 KEY LEGEND.
2. THESE PLANS SHOULD BE READ IN CONJUNCTION WITH OTHER PLANS AND DOCUMENTS IN THE DEVELOPMENT CONSENT ORDER (DCO). THE PROPOSED SCHEME WILL BE SUBJECT TO DETAILED DESIGN DEVELOPMENT WITHIN THE LIMITS OF DEVIATION, AS SHOWN ON THE TR010030/APP/2.3 WORKS PLANS.
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4. FOR CROSS-SECTIONS REFER TR010030/APP/2.9 DRAWINGS.
5. THE INFORMATION SHOWN ON THE PLANS IS COMMENSURATE WITH THE PRELIMINARY DESIGN STATUS OF THE PROJECT.

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

SHEET LAYOUT
N.T.S.

Description	Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date
DCO APPLICATION	A4	0	DD	NK	JW	CT	07/06/19

Drawing Suitability: DCO APPLICATION | Status: A4 | Scale: A1

Project Title: M25 junction 10/A3 Wisley interchange

Drawing Title: SCHEME LAYOUT PLANS REGULATION 5(2)(o)

SHEET 22 OF 31

Drawing Number: TR010030/APP/2.8 | Rev: 0

Client: Working on behalf of highways england

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ID File: HE551522 | Scale: 1:1000 | Original Size: A1

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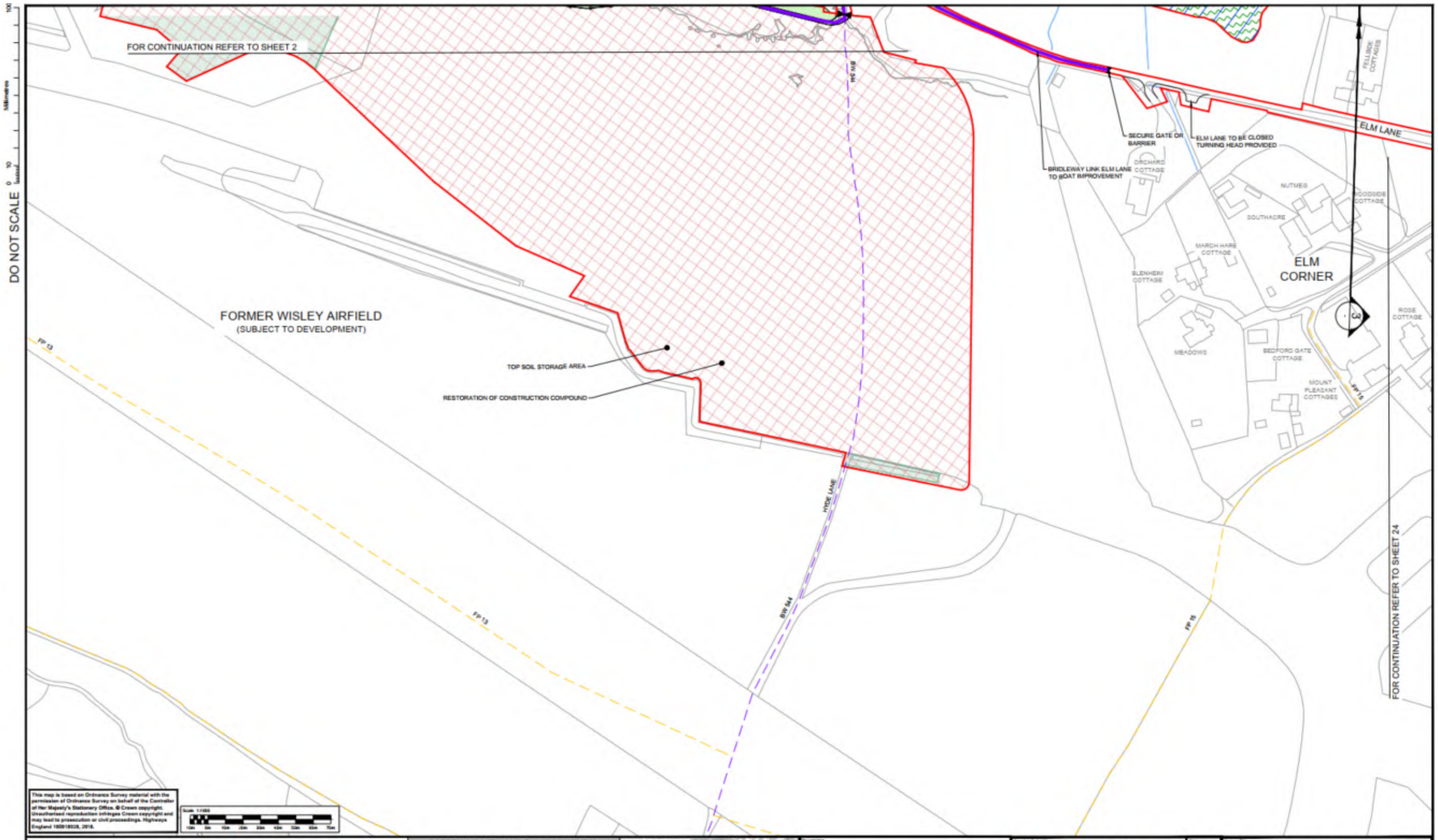

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Maintenance / Cleaning: NONE
Use: NONE
Decommissioning / Demolition: NONE

SHEET LAYOUT
N.T.S

Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date
DCO APPLICATION						
A4	0	DD	NK	JW	CT	07/06/19

Drawing Suitability: DCO APPLICATION
Status: A4

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Drawing Title: SCHEME LAYOUT PLANS REGULATION 5(2)(o)
SHEET 23 OF 31

Drawing Number: TR010030/APP/2.8
Rev: 0

HE P/N: HE551522 | Scale: 1:1000 | Original Size: A1

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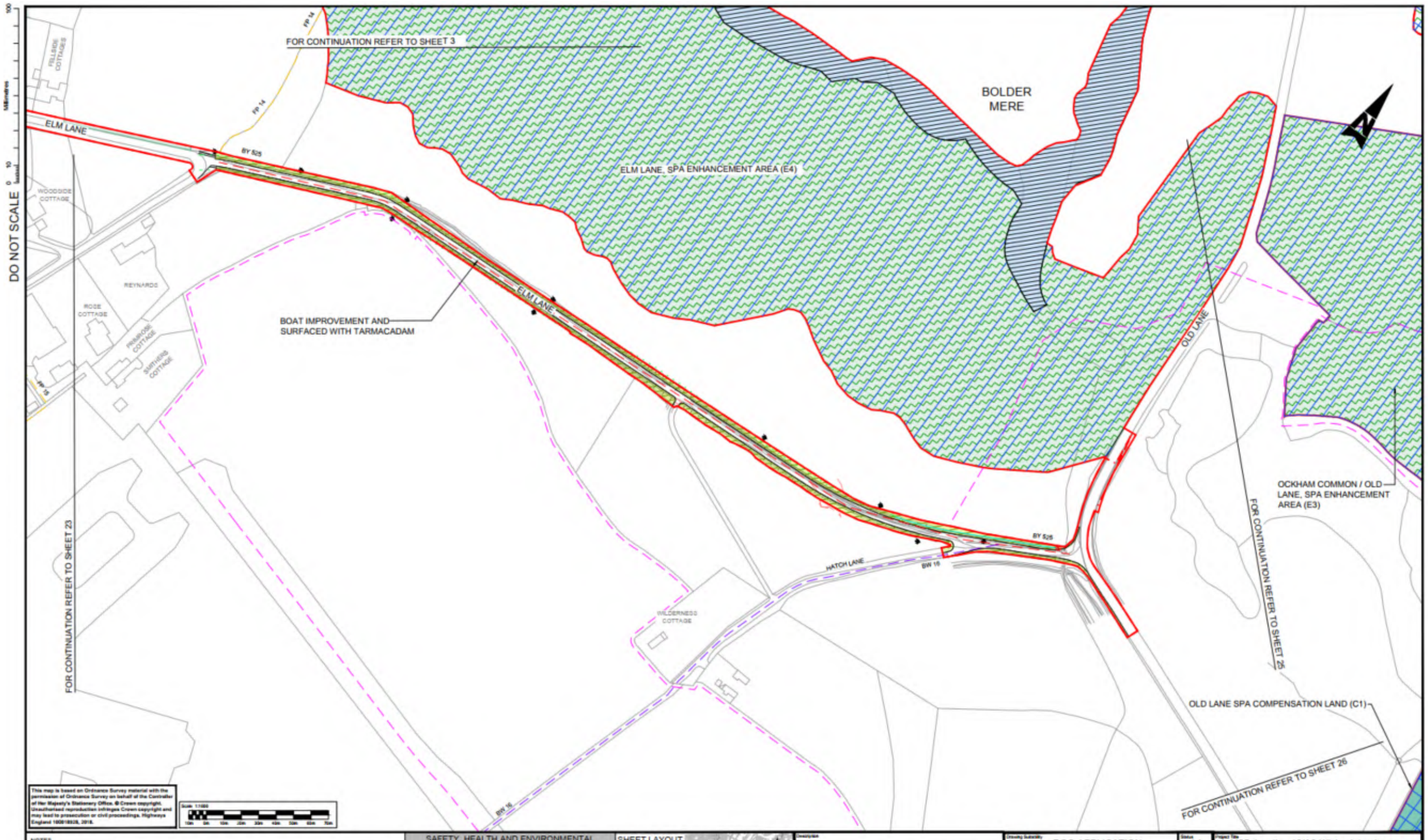

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Maintenance / Cleaning	NONE
Use	NONE
Decommissioning / Demolition	NONE

SHEET LAYOUT
N.T.S

Status	Revision	Description	Drawn	Checked	Reviewed	Authorised	Issue Date
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A4	0		DD	NK	JW	CT	07/06/19

Drawing Suitability: DCO APPLICATION
Status: A4

Project Title: M25 junction 10/A3 Wisley interchange

Drawing Title: SCHEME LAYOUT PLANS REGULATION 5(2)(o)

SHEET 24 OF 31

Drawing Number: TR010030/APP/2.8
Rev: 0

Job No: HE551522
Scale: 1:1000
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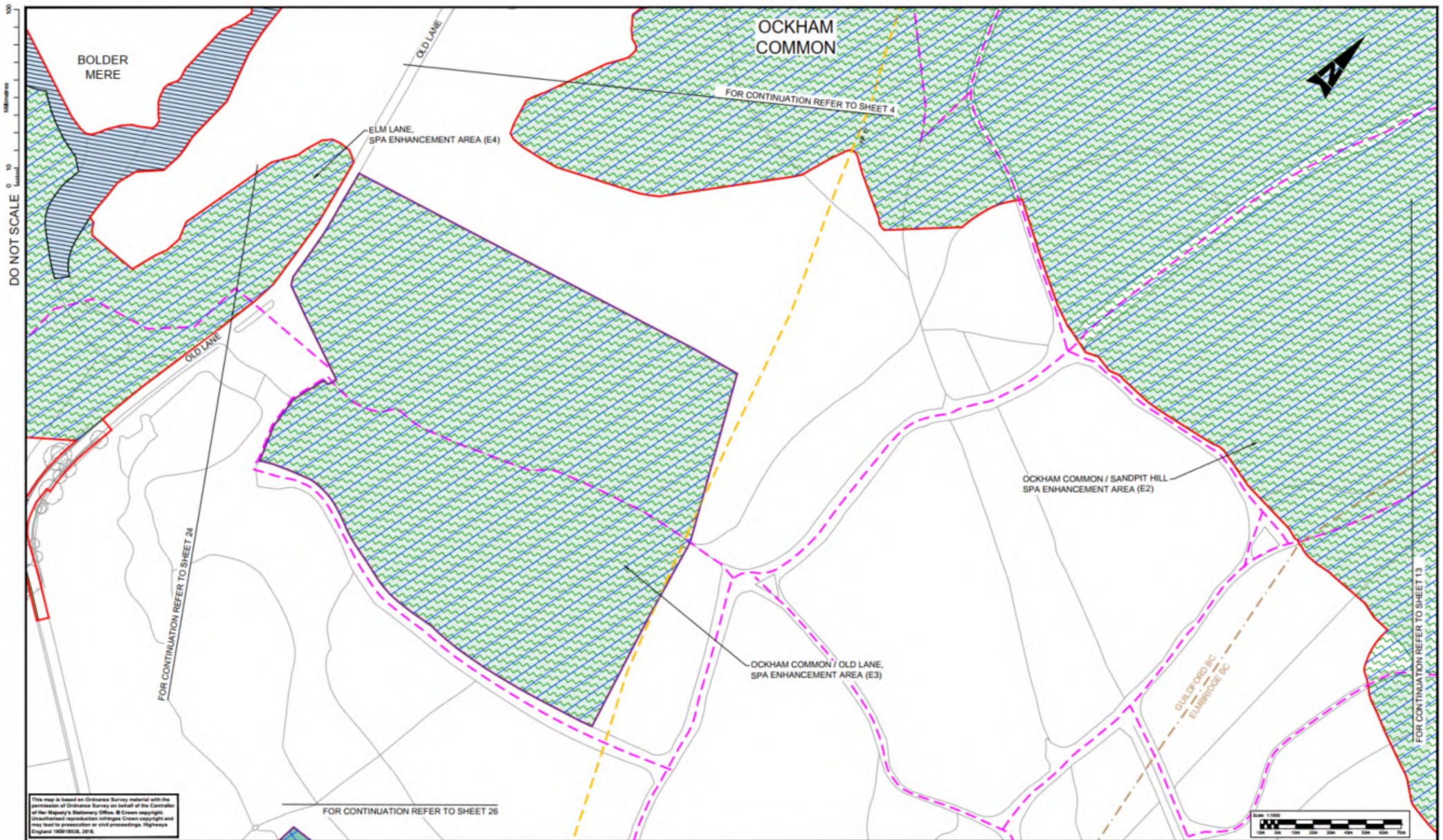

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Maintenance / Cleaning: NONE
Use: NONE
Decommissioning / Demolition: NONE

SHEET LAYOUT
N.T.S

Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date
A4	0	DD	NK	JW	CT	07/06/19

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DCO APPLICATION | A4

M25 junction 10/A3 Wisley interchange

SCHEME LAYOUT PLANS
REGULATION 5(2)(o)

SHEET 25 OF 31

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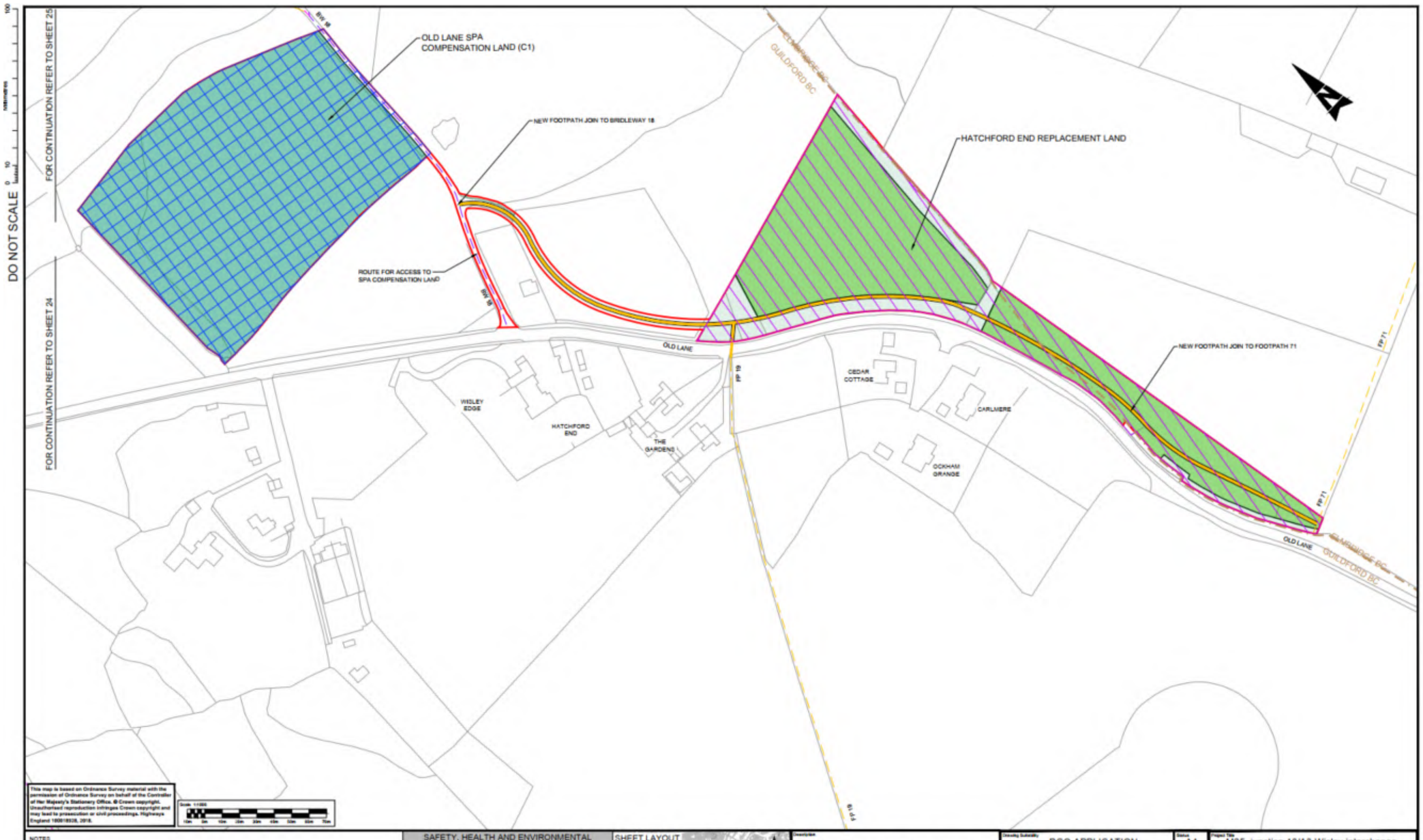

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Construction
CONSTRUCTION OF STRUCTURE OVER LIVE CARRIAGEWAY

Maintenance / Cleaning
NONE

Use
NONE

Decommissioning / Demolition
NONE

SHEET LAYOUT
N.T.S

Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date
A4	0	DD	NK	JW	CT	07/06/19

Description: DCO APPLICATION

Drawing Suitability: DCO APPLICATION | Status: A4 | Scale: 1:1000 | Original Size: A1

Project Title: M25 junction 10/A3 Wisley interchange

Drawing Title: SCHEME LAYOUT PLANS REGULATION 5(2)(o)

SHEET 26 OF 31

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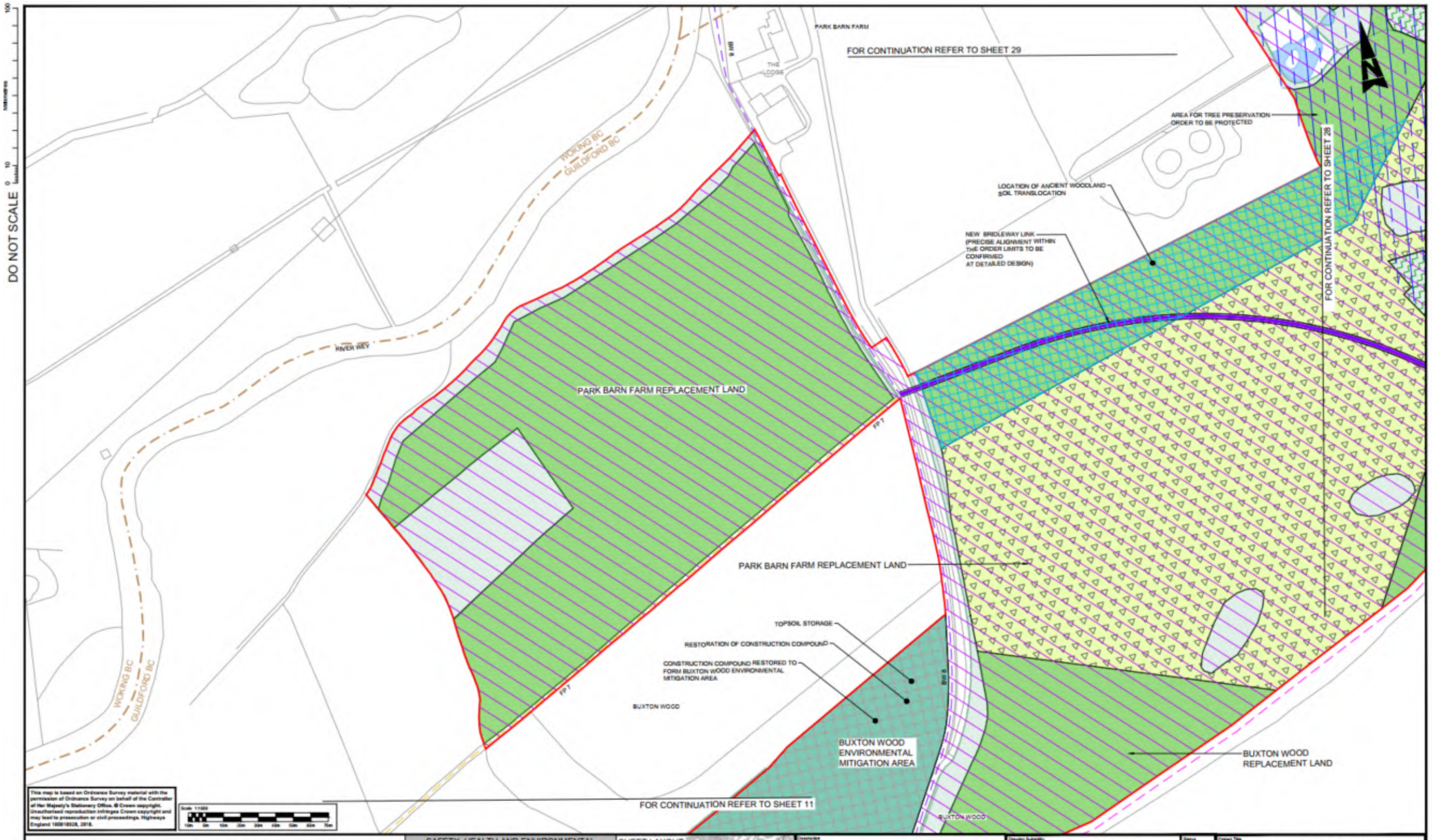

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Maintenance / Cleaning: NONE
Use: NONE
Decommissioning / Demolition: NONE

SHEET LAYOUT
N.T.S

Description	Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date
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SHEET 27 OF 31

Drawing Number: TR010030/APP/2.8
Issue: 0

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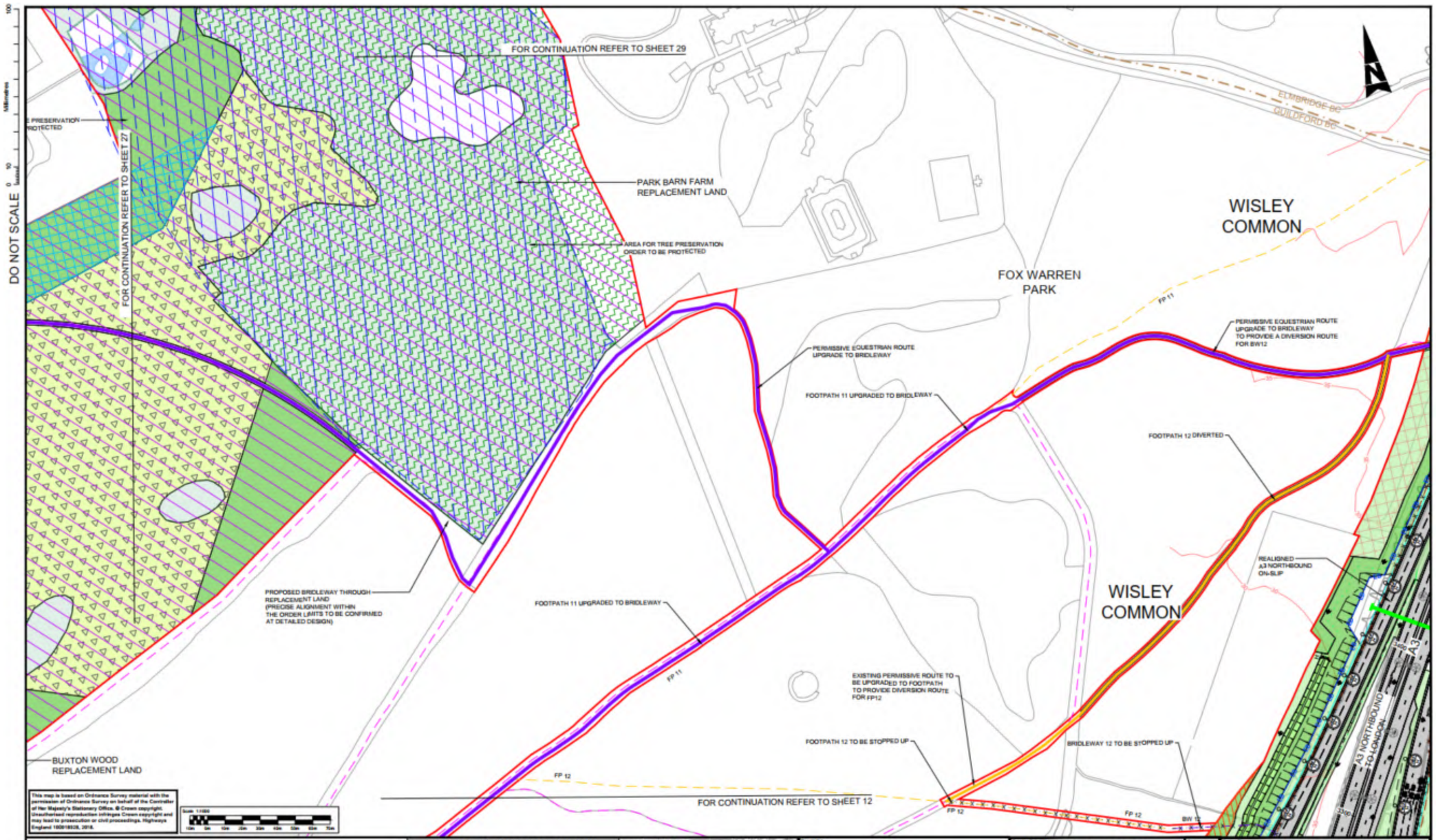

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Maintenance / Cleaning: NONE
Use: NONE
Decommissioning / Demolition: NONE

SHEET LAYOUT N.T.S

Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date
A4	0	DD	NK	JW	CT	07/06/19

Description: DCO APPLICATION

Drawing Suitability: DCO APPLICATION | Status: A4 | Project Title: M25 junction 10/A3 Wisley interchange

Drawing Title: SCHEME LAYOUT PLANS REGULATION 5(2)(o)

SHEET 28 OF 31

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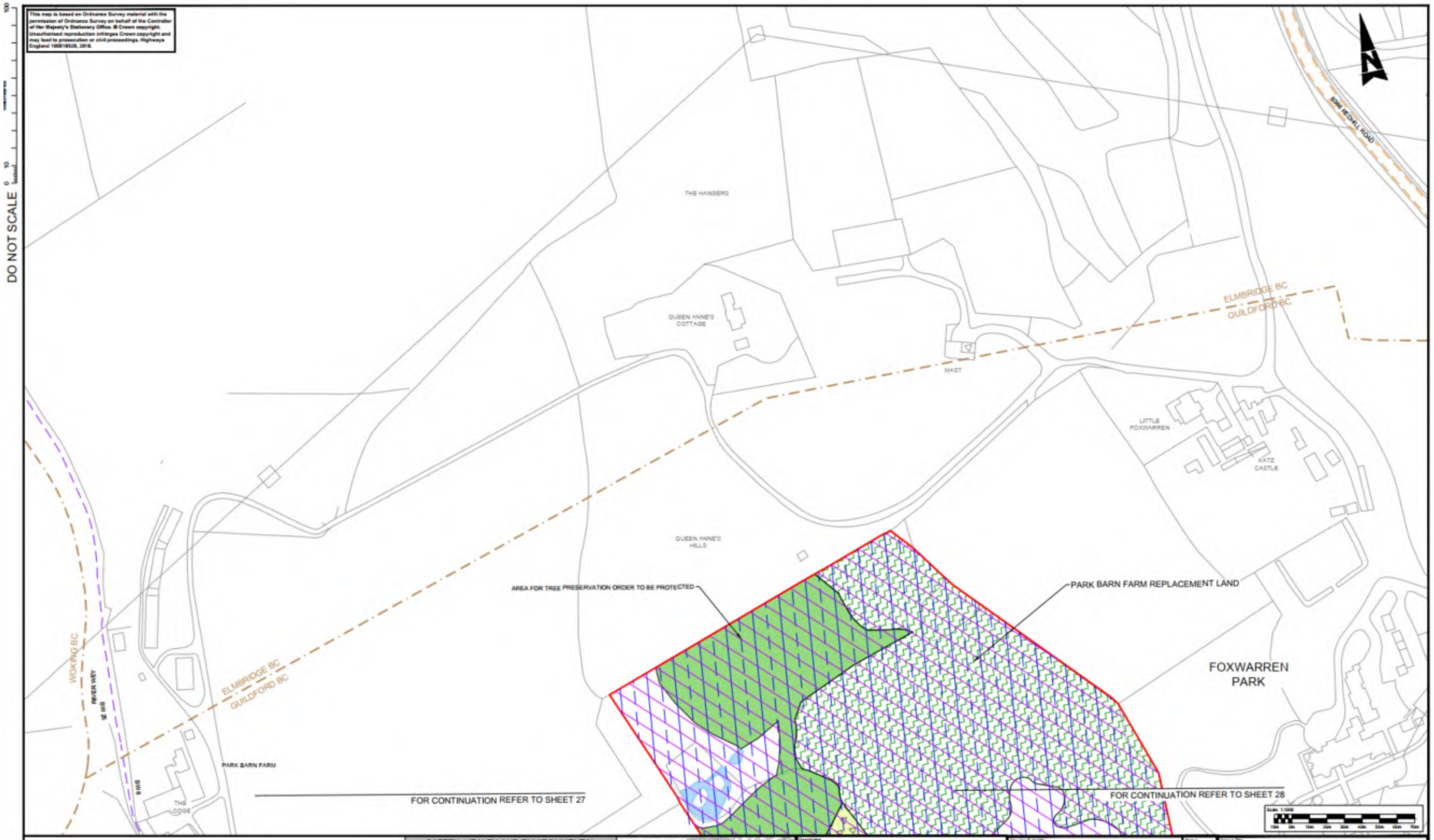

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Maintenance / Cleaning	NONE
Use	NONE
Decommissioning / Demolition	NONE

SHEET LAYOUT
N.T.S

Description	Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date
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Drawing Number: TR010030/APP/2.8 — Rev: 0

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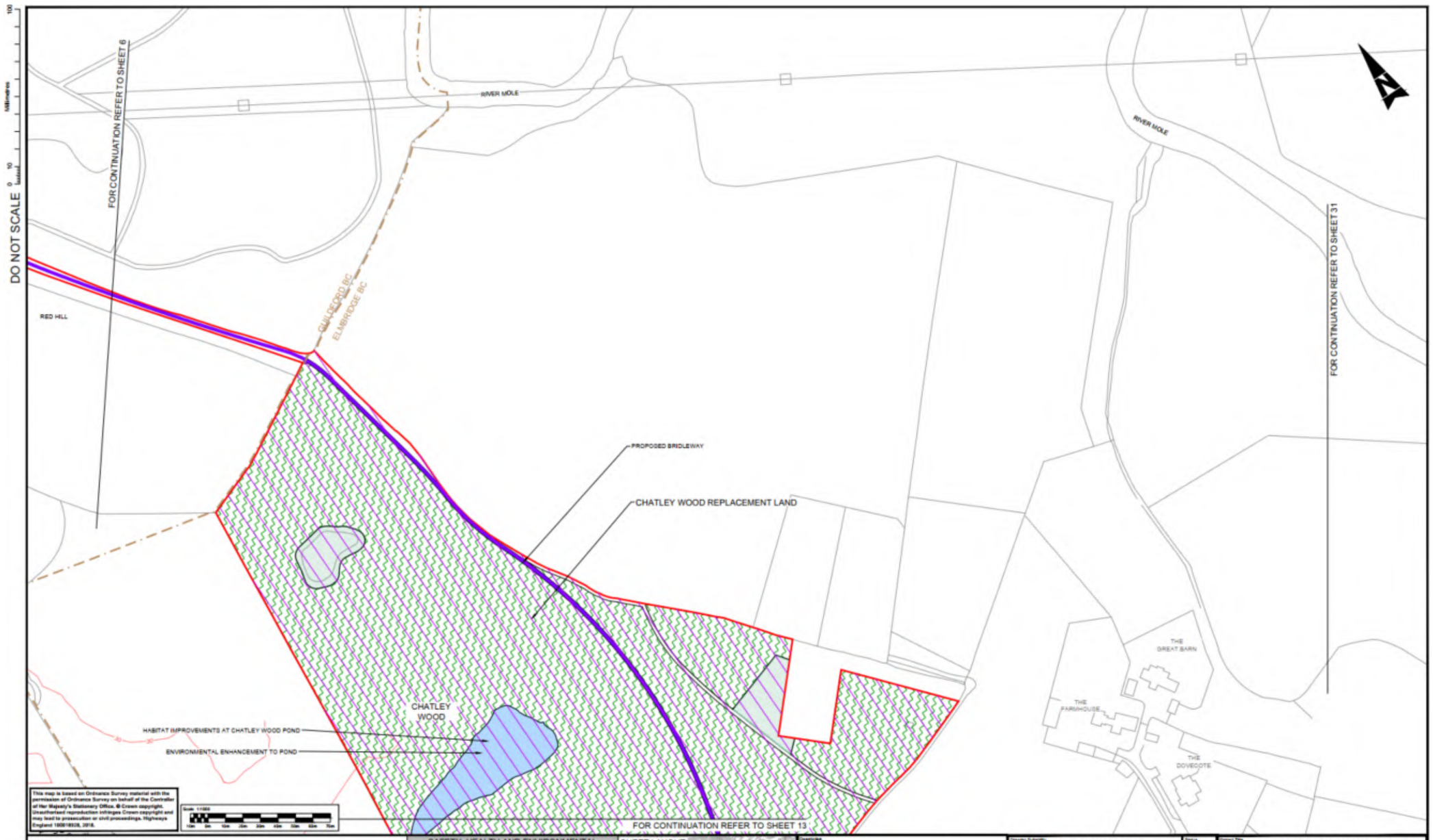

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Maintenance / Cleaning	NONE
Use	NONE
Decommissioning / Demolition	NONE

SHEET LAYOUT
N.T.S

Drawing Suitability	DCO APPLICATION
Status	A4
Project Title	M25 junction 10/A3 Wisley interchange
Drawing Title	SCHEME LAYOUT PLANS REGULATION 5(2)(o) SHEET 30 OF 31
Drawing Number	TR010030/APP/2.8
Rev	0
HE PIN: HE551522	Scale: 1:1000
Original Size:	A1

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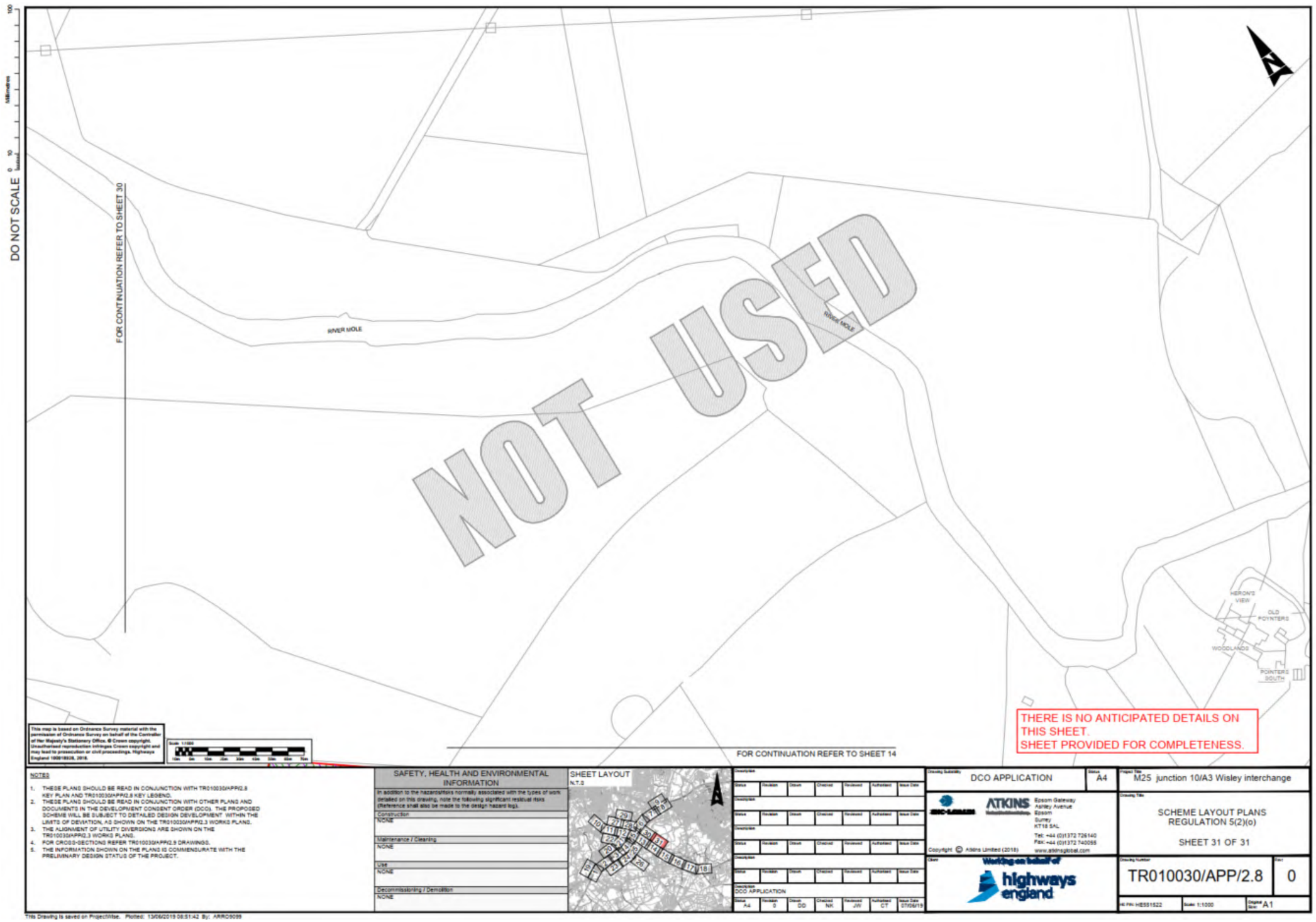

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SHEET LAYOUT
N.T.S

Description	Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date
DCO APPLICATION	A4	0	DD	NH	JW	CT	07/06/19

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M25 junction 10/A3 Wisley interchange

SCHEME LAYOUT PLANS
REGULATION 5(2)(o)

SHEET 31 OF 31

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Appendix B. Scoping Note and SCC Response

highways england

Regional Investment Programme M25 Junction 10/A3 Wisley Interchange

[TR010030]

Transport Assessment Scoping Report

APFP Regulation 5(2)(q)
Revision 1.1
Planning Act 2008
Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

Document Ref: HE551522-ATK-EAC-RP-TR-000001.docx

Volume 1
April 2018

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This document has 25 pages including the cover.

Document history

Job number: HE551522			Document ref: HE551522-ATK-EAC-RP-TR-000001				
Revision	Status	Purpose description	Originated	Checked	Reviewed	Authorised	Date
1.0	S0	Scoping Report for Review	MB	KC	YP	KC	31/01/2018
1.1	S0	Revised Scoping Report for Review	MB	AAP	KC	KC	30/04/2018

Table of contents

Figures

1. Introduction

1.1 Purpose

1.1.1 Highways England is proposing to construct an elongated roundabout with an increased capacity at the M25 junction 10/A3 Wisley Interchange and A3 carriageway widening from three lanes to four lanes between the Ockham Park junction (A3) and the Painshill junction (A3). The proposals also include the M25 junction 10 through junction running element of the M25 junction 10 to 16 Smart Motorway scheme.

1.1.2 The purpose of the Transport Assessment (TA) is to assess the impact of the proposed improvement scheme on the strategic and local highway network, road safety and local sustainable modes of transport.

1.2 Background

1.2.1 Atkins has been appointed by Highways England to undertake transport modelling and network assessment work to progress the scheme through the Development Phase of the Highways England's Project Control Framework (PCF) to submission of a draft Development Consent Order (DCO).

1.2.2 The purpose of the scheme is to reduce delays at M25 junction 10/A3 Wisley Interchange and improve the exit and entry roads. The scheme will also deliver safety improvements at the junction, particularly as the existing junction has a high level of accidents and casualties relative to other junctions on the M25.

1.2.3 The objectives of the scheme are to:

- Reduce delays at M25 junction 10.
- Smooth traffic flow at M25 junction 10 and the exit and entry roads for the A3 Wisley.
- Improve safety at junction 10 and on the M25 and A3.
- Support economic growth and ensure the junction can accommodate extra traffic.

1.3 Existing Road Network

1.3.1 The M25 junction 10 is situated in the south west quadrant of the M25 London Orbital Motorway. At the junction, the A3 which is a key radial route from London to Portsmouth, crosses the M25 motorway.

1.3.2 The M25 is a D4M motorway (dual carriageway with 4 lanes in each direction) either side of M25 junction 10, although the section of motorway between the slip roads is of D3M standard. The A3 is a D3 road (dual carriageway with 3 lanes in each direction) either side of the junction with D2 between the slip roads of the M25 junction 10.

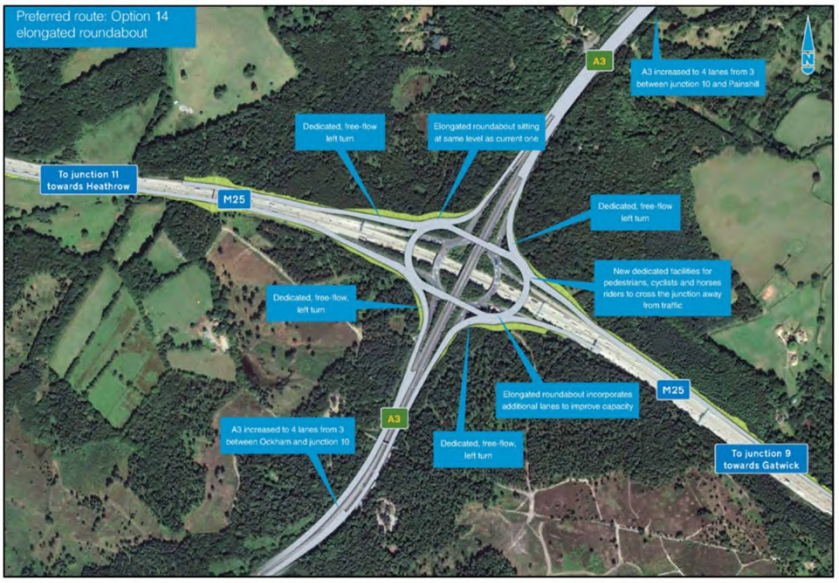
1.3.3 The junction is a signal controlled roundabout, without free-flow left turn lanes. The roundabout currently has 3 lanes on the circulatory carriageway. The junction features pedestrian, cycle and equestrian crossings for NMUs.

1.4 Scheme Description

1.4.1 The main features of the scheme can be identified in Figure 1 and include the following:

- Modifications to the existing roundabout including new bridges over the M25 and the reuse of the existing underbridges below the A3.
- The elongation and expansion of the roundabout from three lanes to four lanes and up to five lanes where unconstrained by existing structures.
- Carriageway widening on the A3 from three lanes to four, at Ockham Park junction to M25 junction 10 then onto Painshill junction.
- The stopping up of accesses to and from the A3 on local routes between Ockham Park junction and Painshill junction.

Figure 1: General Outline of the Scheme



1.5 Funding and Delivery

1.5.1 The design of the scheme has evolved through the consideration of a number of highway arrangement options, which have been tested against economic, social and environmental data to arrive at the preferred option.

1.5.2 The Department for Transport (DfT) announced in its 2014 Road Investment Strategy (RIS) the committed investment for the M25 Junction 10/A3 Wisley Interchange scheme.

1.5.3 As published in the Highways England 2015-2020 Delivery Plan, it is proposed that the scheme will open to traffic in 2022. The construction period will take approximately three years.

1.6 Stakeholder Consultation

1.6.1 Several potential options for the M25 junction 10/A3 Wisley Interchange have been considered and consulted on previously. Between December 2016 and February 2017, a community consultation exercise took place on two proposed options, which led to a preferred option being announced in 2017 by the Secretary of State.

1.7 Approach to Assessment

1.7.1 A Transport Assessment (TA) will be produced in accordance with National Planning Practice Guidance (NPPG) *"Travel Plans, Transport Assessments and Statements"* (March 2014) and will consider Surrey County Council's *"Transport Development Planning Good Practice Guide"* (2017), as far as practicable.

1.8 Report Structure

1.8.1 To follow this introduction, this Scoping Report is ordered as follows:

- Chapter Two – Discusses the Policy Context relevant to the scheme and subsequent compatibility.
- Chapter Three – Provides detail on the collection of baseline data and development of traffic models.
- Chapter Four – Summarises the existing road safety performance within the study area and assesses the impact of the scheme on road safety.
- Chapter Five – Describes accessibility by and impact of the scheme on local sustainable modes of transport.
- Chapter Six – Provides an overview of current highway network performance.
- Chapter Seven – Presents a commentary on future network performance, both with and without the scheme and a future year operational assessment.
- Chapter Eight – Provides the summary and conclusions to the assessment.

2. Policy Context

2.1 Introduction

2.1.1 This section outlines the national, regional and local policies that are relevant to the scheme. It provides a summary of the scheme's compatibility with the relevant planning policy framework and transport strategies.

2.2 National Planning Policy Framework (March 2012)

2.2.1 The National Planning Policy Framework (NPPF) applies to England and is designed to supersede and simplify previous national planning policies. It is intended as a framework for the development of local and neighbourhood plans. However, existing Local Plan policies should not be considered out of date because they were adopted prior to the NPPF's publication. The NPPF emphasises that the purpose of planning is to help achieve sustainable development; i.e. that which results in positive growth and economic, environmental and social progress. The NPPF is based upon a presumption in favour of sustainable development, which should be allowed to proceed without delay.

2.2.2 Policy 1: *Building a strong, competitive economy* of the NPPF states: "*the Government is committed to securing economic growth in order to create jobs and prosperity, building on the country's inherent strengths, and to meeting the twin challenges of global competition and of a low carbon future.*"The proposed development supports this as it will reduce the impacts of congestion at this key junction and support economic growth in the area.

2.2.3 Policy 1 also states *"To help achieve economic growth, local planning authorities should plan proactively to meet the development needs of business and support an economy fit for the 21st century"*. This scheme will enable the junction to meet the demands of today and future demands from higher traffic volumes. This statement supports the scheme and the need for it.

2.3 National Planning Practice Guidance (March 2012)

2.3.1 The National Planning Practice Guidance (NPPG) is intended to be consulted in conjunction with NPPF. Of specific relevance is Section 42 of NPPG 'Travel Plans, Transport Assessments and Statements in decision-taking' which defines the overarching principles of TA's, Transport Statements (TS) and Travel Plans (TP). It identifies that these documents are suitable mechanisms for assessing and mitigating the negative transport impacts of development in order to promote the use of more sustainable transport options and, in summary, states:

2.3.2 TA's and TS's evaluate the potential transport impacts of a development proposal. They should promote mitigation measures, where necessary, and should also establish whether the residual transport impacts of a proposed development are likely to be severe, in the context of NPPF.

2.4 National Networks National Policy Statement (NN NPS)

2.4.1 Under the title *'The need for development of the national road network'* the NN NPS states *"The Strategic Road Network (SRN) provides critical links between cities, joins up communities, connects our major ports, airports and rail terminals. It provides a vital role in peoples' journeys, and drives prosperity by supporting new and existing development, encouraging trade and attracting investment. A well-functioning SRN is critical in enabling safe and reliable journeys and the movement of goods in support of the national and regional economies."*

2.4.2 The statement evidences the financial cost of delays; *"in 2010 the direct costs of congestion on the SRN in England was estimated at £1.9 billion".* Under 2014 estimates made by the Department for Transport (DfT), *"it is forecast that a quarter of travel time will be spent delayed in traffic by 2040, with direct costs rising to £9.8 billion per annum by 2040 without any intervention."*

2.5 Transport Development Planning Good Practice Guide: Surrey County Council (2017)

2.5.1 This document provides guidance on highways and transportation matters for development proposals.

2.5.2 The requirements detailed in the sub-heading *"What subjects are often considered in transport assessments (TAs) and transport statements (TSs)?"* will be adhered to, as far as practicable, as part of this TA in order to meet the Council's Interim Transport Assessment and Transport Statement Guidance.

2.6 Circular 02/13 The Strategic Road Network and the Delivery of Sustainable Development (September 2013)

2.6.1 Policy 18 states *"capacity enhancements and infrastructure required to deliver strategic growth should be identified at the Local Plan stage, which provides the best opportunity to consider development aspirations alongside the associated strategic infrastructure needs".* The improvements in the M25 Junction 10/A3 Wisley interchange are required to deliver strategic growth in the south east to meet the needs of projected increases in demand.

2.6.2 Policy 19 states *"where a potential capacity need is identified, this will be considered and weighed alongside environmental and deliverability considerations. Additional capacity may be considered in the context of the Highways Agency's forward programme of works, balancing the needs of motorists and other road users with wider impact on the environment and the local/regional community."*

2.7 Local Planning Policy Guildford Borough Proposed Submission Local Plan: strategy and sites (December 2017)

2.7.1 Policy ID2: *Supporting the DfT's Road Investment Strategy* outlines that Guildford Borough Council is committed to working with HE to facilitate major, long-term improvements to the A3 trunk road and M25 motorway in terms of capacity and safety. It also notes that promoters/ developers of sites close to the A3 and M25 and strategic sites will need to take account of any emerging proposals by Highways England or other Highway Authorities.

2.7.2 Justifying its support, the document notes *"The implementation of the three RIS schemes during the plan period, alongside other critical infrastructure, is required in order to be able to accommodate future planned growth outside and within the borough".*

2.8 Local Transport Policies – Topic paper: Transport (December 2017)

2.8.1 This document explains the approach taken in drafting the principal transport-related policy elements of the Submission Local Plan (December 2017). The three planned RIS schemes are required for the borough and its surrounding areas to accommodate future growth.

2.8.2 This also notes *"The inadequacy of existing road infrastructure, with particular reference to the A3 trunk road and the M25".*

2.9 Local Transport Plan - Guildford Borough Transport Strategy (December 2017)

2.9.1 Under the chapter titled *'Our Strategic Road Network strategy'* it is noted that the long term strategic planning and funding of the network has been introduced through the preparation of Route Strategies and publication of Highways England's RIS.

2.9.2 Guildford Borough Council state *"we will work with the Government, Highways England, the Local Enterprise Partnership and Surrey County Council to realise the transformation of the Strategic Road Network in the borough and beyond for the long term."* Indicating their support for the scheme and the benefits it will deliver locally.

2.10 Local Planning Policy – Elmbridge Borough Core Strategy Transport Evaluation (January 2010)

2.10.1 This provides further policy guidance published by Elmbridge Borough Council prior to the Elmbridge Local Transport Strategy & Forward Programme. It notes the future need for development on the M25 and A3, in relation to the study area.

2.10.2 The document assesses the potential impact of the location strategy on the M25 (notably Junctions 9 to 12) and the A3, and the impact of planned development on transport infrastructure within the Borough.

2.10.3 It states that the most important aim is *"to identify priorities for tackling congestion and reducing the need to travel in line with the objectives of sustainable development".*

2.10.4 The findings of the transport evaluation state that a number of matters should be addressed within the Core Strategy, notability to *"work in partnership with transport infrastructure and service providers in order to provide a flexible response to changing transport priorities"* and *"support the development of the regional transport network identified within the South East Plan".*

2.11 Local Planning Policy – Surrey Transport Plan: Elmbridge Local Transport Strategy & Forward Programme (September 2014)

2.11.1 This document references the location of the A3 and M25 in Elmbridge Borough alongside other routes on the SRN that pass through its boundaries.

2.11.2 Policy 3.11 states *"Congestion and heavy vehicle movements can also have impacts on noise levels in the locality of the road which can contribute to quality of life issues."*. Although it makes no direct reference to the M25 junction 10/ Wisley Interchange improvements, it is expected that the scheme will result in reduced congestion.

3. Baseline Data and Model Development

3.1 Introduction

3.1.1 A comprehensive review of the existing transport conditions surrounding the site will be provided in the TA. The baseline data and model development will be presented in this section of the TA.

3.2 Study Area

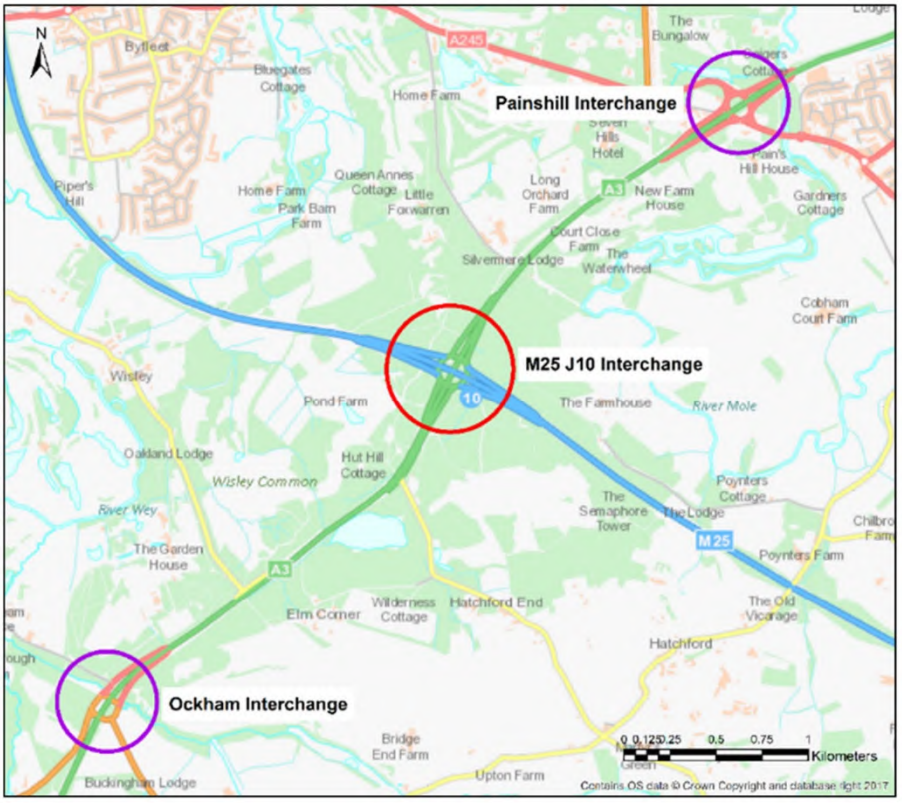
3.2.1 The M25 junction 10 / Wisley Interchange is situated in the south west quadrant of the M25 London Orbital motorway, approximately 30km to the south west of central London and 12km to the north-east of Guildford and forms the confluence of several radial routes between Surrey, Hampshire and Greater London with orbital routes between Kent, East and West Sussex, Surrey, Berkshire and beyond.

3.2.2 The built–up area of Cobham is approximately 3km to the north-east of M25 junction 10 that is around 2km from the Painshill junction, which provides access to the A245 from the A3. The villages of Ripley, Send and Burnt Common are situated between 3.5km and 5.5km to the south of M25 junction 10. 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 with Wisley being approximately 1.4km to the west. The village of Ockham lies south east of the A3 Ockham Park junction, which is approximately 2.5km from M25 junction 10.

3.2.3 The popular visitor attractions of Painshill Park and the Royal Horticultural Society's Garden at Wisley are situated immediately alongside the A3, to the north and south of M25 junction 10 respectively.

3.2.4 The full extent of the study area and associated junctions are illustrated in Figure 2.

Figure 2: Locations of Junctions and Side Roads



3.3 Baseline Data Collection

3.3.1 As part of the data collection process (for PCF Stage 3), the following data has been collected; Automatic Traffic Count (ATC) surveys; Automatic Number Plate Recognition (ANPR) surveys; Manual Classified Count (MCC) surveys, Wisley Event Day surveys and 2017 Trafficmaster data. PCF Stage 3 has retained the 2015 base year in the full South East Regional Traffic Model (SERTM) model and the PCF Stage 2 M3M4 model, together these models form the basis of the strategic model for the M25 junction 10 / Wisley Interchange improvements. A S-Paramics microsimulation model has been produced to reflect a 2017 base year and utilises the most recent data collected.

3.3.2 The ANPR surveys were required to understand the origin-destination (O-D) movements within a defined cordon around the M25 junction 10. By defining a cordon, this allows for trips within the cordon to be captured, and allows for the data to be processed into a matrix. The defined cordon was extended from the cordon used in the 2014 ANPR survey to provide further detail of the traffic flows around Ripley, RHS Gardens Wisley and Feltonfleet School. This data allowed the models to be updated to a 2017 base year.

3.3.3 The surveys for the models were completed during a neutral month, in order to reflect a 'normal' day. They survey was required to be undertaken for a morning peak period of 0600-1000 and an evening peak period of 1500-1900, with data summarised in 15-minute intervals. The ANPR O-D data was classified by vehicle type. Link count data at each entry/exit point to the cordon was also required in 15-minute intervals.

3.3.4 Prior to PCF Stage 3, there were several sources of traffic information utilised within the vicinity of the M25 junction 10 study area. This includes TRADS/WebTRIS data; ANPR turning count survey around M25 junction 10, SERTM data set, ATC sites used in PCF Stage 1 and PCF Stage 2, Mapping data, Trafficmaster Journey time data and Accident data.

3.3.5 The location of the ATC and ANPR Surveys (2014 and 2017) are illustrated in Figure 3, Figure 4 and Figure 5, respectively.

Figure 3: ATC survey locations (July 2014)

Figure 4: ANPR survey locations (July 2014)

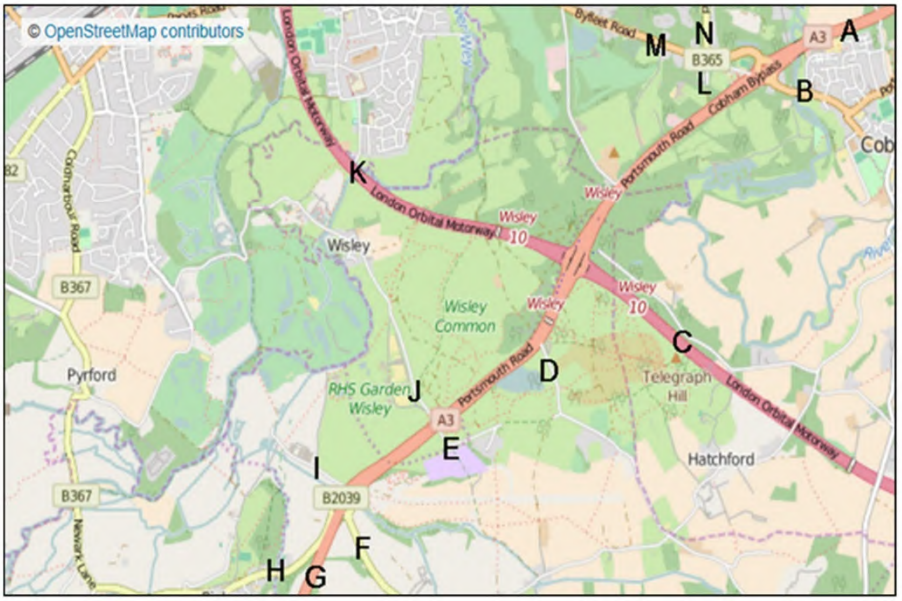
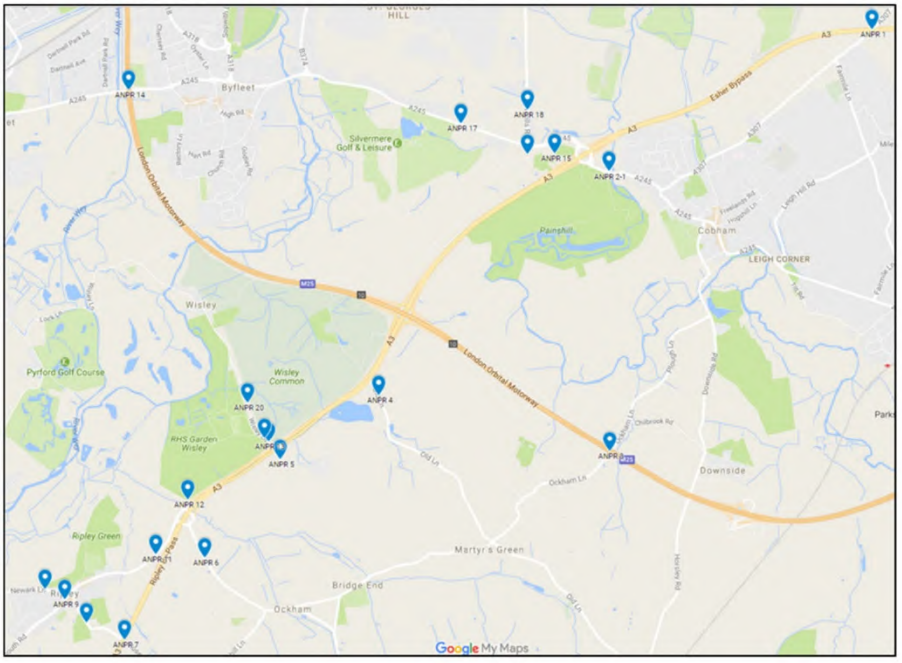


Figure 5: ANPR survey sites (2017)

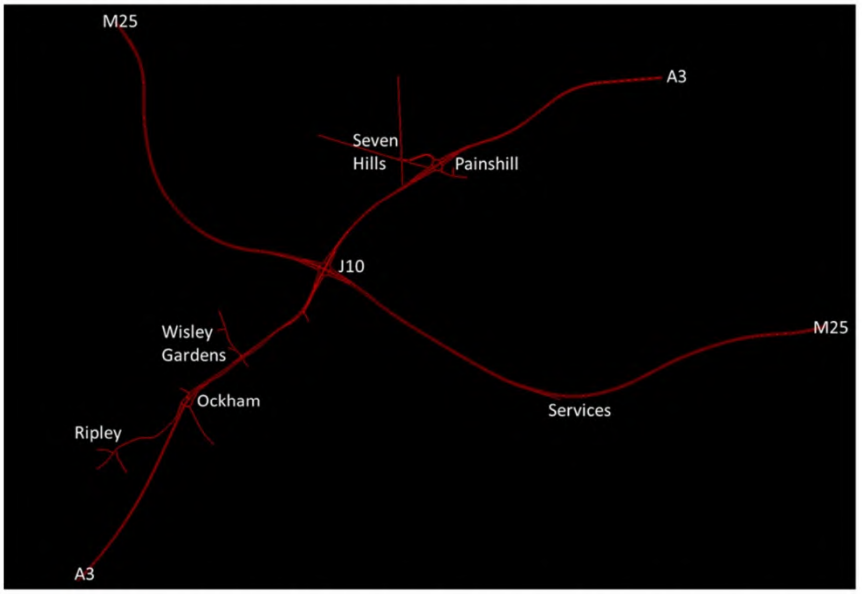


3.4 Transport Demand Modelling and Model Development Area

3.4.1 To assess the traffic impact of the scheme, three stages of traffic modelling have been undertaken. The details of the transport modelling will be cross referenced to transport modelling products and the TA will provide an overview, with reference to:

- South East Regional Transport Model in SATURN
- Microsimulation modelling in S-Paramics model
- Local junction modelling in LinSig / Junctions models.
- The extent of Micro-simulation modelling is shown in Figure 6.

Figure 6: Extent of Local S-Paramics model



3.4.2 Local junction modelling (LinSig / Junctions) will be used to assess capacity at the following:

- M25 Junction 10.
- Ockham Park junction
- Painshill junction and the A245 / Seven Hills Road junction.

3.5 Local Development and Transport Infrastructure Scenarios

3.5.1 The design of the scheme has evolved through the consideration of a number of highway option layouts, which have been tested against scheme economics, social and environmental appraisal to arrive at the preferred option. This option selection process will be described in the TA culminating in the justification for Option 14, which is the preferred option to be assessed in the TA.

4. Collision Analysis

4.1 Introduction

4.1.1 One of the scheme objectives of the M25 junction 10 / A3 Wisley Interchange improvements is specifically aimed at safety enhancements - 'Reduce annual collision frequency and severity ratio on the mainline A3 and slip roads and junction 10 gyratory.'

4.1.2 This section of the TA will look to better understand the safety issues at M25 junction 10 and the surrounding network and what impacts are expected as a result of implementing the proposed scheme. The analysis will consider STATS19 data provided by the Department for Transport over the years 2012-16, COBALT proposed accident rates for different link types and junction classes and scheme drawings. The STATS19 data is the most recent collision data provided that covers the full extent of the scheme.

4.1.3 The collision analysis will include a comparative analysis of junctions around the M25 and a detailed accident analysis of M25 junction 10, namely the calculation of accidents rates on all links and junctions in the study area.

4.2 Background

4.2.1 The M25 junction 10 / A3 Wisley Interchange has been identified as a collision 'hotspot' on the M25 network. Evidence from the five-year STATS19 data showed that the junction had the second highest number of accidents on the M25. In the years 2012-2016, a total of 133 accidents were recorded within the junction 10 buffer, which equates to approximately 27 accidents per year.

4.3 Collision Data

4.3.1 Collision data collected will be based on five-year STATS19 (2012-2016) to include the M25 junction 10 and the A3 from Painshill junction to the north and Ockham Park junction to the south.

4.4 Collision Assessment

4.4.1 The Collision Assessment will be reported in the TA to include expected collision changes resulting from the proposals and scheme benefits based on COBALT analysis.

5. Sustainable Transport

5.1 Introduction

5.1.1 The scheme will support NMUs through the introduction of safety measures including new pedestrian crossings and retention of existing accesses to local amenities.

5.2 Scheme Objectives

5.2.1 As part of the Highways England Delivery Plan (2015 – 2020) a key feature within the Key Performance Indicators (KPIs) is associated with the consideration of Vulnerable Road Users (VRUs) and the incorporation of measures in a scheme that enables them to continue to use the network as in the current situation.

5.2.2 The scheme meets the objective outlined by the DfT which encourages the development of safe, secure and sustainable transport. The TA will analyse the scheme objectives against relevant policy guidelines regarding NMUs.

5.3 Overview of Existing Conditions

5.3.1 A network of NMU infrastructure exists in the wider area of M25 junction 10 / Wisley Interchange linking the surrounding quadrants and allowing NMU north-south movements between the A3 Painshill junction and A3 Ockham Park junction.

5.3.2 Extensive pedestrian footways are provided at both the Ockham Park junction and Painshill junction on the A3. A pedestrian footway runs from Painshill roundabout along the A3 northbound slip road to the bus stop which also connects to the old Byfleet Road, for access to Feltonfleet School. There is also a short equestrian route to the north of junction 10 and links to both sides of the A3.

5.3.3 Approximately 100m to the west of the roundabout, a push button signalised crossing is provided for all NMU's to cross the northbound on-slip road. The pedestrian route follows the opposite side of the slip to the roundabout where it circumvents the outer side of the roundabout. At the stop line of the southbound off-slip a signalised crossing for all NMUs is provided.

5.4 Cycle Routes

5.4.1 Existing cycle crossings will be enhanced as part of the scheme. This will enable users to maintain access.

5.5 Public Transport

5.5.1 Two bus services are directly affected by the scheme, the 715 route and the C1/C2 route.

5.5.2 The closest rail station to the scheme is Effingham Junction station, which is located approximately 4.5km south east of the site.

5.5.3 The operation of public transport services and any alterations to bus and rail services as a result of the scheme, will be outlined in the TA.

5.6 New Provision and Enhancement

5.6.1 Existing NMU facilities will be improved as far as possible to comply with the latest standards and these will be considered in the TA.

6. Current Network Performance

6.1 Introduction

6.1.1 One of the key aims of PCF Stage 0 was to confirm the strategic case for improving the M25 junction 10 / Wisley Interchange. The evidence review confirmed that the junction is one of the busiest interchanges in the country, has one of the highest accident rates on the SRN and experiences frequent disruption and unreliable journey times.

6.1.2 The current network performance is based on data collected from a variety of sources, including that used in SERTM and the Highways England managed TRADS/WebTRIS database. This has been supplemented by information collected in PCF Stage 1 and PCF Stage 2 that has been utilised in model development and contributed to the development of PCF Stage 3 models.

6.1.3 The TA will look at the current network performance in terms of journey times and local junction modelling and provide an analysis of the existing network conditions within the study area.

6.2 Base Year Flows - 2017

6.2.1 The base year for the scheme is 2017 and the TA will set out weekday peak hour base year traffic flows at the junctions included in the scope of junction assessment, as described in Section 3.4.2. The 2017 base traffic flows are demand flows that have been extracted from the SERTM.

6.3 Base Year Operational Assessment

6.3.1 The TA will provide detail on the results of local junction modelling utilising Junctions / LinSig and journey time analysis taken from S-Paramics for the 2017 base year. The base year operational assessment will therefore look at the current operation of M25 junction 10 as well as the other junctions in the study area and how they currently interact as a network.

7. Future Network Performance

7.1 Introduction

7.1.1 This section focuses on the traffic modelling and appraisal work undertaken to test the impact of the proposed scheme options at PCF Stage 2. The PCF stage 2 M25 junction 10 - this model was developed through refinement of the M3M4 model which is based on the M25 assignment model.

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

7.2 Overview of Traffic Forecasts

7.2.1 The modelling of the future year scenarios test with intervention (Do-Something) and without intervention (Do-Nothing) scenarios.

7.2.2 The forecast years as derived from the SATURN model are for an opening year of 2022 and a design year of 2037.

7.2.3 Future year traffic flows include traffic forecast from notable developments in the local area. This includes developments classed as 'near certain' and 'more than likely'. The core scenario is in accordance with the guidance in WebTAG unit M4.

7.2.4 In 2037 throughput at M25 junction 10 is expected to increase by a further 18% which is supplemented by further planned developments in the boroughs of Guildford, Elmbridge and Woking which are expected to deliver 18,500 houses and 10,500 jobs (Scheme Assessment Report, August 2017).

7.3 Opening Year - 2022

7.3.1 The scheme is anticipated to be delivered for opening in 2022. This date is subject to receiving the relevant permissions. The TA will include weekday peak hour traffic flows at the junctions within the study area for the Do-Minimum and Do-Something scenarios.

7.4 Design Year - 2037

7.4.1 The design year for the scheme is 2037 and TA will include weekday peak hour traffic flows at the junctions within the study area for the Do-Minimum and Do-Something scenarios.

7.5 Impact on Strategic Routes

7.5.1 The scheme is expected to have a positive impact on strategic routes, with the M25 and A3 benefitting from reduced delays, reduced congestion and reduced numbers of accidents. This will be given further consideration in the TA.

7.6 Scheme Impact on Flows

7.6.1 The TA will consider the impact of the change in traffic flows on key routes within the study area through comparison of the Do-Minimum and Do-Something scenarios for both the opening year and design year of assessment.

7.7 Scheme Impact on Local Roads

7.7.1 The scheme will involve stopping access to the A3 from several side roads and access roads due to the widening from D3AP to D4AP. This will result in localised diversions to other local roads and segregation from the A3. This will be given further consideration in the TA.

7.8 Impact on Junctions

7.8.1 The TA will consider the impact on junctions within the study area through comparison of the Do-Minimum and Do-Something scenarios for both the opening year and design year of assessment.

7.9 Summary of Strategic and Microsimulation Modelling Impacts

7.9.1 The TA will consider the impact on journey times within the study area through comparison of the Do-Minimum and Do-Something scenarios for both the opening year and design year of assessment.

7.10 Future Year Operational Assessment

7.10.1 For the preferred option, the TA will provide an operational assessment of the network for the Do-Minimum and Do-Something scenarios for both the opening year and design year of assessment taking into consideration the findings fo the microsimulation and junction modelling impacts.

7.11 Other Traffic Impacts

7.11.1 The TA will provide an overview of estimated construction traffic movements and propose mitigation through the provision of a Construction Environmental Management Plan (CEMP).

7.12 Road Safety Audit

7.12.1 The TA will summarise the findings of the Road Safety Audit (RSA) of the proposed improvements (if available).

8. Summary and Conclusions

8.1.1 This TA scoping report is intended to set out the proposed methodology for assessing the impact of the M25 junction 10 / A3 Wisley Interchange scheme for consideration by Highways England and the Local Highway Authority, Surrey County Council.

Glossary

ANPR	Automatic Number Plate Recognition
COBALT	Cost Benefit to Accidents Light Touch Software
CEMP	Construction Environmental Management Plan
DCO	Development Consent Order
DfT	Department for Transport
MCC	Manual Classified Count
NMU	Non-Motorised User
NNNPS	National Policy Statement for National Networks
NPPF	National Planning Policy Framework
PCF	Project Control Framework
RIS	Road Investment Strategy
RSA	Road Safety Audit
SATURN	Highway Traffic Assignment Software Suite
SERTM	South East Regional Traffic Model
SRN	Strategic Road Network
STATS19	National Road Collision Data
TA	Transport Assessment
TRADS	Highways England Traffic Flow Data System
WebTAG	Web based Traffic Appraisal Guidance

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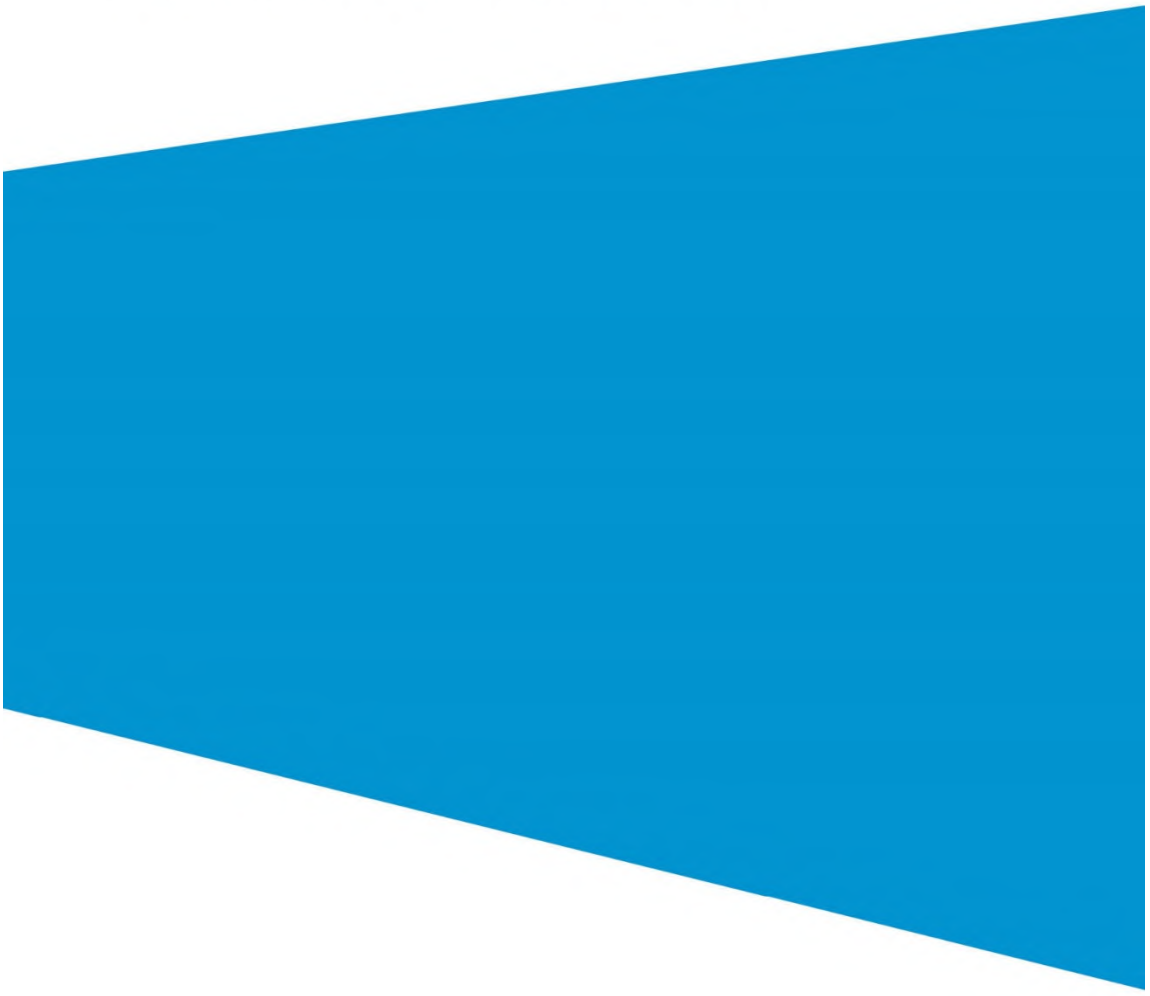

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23 March 2018

Dear Brian

M25 JUNCTION 10/WISLEY INTERCHANGE IMPROVEMENT SCHEME

SURREY COUNTY COUNCIL RESPONSE TO STATUTORY PRE-APPLICATION CONSULTATION

Thank you for the opportunity for Surrey County Council (SCC) to comment on the M25 junction 10/A3 interchange improvement scheme. We have consulted with our Cabinet Members from Transport and the Environment, other elected members and internally within the Environment and Infrastructure Directorate.

Whilst **we strongly support the principle of the scheme** (as was set out in our response to Highway England's Roads Investment Strategy 2015-2020 - RIS1 consultation), we have concerns over the specific details of the scheme as proposed which we would ask to see addressed to deliver a successful scheme that meets the needs of both the strategic and local road network.

Presented within this letter is the collective response from SCC. This response has been set out under the sections/headings set out in the Highways England (HE) M25 junction10/A3 Wisley Interchange scheme questionnaire but supplemented with additional comments that we ask are taken into account as part of our response.

SCHEME OBJECTIVES

A1. To what extent do you agree or disagree that the M25 junction 10/A3 Wisley interchange improvement scheme will address the following objectives?

A1.1 Improving safety – Disagree

A1.1.1 Whilst we agree with the objective as stated, and we strongly support improving safety along the A3 and at M25 Junction 10 that this scheme can bring, we disagree that the scheme as currently proposed achieves this objective at key locations, for the reasons as set out below.

A1.1.2 We acknowledge that the proposals includes some provision for increased safety, for example changing the exit from Wisley Lane. However, we are concerned that aspects of the scheme could reduce safety, in particular increased traffic through Ripley, increased demand at the Ockham roundabout (additional entrance and exit arm onto the roundabout) and increased queuing on the approaches to the A245 / Seven Hills Road junction which could lead to increased driver frustration and a consequent reduction in safety.

A1.1.3 At the M25 Junction 10 roundabout, we have concerns of potential conflicts between merging traffic where the M25 traffic turns left and joins the A3 via a dedicated left turn lane. The circulatory speeds on the existing junction 10 roundabout are reasonably low and consistent due its size and layout; and the phasing of the traffic signals. However, we have concerns that the extended roundabout could result in high speeds on the long straight sections, increasing the potential for loss of control on the bends and shunt type collisions as drivers brake, manoeuvre or accelerate when approaching the bend.

A1.1.4 Later in this response letter we have also raised safety issues localised to the preferred side roads and local access arrangement options. This includes the need to review speed limits on service roads proposed as well as the Painshill junction roundabout and A245 between Painshill junction and Seven Hills Road. Where Road Safety Audits have been undertaken for the scheme, we would welcome to be sent these.

A1.1.5 We would welcome HE's response as to how these concerns will be addressed in order that SCC can be reassured that the stated objective of the scheme will be achieved.

A1.2 Reducing congestion and improve journey time reliability – Strongly Disagree

A1.2.1 Whilst we agree with the objective as stated and strongly support improvements to reduce congestion and journey times along the A3, we disagree that the scheme as currently proposed achieves this objective as a whole for the reasons set out below.

A1.2.2 We agree there is potential for some reduction in congestion on the strategic road network, however it is apparent that there could be increases in congestion on the local road network, particularly through Ripley, at the Ockham interchange and on the approaches to the A245 / Seven Hills Road junction (especially on the approach from Painshill and on Seven Hills Road south). See **A1.4** for further information including comments related to jet lanes at the A3/A245 Painshill junction. In addition, no quantified evidence has been presented to substantiate the claim that journey time reliability will be improved.

A1.2.3 We note that the existing A3 overbridge over the interchange will remain as 2 lanes in each direction but either side of the bridge the A3 will be widened to 4 lanes. We would ask to see evidence that this does not create a pinch point leading to congestion and would ask if HE has future plans to widen the bridge.

A1.2.4 It is important that the design of any new M25 junction 10 should be future proofed, in terms of traffic capacity and layout, against potential development at Wisley Airfield and other relevant major development sites and as such would ask to see the evidence relating to this.

A1.2.5 SCC would welcome HE's response as to how these concerns will be addressed and mitigation provided in order that SCC can be reassured that the stated objective of the scheme will be achieved.

A1.3 Improve facilities for pedestrians, cyclists and horse riders – Agree

A1.3.1 We welcome the inclusion of improved provision for pedestrians, cyclists and horse riders through the scheme, including grade separated facilities crossing the junction. We have raised some issues on facilities proposed localised to the preferred side route options later in this letter. In addition to the proposed cycle route between Ockham junction and Painshill junction, we would also highlight the need for a high quality cycle route connecting Seven Hills Road, across Painshill, towards Cobham. We would ask for facilities provided for non-motorised users to be of sufficient standard (including width, surface, crossing facilities).

A1.3.2 We look forward to seeing the plans in development for the non-motorised user routes, including confirmation on whether current facilities (such as through the existing interchange roundabout) will be extinguished. We are aware that non-motorised user routes may impact SCC countryside estate and designated nature conservation sites. These impacts need to be quantified and mitigated. Also see **A2.9.5.**

A1.3.3 We welcome working with HE to help achieve non-motorised user routes that connect appropriately into the Public Rights of Way (PROW) network, and connect to walking and cycling routes beyond the scheme. The scheme provides an opportunity to undo and mitigate fragmentation issues caused by the existing A3/M25 on the cycling and PROW network, create opportunities for sustainable travel links, create opportunities for recreational use recognising environmental impact, and make a circular 'family' recreational cycle friendly route around the common that links RHS Wisley, Byfleet, Cobham, Wisley and Ripley.

A1.3.4 We would ask for future discussions regarding potential adoption or maintenance of assets/structures that form the improved facilities for non-motorised users. Also see **A2.9.10**.

A1.4 Minimising impacts on the surrounding local road network – Disagree

A1.4.1 Whilst we agree with the objective as stated we disagree that the scheme as currently proposed achieves this objective for the reasons as set out below.

A1.4.2 SCC would ask to see details of the modelling carried out, including a **Links and Nodes diagram** which covers both the impact on the strategic roads network and the local roads network and which shows peak hour and daily traffic flows in the 'do nothing' current year, 'do nothing' design year, and 'do something' design year along with the local model validation report and the forecasting report. This information is requested to demonstrate the impacts on Ripley, surrounding villages (e.g. Send, Ockham) and A245/Seven Hills Road along with any mitigation measures proposed and their modelled impact.

A1.4.3 This traffic flow information is required so that the stated objective of "*Minimising impacts on the surrounding local road network*" can be understood. This information has also been requested by the SCC's Traffic Manager in order that the requirements of the Traffic Management Act 2004 can be addressed.

A1.4.4 We note from the consultation brochure that it states that there will be less traffic on the local road network in the AM peak but no statement has been made for the PM peak. As such we would ask to see the aforementioned traffic network diagram that clearly shows the projected changes in traffic levels on the local road network in the AM peak, PM peak, inter-peaks, and daily flows.

A1.4.5 We note that it is stated that traffic through Ripley is forecast to increase and the scheme adds a further 4% more traffic through Newark Lane. We believe this 4% is a misleading figure due to the data stated in Technical Note (M25 J10 Impacts on the Surrey local road network), dated 7th November 2017. This states on page 7 that, *"The comparison between the 2022 without scheme and with scheme scenarios predict a significant increase in the level of traffic travelling through Ripley in both the morning and evening peaks, with a 15% increase in the morning peak and an 18% increase in the evening peak."*

A1.4.6 Furthermore, it is not clear if this apparent 4% includes the potential of diverted traffic accessing/egressing RHS Wisley Gardens. As such we would ask that this information is provided including scenarios for traffic accessing/egressing RHS Wisley Gardens along with the proposed mitigation/improvement measures for Ripley, and other local settlements affected, to meet the scheme objective of "*Minimising impacts on the surrounding local road network.*"

A1.4.7 On page 6 of the statutory consultation brochure, in the table summarising the scheme objectives and benefits, it stated that the scheme, *"... will accommodate an extra 5% of traffic through the Painshill interchange ..."*. Consequently, we are very concerned about the potential impact of this 5% increase on Surrey's local road network and apparent lack of mitigation proposed and would ask that this mitigation Is provided. The scheme appears to relocate congestion from the strategic road network onto the local road network. We note the proposed jet lane at the Painshill interchange from the northbound A3 to the A245 Byfleet Road will remove the gating effect of the existing signals, and this means that the first junction encountered by vehicles making this movement will be on Surrey's network. We acknowledge the proposed additional lane to provide extra stacking capacity, but we are yet to see evidence of the benefits arising from the proposed *"improved phasing of traffic signals"* as shown on map 4.

A1.4.8 Similarly, while we acknowledge the scheme provides better access arrangements to Feltonfleet School, we are concerned there will be extra congestion and queuing on Seven Hills Road south. We are also concerned that this will be exacerbated by the proposed linking of the access road alongside Painshill Park to Seven Hills Road south via the potential overbridge. We are yet to be convinced that these changes can be accommodated at the existing A245 / Seven Hills Road junction without further mitigation work to improve the operation of this junction and would ask that mitigation options are developed by HE and presented to SCC for further discussion. In addition, please see our comments in response to **A2.8**, including comments on the **option for a jet lane from the A245 onto the A3 northbound** which we would support in principle, subject to seeing modelled evidence.

A1.4.9 It is unclear if the traffic modelling and benefits being presented for the scheme relies upon north facing slip roads being provided at Burntcommon. We ask that this issue be clarified as if the benefits are being taken then would ask whether the Junction 10 Wisley scheme would then include this infrastructure.

A1.4.10 We understand that a HE traffic modelling workshop for the scheme is to be arranged and that SCC officers will be invited to. We would suggest that Elmbridge, Guildford and Woking Borough Councils' are represented at this workshop to feed in views regarding Local Plan growth. We would welcome this workshop to address our concerns and would ask that following this workshop and resolution of our concerns that a presentation is given by HE (and your consultants) to update SCC's Cabinet Members (in early-mid April?).

A1.5 Supporting local and regional growth – Disagree

A1.5.1 The details of the improvements do not show how the scheme allows for potential Local Plan related growth, specifically the possible Wisley Airfield development and others in the vicinity. In addition, please see our response below to **A2.9.2**. We would ask to see evidence as to how this option has been future proofed to take account of capacity beyond 2037 and traffic from potential large scale development adjacent to the proposal (including Wisley Airfield).

A1.6 Any further comments that you think we should consider?

A1.6.1 Please refer to other points made in this letter.

A2. To what extent do you agree or disagree that we have captured the important issues regarding:

A2.1 The proposed design for the widening of the A3 – Disagree

A2.1.1 In general, we agree in principle with widening of sections of the A3 between Ockham and Painshill to increase capacity. However we do have concerns which are discussed in sections **A2.1** to **A2.8**.

A2.1.1.1 As also raised in **A.1.2**, we would ask whether the 2 lane overbridge may create a pinch point in the future.

A2.1.1.2 Consideration will need to be given to an effective method of screening headlights between the new service roads and the A3.

A2.1.2 The proposed design for the widening of the A3 and Lorry/HGV Parking

A2.1.2.1 We are concerned that if the A3 is widened to a dual 4 lane all-purpose road (D4AP) all HGV parking could be lost. Lorry parking along this section of the A3 is long established and a very popular location for overnight parking before transporting goods into London, where there is very little lorry parking available. Roadside parking for HGV's in Surrey away from residential areas is also very limited. If HGV parking alongside the A3 is lost we do not believe that all the HGV's dispersed from this location can be accommodated within these facilities. Our experience is that when these facilities are full any overspill HGV parking will disperse into residential areas. We acknowledge that the Cobham services could accommodate some of the HGV's displaced from the A3 but maintain that HGV parking should be retained in the final scheme.

A2.1.2.2 We understand that at this stage of the design HE haven't undertaken a detailed assessment of both the feasibility and requirement for the inclusion of HGV parking along this stretch of the A3. As set out in your letter to SCC dated 4th October 2017 HE *"acknowledge the concern you have raised in your letter with regard to the overspill onto local roads that may occur if there isn't sufficient provision and that HE intend to "undertake a wider study of the A3 in the vicinity of the junction (rather than just between Ockham and Painshill) to build a better picture of the need in the area".* We would ask to see a copy of this study when it is available.

A2.1.2.3 The proposal seemingly removes the layby at the Wisley Lane Junction with the A3. This is occasionally used as an abnormal load lay-up (e.g. to collect Police escorts) and an alternative should be provided in the scheme design.

A 2.2 The proposed design for the access to Wisley Lane (and RHS Wisley Gardens) – Strongly Disagree

A2.2.1 In section **A1.4** we outlined concerns regarding potential increases in congestion in Ripley that would result from the scheme. The proposed Wisley Lane access and closure of the left in access to Wisley Lane from the A3 has the potential to divert traffic accessing/egressing RHS Wisley Gardens. This could be exacerbated further if the Wisley Airfield development proposals progress. The proposed design for Wisley Lane therefore does not comply with the objective "*Minimising impacts on the surrounding local road network.*"

A2.2.2 Any proposal taken forward here should minimise the impact of traffic on local roads, including those through Ripley, Wisley and Ockham. This should include consideration of the possible impact as a result of the development of the Wisley Airfield site.

A2.2.3 The scheme will need to also consider the future long term planned growth of RHS Wisley Gardens to ensure that their junction proposals are future proofed.

A2.2.4 We would ask that HE provide evidence of the impacts on the local road network and surrounding communities (including Ripley, Send, Ockham and A245/Seven Hills) and the mitigation options which we would request requires a significant funding package (£multi-million) to address these impacts. Mitigation options could consider south facing slip roads at Ockham Roundabout, retaining the left in access to Wisley Lane and improvements to moderate traffic speeds and improve highway condition as a result of additional traffic along the B2215 corridor. In addition consideration should be given to improvements at the B2215 High Street/Newark Lane junction and its approaches and the potential for public realm improvements in Ripley. Further consideration should be given to mitigating the effects of road safety risk of the likely additional traffic in Ripley, including heavy goods vehicles.

A2.2.5 We would request that a detailed technical assessment/feasibility report of options considered to mitigate impacts in Ripley are shared with SCC. This should include the detailed assessment as to why south facing slip roads at Ockham junction roundabout or retaining the current left-turn access into Wisley Lane are not considered feasible/required as part of the scheme, so that SCC can fully understand the technical reasons (e.g. traffic and environmental) why these appear to have been discounted.

A2.2.6 In summary on this point, as previously requested, we would ask that sensitivity testing is undertaken and shared with SCC as to traffic that could travel through Ripley as a result of the proposed changes to Wisley Lane and that a suitably significant mitigation package is funded/included in the scheme.

A2.2.7 Under the proposed access to Wisley Lane, there will be additional traffic using the Ockham roundabout junction. Further consideration should be given to enhancing and improving the safety of this roundabout, including enhancement to vulnerable road user facilities.

A2.2.8 The two way access to Wisley will add an entrance and exit onto the Ockham roundabout and so care will be needed to design the entry and exits at the roundabout to minimise driver confusion with regards to drivers mistaking a vehicle indicating a movement to an adjacent roundabout exit. Also entry path deflection would need to be in accordance with current advice at the roundabout.

A2.2.9 Care will be required to set an appropriate speed limit for Wisley Lane in the vicinity of RHS Wisley Gardens' entrance and along the new road to Ockham junction taking into account the visibility across the over bridge and bends, and the presence of vulnerable road users along the new route. The design should be undertaken carefully to encourage compliance with the new speed limit.

A2.2.10 We would ask to see any Road Safety Audits that have been undertaken as well as any capacity assessments related to Ockham junction roundabout to address our issues raised.

A2.2.11 The new access bridge proposed to Wisley Lane will be busy with RHS Wisley Gardens traffic. We welcome the fact that it will improve accessibility for non-motorised users and would ask that the bridge and first section of Wisley Lane to have a suitable facility/width for pedestrians, cyclists and horse riders as well as suitable parapets on the bridge. We would ask to see the non-motorised route proposals for the Wisley Lane access to link to BW8.

A2.2.12 We would urge HE to continue dialogue with RHS Wisley Gardens in respect of their proposed access to consider the future long term planned growth of RHS Wisley Gardens to ensure that the junction proposals are future proofed and avoid unnecessary trips on the local road network to meet the scheme objective of *"Minimising impacts on the surrounding local road network".*

A2.3 The proposed design for Elm Lane – Disagree

A2.3.1 We understand that if the Wisley Airfield proposals proceeds (currently awaiting a decision from the Secretary of State), the option as currently set out in the consultation documents would not be consistent with the potential proposals for the Wisley Airfield development. We therefore ask that HE consider the treatment of Elm Lane with the Wisley Airfield developers and Elm Lane residents to discuss and agree the possibility of the future connection of Elm Lane to the realigned Wisley Lane (south) to ensure that the design for the realigned Wisley Lane (on the southern side of the A3) allows for this potential connection e.g. in terms of levels, gradients and land.

A2.3.2 Under the proposed design for Elm Lane, the remains of Elm Lane (where it is being stopped up) should be retained as bridleway linking BW544/new bridge and Old Lane/BW16. Extinguishing the Elm Lane 'spur' and integrating new parking restrictions would also help deter unlawful motorbike access to Wisley Airfield. It should be noted that the new road providing access to Old Lane for Elm Lane residents could create possible conflict with walkers, cyclists and equestrians.

A2.4 The proposed design for Old Lane – Neutral

A2.4.1 Care will be needed to improve the safety of the Old Lane Junction with the A3. At the present time, when the traffic signals turn red at the top of the of the M25 slip, this provides a break in the traffic allowing vehicles to more easily exit Old Lane on to the A3. However under the proposals, these traffic signals will be removed, which will make it more difficult to find a gap in the traffic and join safely the fast moving traffic exiting the M25. We would ask that an acceleration lane from Old Lane would improve drivers' ability to join the A3 with improved safety, especially if breaks in southbound A3 traffic will not be present due to the removal of the existing signals.

A2.5 The proposed design for Pond Farm / Birchmere campsite – Agree

A2.5.1 We support the fact that the new bridge connecting the Ockham Common side of the A3 to Pond Farm and the Scout campsite, replacing the existing Cockrow Bridge, is usable for all.

A2.5.2 We would ask that the bridge to have a suitable facility/width for pedestrians, cyclists and horse riders as well as suitable parapets on the bridge. Clarification regarding accesses for cyclists and horse riders both sides of the bridge is required.

A2.5.2 FP17 needs to be suitably connected/ramped up to the new bridge crossing the A3. The FP10 end point should link in with new bridge therefore linking up with FP17 (FP10 currently ends at the A3 verge). There are opportunities to make changes to and tie into the existing network to significantly improve provision for non-motorised users.

A2.6 The proposed design for the access arrangements for properties along the A3 southbound (Painshill to M25 junction 10) – Disagree

A2.6.1 Whilst we support improving the safety and traffic flow along the A3 we have a number of concerns that we ask are addressed as set out below.

A2.6.2 An appropriate speed limit will need to be set for the service roads, and they should be designed carefully to encourage compliance with the new speed limit. It is unclear if the proposed access via the new bridge will link into Redhill Road and as such clarification is requested on this point. There may be some increased traffic and possibly more vulnerable users on Redhill Road and therefore the speed limit (currently 60 mph) should be reviewed along with additional measures to encourage compliance with a new lower speed limit may be required as part of the proposed HE scheme

A2.6.3 On the new bridge proposed, we would ask that the bridge to have a suitable facility/width pedestrians, cyclists and horse riders as well as suitable parapets and clarification regarding accesses for cyclists and horse riders both sides of the bridge is required.

A2.6.4 There are opportunities to make changes to and tie into the existing network to significantly improve provision for non-motorised users. FP11 could be upgraded to bridleway. This would link through to BW8. BW12 could be diverted to link Pointers Road with bridge (far enough away from A3 and with acoustic fencing for horses). We would suggest BW12 needs to be extinguished.

A2.6.5 As noted in **A2.9.5**, the proposed new bridge and its approaches may directly impact the SCC Countryside Estate and the impacts need to be quantified and mitigated.

A2.6.6 **Painshill Park-** We would urge HE to continue dialogue with Painshill Park in respect of the proposed alternative link road and overbridge arrangement that currently impacts upon Painshill Park. We would ask that HE consider further alternative access arrangements to minimise impacts on Painshill Park and the SCC Countryside Estate.

A2.7 The proposed design for the access arrangements for properties along the A3 northbound (Painshill to M25 junction 10) - Agree

A2.7.1 An appropriate speed limit will need to be set for the service roads, and they should be designed carefully to encourage compliance with the new speed limit – see also para **A2.9.10**.

A2.8 The proposed design for the widening of the A245 between the A3 Painshill junction and Seven Hills Road – Disagree

A2.8.1 As raised in **A.1.4**, we have concerns regarding potential increases in congestion at Seven Hills junction and on the approaches resulting from the scheme. We have yet to see the traffic modelling work carried out for this location to show that the changes proposed can be accommodated without further mitigation work. We would welcome drawings of the highway arrangement to clarify road layout, including access for Feltonfleet School.

A2.8.2 We understand from Map 4 within the consultation brochure that the design may include **a jet lane from the A245 onto the A3 northbound** which may be beneficial to ease congestion on the Cobham approach to the Painshill junction. In principle we would support this, subject to seeing modelled evidence.

A2.8.3 Currently the SCC maintained A245/B365 junction signals are not linked to operation of the HE signals at Painshill A3 junction but we strongly recommend that the linking of these junctions is fully investigated, taking into account expected changes in traffic flows.

A2.8.4 The speed limit of the Painshill junction roundabout and the A245 between Painshill junction and Seven Hills Road is currently national speed limit (70 mph). This speed limit should be reviewed as part of the proposed HE scheme to encourage safer speeds here and on the approaches to the junctions.

A2.8.5 The provision of a jet lane for northbound vehicles leaving the A3 entering the northbound A245 could result in risk of vehicles encountering queuing traffic ahead and not having time to stop, especially if visibility into A245 from the slip road is restricted by the horizontal alignment. The facilities for pedestrians/cyclists across the proposed jet lane will need consideration, as the jet lane is likely to allow continuous movement of left turning traffic. There is a need for improved facilities for sustainable transport modes at Painshill junction.

A2.9 Any further comments that you think we should consider?

A2.9.1 Bus Facilities and Routes

A2.9.1.1 We would request that clarity is provided as to what new access arrangements will be provided for the bus stops and services that are currently located/operate on the A3 between Ockham roundabout and Junction 10 as the consultation map does not show whether the existing bus stops are to be removed or retained?

A2.9.1.2 The 715 bus service that serves RHS Wisley Gardens, is essential, irrespective of what happens on the Wisley Airfield development as with the plans as drawn, we see a real issue of bus access to RHS Wisley Gardens being worsened rather than improved - not physically but in terms of a bus time/mileage penalty.

A2.9.1.3 SCC have been pressed by RHS Wisley Gardens and disability groups to provide a bus service that goes into the RHS Wisley Gardens both north and south bound but at present that is constrained by the access restrictions at A3/Wisley Lane southbound, creating unacceptable time penalties. The new route (east of the A3 from/to Ockham Park roundabout and over the A3 to give access to/from Wisley Lane and the Gardens) would be as much of a detour for a bus north and southbound, as the current situation.

A2.9.1.4 We therefore ask that this issue be considered in the design of the proposals to ensure that this can be delivered with the highway in the vicinity supporting appropriate and non- circuitous bus access. Otherwise, these plans might worsen the situation for buses.

A2.9.2 Possible Wisley Airfield Development

A2.9.2.1 Although approval has not yet been given for development at this site, it is essential that the design of any new M25 junction 10 should be future proofed, in terms of traffic capacity and layout, against potential development at Wisley Airfield and other relevant major development sites and we would ask to see evidence of this including the traffic modelling work..

A2.9.2.2 Any proposal taken forward should minimise the impact of traffic on local roads, including those through Ripley, Wisley and Ockham. This should include consideration of the possible impact as a result of the development of the Wisley Airfield site including the potential realignment of Elm Lane to allow the closure of its direct access onto the A3 access; and the provision of additional slip roads to allow all movements at the A3/A247 Burntcommon interchange.

A2.9.3 VMS/Technology

A2.9.3.1 In the County Council's response (dated 1st February 2017) to the initial consultation we stated that SCC has two existing VMS on the A245 either side of the Painshill A3 junction. These signs have been an essential tool to inform motorists of both immediate incidents and planned works/events but both have come to the end of their useful life.

A2.9.3.2 We asked that HE funds the replacement of these two VMS together with the provision of new VMS on the SCC network to benefit J10 of the M25 and the nearby associated A3 junctions. This would ensure that motorists arriving onto the HE network are aware of network issues in advance of arriving on the network itself. Other suitable locations for the provision of new VMS might be on B2215 Portsmouth Road leaving Ripley to join A3 north bound and B2039 Ockham Road to join A3 north bound.

A2.9.3.3 If installed in advance of any works on the strategic road network itself, these signs would also be a useful communications tool to update on the scheme's construction progress; potentially saving money on portable VMS to serve the same purpose.

A2.9.3.4 We would need HE to be able to connect to SCC's ITS infrastructure to our own ITS systems, to allow for sharing of data, joint strategies etc. and to ensure that HE will be granted access to them via that link so we can use them as part of any wider traffic management strategies – particularly out of hours.

A2.9.3.5 We understand in the email response from HE on 24th July 2017 that HE have confirmed that *"In principal, the idea is sound and if it would add benefit in the local area and on the strategic road network, it would be possible for HE to provide the VMS's, for SCC to use and maintain"*. We understand that HE would need a brief business case to demonstrate this benefit and envisage 3 No VMS at about £25k per sign.

A2.9.4 Flood Compensation

A2.9.4.1 The impact on flood zones, Main River and ordinary water courses will need to be taken into account including mitigation of any current flooding of the strategic and local road network in the vicinity of the proposed scheme. We understand that the Environment Agency are being consulted, which should also clarify the position and requirements and we would ask to see the mitigation in this respect.

A2.9.4.2 There will be highway "wet spots*" (locations where flooding occurs in times of local intense rainfall) affected by the scheme. Increased run off caused by the scheme in these locations is a concern for SCC as the Lead Local Flood Authority and we would ask that mitigation/compensation is provided. There is a need to regulate the run off from the increase in gross impermeable area created by the scheme.

* Wet spots include:

- A245 west bound dual carriageway off Painshill roundabout (high risk wet spot).
- Areas by J10 roundabout.
- Between the A3 and Wisley Airfield.
- By Ockham junction roundabout/Stratford Brook (high risk wet spot).

A2.9.5 Impact on the local countryside estate

A2.9.5.1 SCC would ask for detailed discussions with HE as to how the SCC countryside estate around the scheme can be managed and land take mitigated. We would ask that drawings and schedules to identify land take required is provided.

A2.9.5.2 The scheme as proposed will have a major impact on designated nature conservation sites and SCC countryside estate and compensatory mitigation should be provided.

A2.9.5.3 Ockham and Wisley Commons are owned by SCC, forming part of the countryside estate managed by Surrey Wildlife Trust. It forms part of the Thames Basin Heaths Special Protection Area for birds (SPA), a SSSI, a LNR and most of the land that may be affected by the improvement scheme is public open space with public footpaths and bridleways and also permissive routes.

A2.9.5.4 Impacts on designated sites and SCC countryside estate will need to be assessed and the land take compensated adequately/subsequent mitigation required.

A2.9.5.5 In addition to impact on actual land take, we are particularly concerned about how access will be provided and maintained to Wisley and Ockham Commons both during construction and then following completion; to ensure safe access for cyclists, riders and walkers across the A3/M25. Access arrangements will need to be communicated so that the general public will be made fully aware.

A2.9.5.6 The delivery of the non-motorised user routes currently proposed as part of the wider scheme will also have additional impacts on SSSI, SPA and Common Land. Use of existing routes may reduce this. As examples, we have noticed that the access route connecting to Pointers Road will cross SSSI and as such would ask if alternatives have been investigated or mitigation identified.

A2.9.5.7 The SCC countryside estate may also be directly impacted by the new bridge and its approaches proposed through the Side Road Preferred Route A3 southbound (Painshill to M25 J10). This part of the SCC countryside estate is not SSSI or SPA but it is very close to part which is SSSI and Common Land.

A2.9.5.8 There appears to be an over reliance on existing trees to provide screening. Some of these trees may need to be removed at some stage for conservation reasons as the area's ecological importance is for open heathland. There is also a concern that cutting swathes into plantations during the works and exposing trees that were previously protected will make these more susceptible to wind throw and create additional maintenance liabilities for SCC.

A2.9.6 Exchange Land

A2.9.6.1 We understand that HE has made a commitment to resolving historic exchange land issues that relate to the building of the M25 and the calculations the project team have made in terms of replacement land for this scheme are based on all exchange land from the previous development being in the correct ownership and designation but would ask that these issues be finalised as soon as possible and before exchange land for the current Junction 10 scheme is agreed.

A2.9.6.2 We understand that with regard to the replacement land that HE are currently working to identify, you are working to the provide replacement land that is 'not less and of equal advantage to the public'. At present, we understand that you are working to an approximate ration of 3:1 on this land. We would reiterate that in view of the potential impacts on different designations, the exchange land will need to be carefully considered. Exchange common land may not be suitable to act as well as exchange land for the SPA/SSSI, for example.

A2.9.6.3 In addition the land to be lost has a high nature conservation value that cannot be compensated by supplying a like for like land area unless the exchange land has a similar nature conservation value. If this cannot be found, a mechanism for bringing any exchange land up to the required standard will be required. It will also be important to understand the amount and location of temporary land take needed during the construction of the project.

A2.9.7 Landscape Views

A2.9.7.1 The County Council have many interests in the landscape of the area affected by the proposed junction improvements. The area is identified as sandy woodland in the Landscape Character Assessment of Surrey undertaken in 2015. As such it softens the impact of the two major roads cutting through this woody heathland area and we would expect to see this character maintained in the landscape work. In addition to containing parts of the Thames Basin Heaths SPA, it impacts on two significant gardens. We will need to see the outline landscape scheme and be involved in the detailed design in order to reduce the impact on all these key features.

A2.9.8 Mineral Safeguarding Areas

A2.9.8.1 It appears that the scheme would result in some minor, but not substantial incursion into the Mineral Safeguarding Areas (MSAs) that extend across the former Wisley Airfield and Ockham Park, to the south east of J10 of the M25, and the one that extends across Wisley and Pyrford to the west of the A3. The effect of the proposed scheme on MSAs should be addressed as part of the planning submission.

A2.9.9 Waste Safeguarding

A2.9.9.1 The proposed access to Wisley Lane is adjacent to a site that is allocated in the 2008 Surrey Waste Plan (SWP). The allocated SWP site is also allocated in the Aggregates Recycling Joint Development Plan Document 2013 (ARJDPD) as a potential site for the development of aggregates recycling. Despite the site being safeguarded under these allocations the Waste Planning Authority (WPA) consider it unlikely to receive a waste related development due to the site being allocated in Guildford Borough's Submission Local Plan for a new settlement. For this reason the WPA will not be taking the site forward in the new Surrey Waste Local Plan.

A2.9.9.2 The WPA would however encourage sustainable construction techniques to maximise recycling of Construction, Demolition and Excavation (CD&E) waste that is generated by the M25 Junction 10 development. The SWP allocated site was identified as being suitable for aggregate recycling and the developer may want to consider using the site to recycle materials generated from the development.

A2.9.10 Asset definition – would any assets become the County Council's responsibility?

A2.9.10.1 We would ask for future discussions regarding potential adoption of assets/structures and assets/structures impacting Surrey highway.

A2.9.10.2 The adoption of a highway asset by SCC should be with the agreement of SCC. Any highway asset to be adopted must have had technical approval and meet SCC's requirements (e.g. for material, form, loading, durability, etc.). SCC must have a commuted sum for any highway asset that is to be adopted.

A2.9.10.3 All bridges, and their approach supports, crossing/carrying the M25/A3 should remain the responsibility of HE. All retaining structures retaining either the A3/M25 or a Surrey highway adjacent to the M25/A3 should remain the responsibility of HE.

A2.9.10.4 For assets/structures not to be adopted by SCC that will carry/cross or be on a Surrey highway/ROW, SCC will need to be involved with the technical approval of the design details (dimensions/loading/parapet height etc.), including to agree/reject any Departures from Standard that may be proposed. Where SCC will adopt any of the elements of these non-Surrey structures, often paved surfaces, then these elements must be approved by Surrey with a commuted sum payable.

A2.9.10.5 Agreements must be written/signed as part of the project to clarify the future maintenance responsibilities of the assets.

A2.9.10.6 SCC will also need to be involved with the technical approval of any temporary structures affecting Surrey's highway/PROW network (i.e. temporary bridges in place whilst foot/bridle bridges are being reconstructed both over the A3 and M25).

A2.9.11 Network impacts during construction

A2.9.11.1 The impacts during construction will need careful consideration. The elongated roundabout is proposed to be at the same level as the existing one and so it is likely that there would be some degree of additional traffic congestion arising from construction works, as the existing roundabout is reconstructed. Effective and safe traffic management during construction will be important and we would ask to see these details when available.

A2.9.11.2 For any closures of the M25/A3 during the works, there may be use of diversions onto Surrey's local road network that will increase fatigue of our existing highway assets on those routes and so would ask if funding is provided to mitigate these impacts.

A2.9.11.3 It will be important to take into account that not all bridges on HE diversion routes may be motorway grade load capacity and potential funding of maintenance on tactical diversion routes/bridges should be considered.

A2.9.11.4 As well as potential closures of the M25/A3, we realise that other closures may be necessary, affecting accesses for vehicles as well as non-motorised users. For example the Wisley Lane Junction with the A3 will need a temporary continuous access route on to the A3 while the new bridge over the A3 is being built. The alternative route via Pyrford Lock is unsuitable (a 7.5t weight restricted bridge and 2.5m width restriction). Where closures affect Rights of Ways, mitigation should be considered including phasing of the works programme to minimise diversion routes.

A2.9.11.5 We would ask that information is provided as to how the impacts during construction are to be mitigated to the local road network and also to key businesses and facilities in the local area including RHS Wisley Gardens, Painshill Park and Feltonfleet School.

A2.9.11.6 We would ask that the construction compounds identified are fully restored to at least the condition that existing prior to construction.

A2.9.12 PCF3 Traffic Modelling

A2.9.12.1 Following previous discussions with HE regarding the traffic modelling methodology, we look forward to a continued dialogue with regard to proposed PCF3 traffic modelling.

A2.9.13 A3 widening through Guildford

A2.9.13.1 There is a need for this scheme to take into account and to not negatively impact the future scheme to widen the A3 through Guildford. In particular we would ask that the Junction 10 proposals are future proofed against any additional traffic capacity provided later as part of the potential A3 widening scheme in Guildford for example additional northbound A3 traffic "arriving" at Junction 10. We would ask that the traffic modelling and capacity assessment requested earlier in our letter show how this has been taken into account.

A3. What changes could be made to the proposals to remove or minimise any of the potentially negative effects that are of concern to you?

A3.1 Please see some suggestions we have made within this letter. We welcome future discussions with HE to address our concerns.

A4. Do you agree with the proposed approach to mitigating the potential adverse environmental impacts of the proposed scheme?

- Land take
- Special Protection Area / Site of Special Scientific Interest and biodiversity
- Ancient woodland and landscape (impact on flora and fauna)
- Scheduled monuments, listed buildings and other heritage assets
- Common Land – access for pedestrians, cyclists and horse riders
- Approach to addressing/ mitigating air quality and noise

A4.1 We are not able to agree with the proposed approach currently as it is difficult to assess the adequacy of the mitigation measures when the impacts have not been fully assessed and ask that this information is provided. In addition as part of the mitigation hierarchy, compensation measures also need to be considered along with the need to identify biodiversity gains.

A4.2 Given the scale of likely impacts identified in para 7.7.2 of the PEIR Main Text Report, it is questioned whether there is currently sufficient extent for mitigation and compensation together with land to achieve them. Furthermore some mitigation is put forward and then caveated by being 'subject to funding available' as is the case with the multifunctional bridge in para 7.5.1. The needs for mitigation will be driven by the levels of the impacts of the scheme. The mitigation provided by the multi-functional bridge may be achieved in other ways but the subject to cost caveat is inappropriate at this stage.

A4.3 Air quality and noise impacts/mitigation should be addressed in consultation with Elmbridge, Guildford and Woking Borough Councils. We would ask that the **Link and Nodes traffic diagram** requested under para **A1.4** be provided to clearly demonstrate how the changes in traffic flows impact on air quality and noise and suitable mitigation be provided.

A4.4 We would also draw HE's attention to the Planning Inspectorate's Environmental Scoping Opinion for the scheme which took account of the County Council's response in respect of the environmental scoping process (see County Council letter to the Planning Inspectorate dated 11th January 2018).

A4.5 In cultural heritage terms direct impact to designated heritage assets should be avoided if at all possible and the approach set out in the PEIR acknowledges that. Where impact is unavoidable then a full assessment of the significance of an asset whether designated or not is required in order to make informed decisions regarding appropriate mitigation and again that is allowed for in the documentation. We are satisfied that that the baseline work done so far, when combined with the further evaluation and survey work that is proposed will enable informed decisions to be made regarding the nature of the cultural heritage resource and enable appropriate mitigation measures to be put in place.

A4.5 The PEIR states that the design seeks to avoid heritage assets where possible and minimises land take where unavoidable. This is to be welcomed. The mitigation measures that are proposed seem appropriate although these will need to be developed following further detailed investigations. It will be for HE to advise on measures that directly impact upon scheduled monuments, Grade 1 Parks and Gardens or listed buildings.

A5. Do you wish to make any comments about the information contained in our Preliminary Environmental Information Report that was published as part of the consultation materials?

A5.1 In the PEIR, we would recommend that the sources of the desktop information are cited: National Biodiversity Network, MAGIC or Surrey Biodiversity Information Centre, etc.

A5.2 It is unclear whether the potential exchange land has been or will be subject to ecological surveys. These are necessary to ensure that no habitats or species are adversely harmed and also that the exchange land can function in the way it is proposed.

A5.3 There is a lack of clarity when referring to the impacts of the scheme across different areas. For example there is the Ecological Zone of Influence and what is referred to as the 'footprint of the scheme' and the latter should be defined. Does this, for example include all the side roads, rights of way diversions and temporary land take for construction works?

A5.4 Regarding Chapter 12 (Minerals & Waste) of the PEIR, no reference is made in the sections on baseline information to a number of publications that SCC produce that are relevant, including the Annual Monitoring Reports, the Local Aggregate Assessments, and the South East Aggregates Monitoring Report (a SEAWP report), all of which can be accessed on the SCC website at the following address: https://www.surreycc.gov.uk/environment-housing-and-planning/minerals-and-waste-policies-and-plans/minerals-and-waste-performance-monitoring.

A5.5 In respect of predicted future waste infrastructure capacity, there are a number of references to SCC's stated intent to calculate future need for construction, demolition and excavation (CD&E) waste management capacity. That work has now been carried out and forms part of the evidence base for the emerging Surrey WLP 2018-2033. The relevant report can be accessed on the SCC website at the following address: https://www.surreycc.gov.uk/__data/assets/pdf_file/0009/147357/2017-10-27-Draft-Plan,-Waste-Needs-Assessment.compressed.pdf.

A5.6 In general we are content with the approach taken so far to the cultural heritage issues raised by the proposals. We have been consulted on the scope and extent of the required heritage assessments and have discussed the need to assess the potential for as yet undiscovered archaeological assets as well as the known known heritage assets within the study area. The baseline information that has been provided is satisfactory and now a detailed suite of archaeological investigations will be required in order to further assess the nature, extent and significance of the potential archaeological resource and we note that the need for this is acknowledged in the report. We are therefore satisfied that this will enable informed decisions to be made regarding the significance of the archaeological resource and allow suitable and appropriate mitigation measures to be devised.

B1 Next Steps and other matters

B1.1 Where our letter deals with mitigation, which is to be subsequently accepted, we would ask that HE clarifies the mechanism by which these matters will be written into the Development Consent Order (DC) and/or planning requirements and obligations. We would also welcome HE setting out/confirming the nature and timetable for the remaining stages and documentation in relation to this scheme e.g. Statement of Common Ground, Planning Statement, Environmental Impact Assessment and the DCO.

B1.2 We have welcomed the consultation and engagement from HE and their consultants to date and look forward to continued dialogue. SCC has invested significant resources in engagement and responding to the development of this scheme to produce a successful scheme that addresses the needs and impacts on both the strategic and local road network. As the project develops further SCC will have to dedicate further resources and associated costs. We would therefore welcome a discussion with Highways England to enter into a Planning Performance Agreement to cover our costs involved. Your response on the processes involved to achieve this would be appreciated.

Thank you for providing the opportunity for Surrey County Council to comment.

We would ask if you could please acknowledge receipt of this letter.

Yours sincerely

[redacted]

Trevor Pugh
Strategic Director Environment & Infrastructure

Cc Robert Ranger – PINS Case Officer

Appendix C. Model Calibration / Validation Summary

Table C-1 Summary of calibration sites

Time Period	Calibration counts passing criteria		
	Flow	GEH	Flow/GEH
Total Counts	148	148	148
Number of calibration counts passing WebTAG criteria			
AM	122	124	126
IP	126	124	128
PM	124	122	126
Proportion of calibration counts passing WebTAG criteria			
AM	82%	84%	85%
IP	85%	84%	86%
PM	84%	82%	85%

Table C-2 AM Peak screenline flow comparison

Screenline	Dir	Count	Model	Diff	Diff (%)	GEH	Flow	GEH
Cali-screenline 1	NB	5584	5356	-228	-4%	3.1	□	□
	SB	5586	5497	-89	-2%	1.2	□	□
Vali-screenline 2	EB	2153	2156	4	0%	0.1	□	□
	WB	2596	2581	-15	-1%	0.3	□	□
Cali-screenline 3	SB	6371	6491	120	2%	1.5	□	□
	NB	6325	6307	-18	0%	0..2	□	□
Cali-screenline 4	WB	2506	2436	-70	-3%	1.4	□	□
	EB	2060	1971	-89	-4%	2.0	□	□
Guildford cordon	IN	7886	8138	252	3%	2.8	□	□
	OUT	6844	7000	156	2%	1.9	□	□
Number of screenlines meeting Flow/GEH WebTAG criteria							10	
Percentage of screenlines meeting criteria							100%	

Table C-3 Inter Peak screenline flow comparison

Screenline	Dir	Count	Model	Diff	Diff (%)	GEH	Flow	GEH
Cali-screenline 1	NB	4363	4330	-33	-1%	0.5	□	□
	SB	4667	4848	181	4%	2.6	□	□
Vali-screenline 2	EB	2234	2416	182	8%	3.8	□	□
	WB	2195	2298	103	5%	2.2	□	□
Cali-screenline 3	SB	6009	5865	-143	-2%	1.9	□	□
	NB	5254	5333	79	2%	1.1	□	□

Screenline	Dir	Count	Model	Diff	Diff (%)	GEH	Flow	GEH
Cali-screenline 1	NB	4363	4330	-33	-1%	0.5	□	□
Cali-screenline 4	WB	1898	1848	-50	-3%	1.2	□	□
	EB	1918	1912	-6	0%	0.1	□	□
Guildford cordon	IN	6161	6212	51	1%	0.7	□	□
	OUT	6858	6949	91	1%	1.1	□	□
Number of screenlines meeting Flow/GEH WebTAG criteria							10	
Percentage of screenlines meeting criteria							100%	

Table C-4 PM Peak screenline flow comparison

Screenline	Dir	Count	Model	Diff	Diff (%)	GEH	Flow	GEH
Cali-screenline 1	NB	5672	5370	-302	-5%	4.1	□	□
	SB	5596	5869	273	5%	3.6	□	□
Vali-screenline 2	EB	2586	2571	-15	-1%	0.3	□	□
	WB	2166	2211	45	2%	1.0	□	□
Cali-screenline 3	SB	6850	6567	-283	-4%	3.5	□	□
	NB	6309	6375	66	1%	0.8	□	□
Cali-screenline 4	WB	1995	2024	29	1%	0.6	□	□
	EB	2184	2179	-5	0%	0.1	□	□
Guildford cordon	IN	6634	6443	-191	-3%	2.4	□	□
	OUT	8407	8815	408	5%	4.4	□	□
Number of screenlines meeting Flow/GEH WebTAG criteria							9	
Percentage of screenlines meeting criteria							90%	

Table C-5 AM Peak calibration results for AoDM

Location	Description	Dir	2015 Counts (PCU)	Modelled Flows (PCU)				
				Diff	Diff (%)	GEH	Flow	GEH
M25 J10	A3 SB J10 Off-slip	SB Left	324	16	5%	0.9	✓	✓
	A3 SB J10 Off-slip	SB Ahead	1106	-26	-2%	0.8	✓	✓
	M25 CW J10 Off-slip	CW Left	1194	-24	-2%	0.7	✓	✓
	M25 CW J10 Off-slip	CW Ahead	420	5	1%	0.3	✓	✓
	A3 NB J10 Off-slip	NB Left	1315	128	10%	3.5	✓	✓
	A3 NB J10 Off-slip	NB Ahead	1131	-106	-9%	3.2	✓	✓
	M25 ACW J10 Off-slip	ACW Left	1102	-1	0%	0.0	✓	✓
	M25 ACW J10 Off-slip	ACW Ahead	1213	21	2%	0.6	✓	✓
A3 Main	A3 NB Copsem	NB	2441	13	1%	0.3	✓	✓
	A3 SB Copsem	SB	2810	-217	-8%	4.2	✓	✓

Location	Description	Dir	2015 Counts (PCU)	Modelled Flows (PCU)				
				Diff	Diff (%)	GEH	Flow	GEH
	A3 NB Painshill to Copsem	NB	3028	2	0%	0.0	✓	✓
	A3 SB Copsem to Painshill	SB	3405	-292	-9%	5.1	✓	×
	A3 NB South of Ockham	NB	3690	-79	-2%	1.3	✓	✓
	A3 SB South of Ockham	SB	3579	17	0%	0.3	✓	✓
M25 J8-J12	M25 J8-9	CW	6326	-88	-1%	1.1	✓	✓
	M25J9	CW	4926	144	3%	2.0	✓	✓
	M25 J9-10	CW	5857	92	2%	1.2	✓	✓
	M25J10	CW	4243	110	3%	1.7	✓	✓
	M25 J10-11	CW	6652	156	2%	1.9	✓	✓
	M25J11	CW	6008	-264	-4%	3.4	✓	✓
	M25 J11-12	CW	7460	-99	-1%	1.1	✓	✓
	M25 J12-11	ACW	7069	94	1%	1.1	✓	✓
	M25J11	ACW	5720	84	1%	1.1	✓	✓
	M25 J11-10	ACW	6820	82	1%	1.0	✓	✓
	M25J10	ACW	4505	63	1%	0.9	✓	✓
	M25 J10-9	ACW	5926	-30	-1%	0.4	✓	✓
	M25J9	ACW	4683	-1	0%	0.0	✓	✓
	M25 J9-8	ACW	5554	2	0%	0.0	✓	✓

Table C-6 Inter Peak calibration results for AoDM

Location	Description	Dir	2015 Counts (PCU)	Modelled Flows (PCU)				
				Diff	Diff (%)	GEH	Flow	GEH
M25 J10	A3 SB J10 Off-slip	SB Left	473	-77	-16%	3.7	✓	✓
	A3 SB J10 Off-slip	SB Ahead	1112	-10	-1%	0.3	✓	✓
	M25 CW J10 Off-slip	CW Left	1058	2	0%	0.1	✓	✓
	M25 CW J10 Off-slip	CW Ahead	380	-1	0%	0.0	✓	✓
	A3 NB J10 Off-slip	NB Left	914	6	1%	0.2	✓	✓
	A3 NB J10 Off-slip	NB Ahead	860	122	14%	4.0	✓	✓
	M25 ACW J10 Off-slip	ACW Left	957	-16	-2%	0.5	✓	✓
	M25 ACW J10 Off-slip	ACW Ahead	1003	15	1%	0.5	✓	✓
A3 Main	A3 NB Copsem	NB	1771	-13	-1%	0.3	✓	✓
	A3 SB Copsem	SB	1987	-14	-1%	0.3	✓	✓
	A3 NB Painshill to Copsem	NB	2249	-111	-5%	2.4	✓	✓
	A3 SB Copsem to Painshill	SB	2557	-127	-5%	2.5	✓	✓

Location	Description	Dir	2015 Counts (PCU)	Modelled Flows (PCU)				
				Diff	Diff (%)	GEH	Flow	GEH
	A3 NB South of Ockham	NB	2953	20	1%	0.4	✓	✓
	A3 SB South of Ockham	SB	3659	-126	-3%	2.1	✓	✓
M25 J8-J12	M25 J8-9	CW	5549	30	1%	0.4	✓	✓
	M25J9	CW	4949	60	1%	0.9	✓	✓
	M25 J9-10	CW	5878	41	1%	0.5	✓	✓
	M25J10	CW	4766	-286	-6%	4.2	✓	✓
	M25 J10-11	CW	6456	11	0%	0.1	✓	✓
	M25J11	CW	5869	-109	-2%	1.4	✓	✓
	M25 J11-12	CW	7352	-90	-1%	1.1	✓	✓
	M25 J12-11	ACW	7025	-15	0%	0.2	✓	✓
	M25J11	ACW	5922	-89	-2%	1.2	✓	✓
	M25 J11-10	ACW	6392	126	2%	1.6	✓	✓
	M25J10	ACW	4432	127	3%	1.9	✓	✓
	M25 J10-9	ACW	5719	140	2%	1.8	✓	✓
	M25J9	ACW	5053	-41	-1%	0.6	✓	✓
	M25 J9-8	ACW	6014	-117	-2%	1.5	✓	✓

Table C-7 PM Peak calibration results for AoDM

Location	Description	Dir	2015 Counts (PCU)	Modelled Flows (PCU)				
				Diff	Diff (%)	GEH	Flow	GEH
M25 J10	A3 SB J10 Off-slip	SB Left	459	8	2%	0.4	✓	✓
	A3 SB J10 Off-slip	SB Ahead	939	51	5%	1.7	✓	✓
	M25 CW J10 Off-slip	CW Left	1054	-28	-3%	0.9	✓	✓
	M25 CW J10 Off-slip	CW Ahead	400	-35	-9%	1.8	✓	✓
	A3 NB J10 Off-slip	NB Left	1277	37	3%	1.0	✓	✓
	A3 NB J10 Off-slip	NB Ahead	981	49	5%	1.6	✓	✓
	M25 ACW J10 Off-slip	ACW Left	1209	56	5%	1.6	✓	✓
	M25 ACW J10 Off-slip	ACW Ahead	1144	87	8%	2.5	✓	✓
A3 Main	A3 NB Copsem	NB	2659	-20	-1%	0.4	✓	✓
	A3 SB Copsem	SB	2519	102	4%	2.0	✓	✓
	A3 NB Painshill to Copsem	NB	3301	-86	-3%	1.5	✓	✓
	A3 SB Copsem to Painshill	SB	3253	-5	0%	0.1	✓	✓
	A3 NB South of Ockham	NB	3639	-1	0%	0.0	✓	✓

Location	Description	Dir	2015 Counts (PCU)	Modelled Flows (PCU)				
				Diff	Diff (%)	GEH	Flow	GEH
	A3 SB South of Ockham	SB	4348	-394	-9%	6.1	✓	×
M25 J8-J12	M25 J8-9	CW	4971	246	5%	3.4	✓	✓
	M25J9	CW	4286	323	8%	4.8	✓	✓
	M25 J9-10	CW	5715	-90	-2%	1.2	✓	✓
	M25J10	CW	4351	-116	-3%	1.8	✓	✓
	M25 J10-11	CW	6504	-34	-1%	0.4	✓	✓
	M25J11	CW	5361	73	1%	1.0	✓	✓
	M25 J11-12	CW	6991	32	0%	0.4	✓	✓
	M25 J12-11	ACW	7434	-31	0%	0.4	✓	✓
	M25J11	ACW	6383	-137	-2%	1.7	✓	✓
	M25 J11-10	ACW	7201	333	5%	3.9	✓	✓
	M25J10	ACW	4985	53	1%	0.7	✓	✓
	M25 J10-9	ACW	6400	92	1%	1.1	✓	✓
	M25J9	ACW	5594	-18	0%	0.2	✓	✓
	M25 J9-8	ACW	6744	-67	-1%	0.8	✓	✓

Table C-8 AM Peak link flow comparison for local roads in the AoDM

Junction	Description	2015 Total Counts	Model	Diff	Diff (%)	GEH	Flow	GEH
Ripley junction	Newark Lane	270	306	37	14%	2.2	✓	✓
	Portsmouth Road SB	604	710	106	18%	4.2	×	✓
	Rose Lane	99	69	-30	-30%	3.3	✓	✓
	Portsmouth Road NB	667	492	-176	-26%	7.3	×	×
Seven Hills junction	Byfleet Road	987	965	-22	-2%	0.7	✓	✓
	Seven Hills Road SB	715	742	27	4%	1.0	✓	✓
	A3-A245	1774	1827	54	3%	1.3	✓	✓
	Seven Hills Road NB	32	50	18	57%	2.8	✓	✓
Painshill junction	A3 SB off-slip	900	766	-134	-15%	4.7	✓	✓
	A245 Cobham Bridge	1086	1016	-70	-6%	2.2	✓	✓
	A3 NB off-slip	1258	1290	32	3%	0.9	✓	✓
	Byfleet Road	1556	1539	-17	-1%	0.4	✓	✓
Ockham RB	A3SB off-slip	722	728	6	1%	0.2	✓	✓
	A3NB on-slip	1258	1147	-111	-9%	3.2	✓	✓
	Ockham Rd North	385	472	87	23%	4.2	✓	✓

Junction	Description	2015 Total Counts	Model	Diff	Diff (%)	GEH	Flow	GEH
	Portsmouth Road	683	761	79	12%	2.9	✓	✓
Wisley Lane	Wisley Lane to A3	145	169	24	16%	1.9	✓	✓
	A3 to Wisley Lane	168	126	-42	-25%	3.5	✓	✓

Table C-9 PM Peak link flow comparison for local roads in the AoDM

Junction	Description	2015 Total Counts	Model	Diff	Diff (%)	GEH	Flow	GEH
Ripley junction	Newark Lane	232	262	29	13%	1.9	✓	✓
	Portsmouth Road SB	690	701	11	2%	0.4	✓	✓
	Rose Lane	125	32	-94	-75%	10.6	✓	×
	Portsmouth Road NB	514	433	-81	-16%	3.7	✓	✓
Seven Hills junction	Byfleet Road	998	1211	213	21%	6.4	×	×
	Seven Hills Road SB	695	764	69	10%	2.5	✓	✓
	A3-A245	1535	1559	24	2%	0.6	✓	✓
	Seven Hills Road NB	41	50	9	23%	1.4	✓	✓
Painshill junction	A3 SB off-slip	602	470	-132	-22%	5.7	×	×
	A245 Cobham Bridge	1058	1151	93	9%	2.8	✓	✓
	A3 NB off-slip	1203	1110	-93	-8%	2.7	✓	✓
	Byfleet Road	1830	1834	3	0%	0.1	✓	✓
Ockham RB	A3SB off-slip	927	892	-35	-4%	1.2	✓	✓
	A3NB on-slip	1006	949	-57	-6%	1.8	✓	✓
	Ockham Rd North	264	301	37	14%	2.2	✓	✓
	Portsmouth Road	542	652	110	20%	4.5	×	✓
Wisley Lane	Wisley Lane to A3	205	118	-87	-43%	6.9	✓	×
	A3 to Wisley Lane	131	138	7	5%	0.6	✓	✓

Table C-10 Summary of journey time validation

Route	Period	Observed (mins)	Modelled (mins)	% Diff	Pass
M25 J8-J17	AM	52.58	40.37	-23%	×
	IP	45.78	42.92	-6%	✓
	PM	69.75	40.72	-42%	×
M25 J17–J8	AM	55.27	39.62	-28%	×
	IP	44.80	38.68	-14%	✓
	PM	63.85	40.30	-37%	×
A3 SB	AM	16.70	16.43	-2%	✓
	IP	15.47	15.50	0%	✓
	PM	23.82	16.45	-31%	×
A3 NB	AM	16.63	16.83	1%	✓
	IP	14.43	14.72	2%	✓
	PM	16.13	15.65	-3%	✓
Copsem to J9	AM	9.38	6.18	-34%	×
	IP	7.12	6.37	-11%	✓
	PM	10.95	6.82	-38%	×
J9 to Copsem	AM	12.12	5.67	-53%	×
	IP	8.98	5.45	-39%	×
	PM	10.52	5.42	-49%	×
Epsom Road WB	AM	16.63	12.23	-26%	×
	IP	15.45	11.45	-26%	×
	PM	17.20	11.67	-32%	×
Epsom Road EB	AM	17.17	11.07	-36%	×
	IP	15.43	10.77	-30%	×
	PM	16.92	11.22	-34%	×
Ockham Road NB	AM	17.37	16.58	-5%	✓
	IP	16.90	15.62	-8%	✓
	PM	17.28	16.37	-5%	✓
Ockham Road SB	AM	18.00	17.78	-1%	✓
	IP	16.97	16.37	-4%	✓
	PM	17.55	17.23	-2%	✓

Table C-11 Summary of link flow validation (based on ten links)

Time period	Proportion of counts passing WebTAG criteria		
	Flow	GEH	Flow/GEH
AM	90%	90%	100%
IP	90%	70%	90%
PM	100%	90%	100%

Appendix D. Merge/Diverge Assessment Full Outputs

Table D-12 Merge Assessment 2022

Junction	Merge	Motorway/ All Purpose	Mainline Flow	Merge Flow	Layout Required	Layout Provided
AM						
M25 J10	M25 WB (Clockwise)	Motorway	4055	2833	F* - Lane Gain with Ghost Island Merge (*see notes)	Yes
	M25 EB (Counter clockwise)	Motorway	3899	1431	C – Ghost Island Merge	Yes
	A3 NB	All Purpose	2529	1348	F – Lane Gain with Ghost Island Merge	Yes
	A3 SB	All Purpose	2196	2488	F – Lane Gain with Ghost Island Merge	Yes
Ockham	A3 NB	All Purpose	3699	1494	F – Lane Gain with Ghost Island Merge	Yes
Painshill	A3 SB	All Purpose	2567	1237	F – Lane Gain with Ghost Island Merge	Yes
PM						
M25 J10	M25 WB (Clockwise)	Motorway	3980	2248	F* - Lane Gain with Ghost Island Merge (*see notes)	Yes
	M25 EB (Counter clockwise)	Motorway	4878	1439	F* - Lane Gain with Ghost Island Merge (*see notes)	Yes
	A3 NB	All Purpose	2516	1532	F – Lane Gain with Ghost Island Merge	Yes
	A3 SB	All Purpose	2541	2428	G – Lane Gain with Ghost Island	Yes
Ockham	A3 NB	All Purpose	3600	1087	B – Parallel Merge	Yes
Painshill	A3 SB	All Purpose	2621	1458	F – Lane Gain with Ghost Island Merge	Yes

Table D-13 Merge Assessment 2037

Junction	Merge	Motorway/ All Purpose	Mainline Flow	Merge Flow	Layout Required	Layout Provided
AM						
M25 J10	M25 WB (Clockwise)	Motorway	4469	3327	G – Lane Gain with Ghost Island	Yes
	M25 EB (Counter clockwise)	Motorway	4201	1506	F* - Lane Gain with Ghost Island Merge (*see notes)	Yes
	A3 NB	All Purpose	3135	1352	F – Lane Gain with Ghost Island Merge	Yes

Junction	Merge	Motorway/ All Purpose	Mainline Flow	Merge Flow	Layout Required	Layout Provided
AM						
	A3 SB	All Purpose	2531	2823	G – Lane Gain with Ghost Island	Yes
Ockham	A3 NB	All Purpose	4146	2040	F – Lane Gain with Ghost Island Merge	Yes
Painshill	A3 SB	All Purpose	3231	1172	B – Parallel Merge	Yes
PM						
M25 J10	M25 WB (Clockwise)	Motorway	4401	2422	F* - Lane Gain with Ghost Island Merge (*see notes)	Yes
	M25 EB (Counter clockwise)	Motorway	4906	1646	F* - Lane Gain with Ghost Island Merge (*see notes)	Yes
	A3 NB	All Purpose	2792	1478	F – Lane Gain with Ghost Island Merge	Yes
	A3 SB	All Purpose	2926	2794	G – Lane Gain with Ghost Island	Yes
Ockham	A3 NB	All Purpose	3883	1411	F – Lane Gain with Ghost Island Merge	Yes
Painshill	A3 SB	All Purpose	3124	1528	F – Lane Gain with Ghost Island Merge	Yes

Table D-14 Diverge Assessment 2022

Junction	Merge	Motorway/ All Purpose	Mainline Flow	Merge Flow	Layout Required	Layout Provided
AM						
M25 J10	M25 WB (Clockwise)	Motorway	4055	1613	D* - Ghost Island Diverge for Lane Drop/Lane Drop at Parallel Diverge	Yes
	M25 EB (Counter clockwise)	Motorway	3899	2387	D* - Ghost Island Diverge for Lane Drop/Lane Drop at Parallel Diverge	Yes
	A3 NB	All Purpose	2529	2664	E – 2 Lane Drop	Yes
	A3 SB	All Purpose	2196	1608	D – Ghost Island Diverge for Lane Drop/Lane Drop at Parallel Diverge	Yes
Ockham	A3 NB	All Purpose	3699	848	A – Taper Diverge	Yes
Painshill	A3 SB	All Purpose	2567	1301	D – Ghost Island Diverge for Lane Drop/Lane Drop at Parallel Diverge	Yes
PM						
M25 J10	M25 WB (Clockwise)	Motorway	3980	1655	D* - Ghost Island Diverge for Lane Drop/Lane Drop at Parallel Diverge	Yes
	M25 EB (Counter clockwise)	Motorway	4878	2485	E – 2 Lane Drop	Yes
	A3 NB	All Purpose	2516	2178	D – Ghost Island Diverge for Lane Drop/Lane Drop at Parallel Diverge	Yes
	A3 SB	All Purpose	2541	1538	D – Ghost Island Diverge for Lane Drop/Lane Drop at Parallel Diverge	Yes
Ockham	A3 NB	All Purpose	4084	884	C – Lane Drop at Taper Diverge	Yes
Painshill	A3 SB	All Purpose	2726	1320	D – Ghost Island Diverge for Lane Drop/Lane Drop at Parallel Diverge	Yes

Table D-15 Diverge Assessment 2037

Junction	Merge	Motorway/ All Purpose	Mainline Flow	Merge Flow	Layout Required	Layout Provided
AM						
M25 J10	M25 WB (Clockwise)	Motorway	4469	1657	D* - Ghost Island Diverge for Lane Drop/Lane Drop at Parallel Diverge	Yes
	M25 EB (Counter clockwise)	Motorway	4201	2374	D* - Ghost Island Diverge for Lane Drop/Lane Drop at Parallel Diverge	Yes
	A3 NB	All Purpose	3135	3050	E – 2 Lane Drop	Yes
	A3 SB	All Purpose	2531	1871	D – Ghost Island Diverge for Lane Drop/Lane Drop at Parallel Diverge	Yes
Ockham	A3 NB	All Purpose	4322	1032	C – Lane Drop at Taper Diverge	
Painshill	A3 SB	All Purpose	2990	1498	D – Ghost Island Diverge for Lane Drop/Lane Drop at Parallel Diverge	
PM						
M25 J10	M25 WB (Clockwise)	Motorway	4401	1849	D* - Ghost Island Diverge for Lane Drop/Lane Drop at Parallel Diverge	Yes
	M25 EB (Counter clockwise)	Motorway	4906	2494	E – 2 Lane Drop	Yes
	A3 NB	All Purpose	2792	2502	E – 2 Lane Drop	Yes
	A3 SB	All Purpose	2926	1728	D – Ghost Island Diverge for Lane Drop/Lane Drop at Parallel Diverge	Yes
Ockham	A3 NB	All Purpose	4552	1167	C – Lane Drop at Taper Diverge	Yes
Painshill	A3 SB	All Purpose	2776	1496	D – Ghost Island Diverge for Lane Drop/Lane Drop at Parallel Diverge	Yes

Appendix E. Junction model results – M25 junction 10

Table E-16: Traffic Flows: M25 junction 10 AM peak

	Movement	2015	2022			2037		
		Base	DM	DS	DS vs DM	DM	DS	DS vs DM
M25 J10	A3 SB J10 Off-slip – left	340	295	364	+69	304	381	+77
	A3 SB J10 Off-slip	1080	723	1286	+563	745	1529	+784
	M25 CW J10 Off-slip – left	1170	1016	1445	+429	1072	1372	+300
	M25 CW J10 Off-slip	426	405	366	-39	400	359	-41
	A3 NB J10 Off-slip – left	1443	1399	1651	+252	1461	1945	+484
	A3 NB J10 Off-slip	1025	1101	1238	+137	1039	1352	+313
	M25 ACW J10 Off-slip – left	1101	1120	1158	+38	1109	1188	+79
	M25 ACW J10 Off-slip	1234	1376	1504	+128	1382	1503	+121
M25 Mainline	M25 J9 – J10 (CW)	5949	6816	6784	-32	7479	7332	-147
	M25 J10 (CW)	4353	5395	4973	-422	6008	5611	-397
	M25 J10 – J11 (CW)	6808	7448	7836	+388	8073	8338	+265
	M25 J11 – J10 (ACW)	6902	7319	7431	+112	7696	7800	+104
	M25 J10 (ACW)	4568	4823	4769	-54	5205	5109	-96
	M25 J10 – J9 (ACW)	5896	6175	6316	+141	6553	6773	+220
A3 Mainline	A3 South of J10 (NB)	4801	5286	5492	+206	5928	6506	+578
	A3 South of J10 (SB)	4325	4680	5165	+485	5012	5881	+869
	A3 North of J10 (NB)	3887	4153	4136	-17	4566	4777	+211
	A3 North of J10 (SB)	3645	3598	3953	+355	3961	4558	+597

Table E-17: Traffic Flows: M25 junction 10 PM peak

	Movement	2015	2022			2037		
		Base	DM	DS	DS vs DM	DM	DS	DS vs DM
M25 J10	A3 SB J10 Off-slip – left	467	352	529	+177	457	570	+113
	A3 SB J10 Off-slip	990	725	1045	+320	1058	1305	+247
	M25 CW J10 Off-slip – left	1026	922	1326	+404	1087	1251	+164
	M25 CW J10 Off-slip	364	388	377	-11	431	385	-46
	A3 NB J10 Off-slip – left	1314	1319	1377	+58	1339	1463	+124
	A3 NB J10 Off-slip	1030	1101	1008	-93	1161	1205	+44
	M25 ACW J10 Off-slip – left	1266	1212	1238	+26	1121	1127	+6
	M25 ACW J10 Off-slip	1231	1354	1442	+88	1327	1553	+226
M25 Mainline	M25 J9 – J10 (CW)	5625	6333	6509	+176	6987	7063	+76
	M25 J10 (CW)	4235	5023	4807	-216	5469	5427	-42

	Movement	2015	2022			2037		
		Base	DM	DS	DS vs DM	DM	DS	DS vs DM
	M25 J10 – J11 (CW)	6470	7016	7159	+143	7697	7859	+162
	M25 J11 – J10 (ACW)	7534	8255	8265	+10	8295	8306	+11
	M25 J10 (ACW)	5038	5688	5585	-103	5847	5625	-222
	M25 J10 – J9 (ACW)	6492	7023	7070	+47	7342	7291	-51
A3 Mainline	A3 South of J10 (NB)	4567	5037	5008	-29	5415	5586	+171
	A3 South of J10 (SB)	4846	4947	5291	+344	5199	5943	+744
	A3 North of J10 (NB)	3864	4227	4249	+22	4386	4418	+32
	A3 North of J10 (SB)	4203	3924	4216	+292	4614	4840	+226

Table E-18 Operational Performance: M25 junction 10 - 2022 DM AM Peak

Lane No.	Lane Name	DoS (%)	MMQ (PCU)	Total Delay (PCUHr)
1/2+1/1	M25 (west) off Left	90.7%	12.9	9.4
1/3+1/4	M25 (west) off Ahead	105.9%	61.7	52.6
2/2+2/1	A3 (north) off Left Ahead	89.9%	11.4	9.8
2/3	A3 (north) off Ahead	101.7%	17.1	13.6
3/2+3/1	M25 (east) off Left Ahead	106.6%	47.9	46.0
3/3	M25 (east) off Ahead	70.7%	6.6	3.2
4/2+4/1	A3 (south) off Left	80.7%	10.0	5.1
4/3+4/4	A3 (south) off Ahead	57.8%	7.3	2.7
9/1	Circ @ M25 (west) off Ahead	44.6%	5.9	0.7
9/2	Circ @ M25 (west) off Ahead Right	86.3%	4.6	1.8
9/3	Circ @ M25 (west) off Right	56.3%	2.5	1.1
10/1	Circ @ A3 (north) off Ahead	63.0%	11.6	2.1
10/2	Circ @ A3 (north) off Ahead Right	97.4%	10.0	2.1
10/3	Circ @ A3 (north) off Right	58.3%	5.1	0.7
11/1	Circ @ M25 (east) off Ahead	65.4%	10.8	1.3
11/2	Circ @ M25 (east) off Ahead Right	98.8%	16.6	1.7
11/3	Circ @ M25 (east) off Right	34.4%	0.6	0.2
12/1	Circ @ A3 (south) off Ahead	92.6%	6.0	1.5
12/2	Circ @ A3 (south) off Ahead Right	90.0%	5.8	1.6
12/3	Circ @ A3 (south) off Right	92.6%	2.1	1.0

Lane No.	Lane Name	DoS (%)	MMQ (PCU)	Total Delay (PCUHr)
PRC (%)	-18.5%			
Total Delay	158.15			

Table E-19 Operational Performance: M25 junction 10 - 2022 DM PM Peak

Lane No.	Lane Name	DoS (%)	MMQ (PCU)	Total Delay (PCUHr)
1/2+1/1	M25 (west) off Left	93.1%	16.4	10.8
1/3+1/4	M25 (west) off Ahead	99.7%	31.6	23.3
2/2+2/1	A3 (north) off Left Ahead	99.9%	10.0	8.7
2/3	A3 (north) off Ahead	94.0%	11.2	7.7
3/2+3/1	M25 (east) off Left Ahead	95.1%	15.9	13.4
3/3	M25 (east) off Ahead	59.7%	5.3	2.4
4/2+4/1	A3 (south) off Left	73.0%	8.7	4.4
4/3+4/4	A3 (south) off Ahead	58.5%	8.3	3.0
9/1	Circ @ M25 (west) off Ahead	50.0%	6.2	1.0
9/2	Circ @ M25 (west) off Ahead Right	96.7%	6.1	2.2
9/3	Circ @ M25 (west) off Right	51.1%	2.2	1.0
10/1	Circ @ A3 (north) off Ahead	66.1%	11.6	0.6
10/2	Circ @ A3 (north) off Ahead Right	100.3%	19.9	5.2
10/3	Circ @ A3 (north) off Right	59.7%	5.4	2.0
11/1	Circ @ M25 (east) off Ahead	78.0%	7.5	0.9
11/2	Circ @ M25 (east) off Ahead Right	99.2%	16.0	4.1
11/3	Circ @ M25 (east) off Right	36.4%	6.0	2.1
12/1	Circ @ A3 (south) off Ahead	74.9%	0.7	0.4
12/2	Circ @ A3 (south) off Ahead Right	93.8%	6.8	0.7
12/3	Circ @ A3 (south) off Right	72.0%	5.4	2.0
PRC (%)	-11.4%			
Total Delay	95.90			

Table E-20 Operational Performance: M25 junction 10- 2037 DM AM Peak

Lane No.	Lane Name	DoS (%)	MMQ (PCU)	Total Delay (PCUHr)
1/2+1/1	M25 (west) off Left	94.2%	16.4	11.9
1/3+1/4	M25 (west) off Ahead	106.1%	63.4	54.8
2/2+2/1	A3 (north) off Left Ahead	102.4%	32.9	31.6
2/3	A3 (north) off Ahead	111.2%	28.5	25.2
3/2+3/1	M25 (east) off Left Ahead	101.5%	30.8	28.0
3/3	M25 (east) off Ahead	58.3%	5.3	2.4
4/2+4/1	A3 (south) off Left	91.0%	14.2	8.1
4/3+4/4	A3 (south) off Ahead	61.5%	7.7	2.8
9/1	Circ @ M25 (west) off Ahead	39.9%	5.5	1.0
9/2	Circ @ M25 (west) off Ahead Right	87.4%	10.6	1.7
9/3	Circ @ M25 (west) off Right	58.8%	3.1	0.9
10/1	Circ @ A3 (north) off Ahead	64.4%	12.2	2.2
10/2	Circ @ A3 (north) off Ahead Right	99.9%	11.0	2.4
10/3	Circ @ A3 (north) off Right	54.7%	5.0	0.5
11/1	Circ @ M25 (east) off Ahead	72.5%	11.1	1.1
11/2	Circ @ M25 (east) off Ahead Right	100.7%	19.6	5.3
11/3	Circ @ M25 (east) off Right	33.2%	1.3	0.6
12/1	Circ @ A3 (south) off Ahead	93.3%	5.6	1.7
12/2	Circ @ A3 (south) off Ahead Right	88.7%	5.3	1.5
12/3	Circ @ A3 (south) off Right	93.1%	3.0	1.1
PRC (%)	-23.6%			
Total Delay	184.85			

Table E-21 Operational Performance: M25 junction 10- 2037 DM PM Peak

Lane No.	Lane Name	DoS (%)	MMQ (PCU)	Total Delay (PCUHr)
1/2+1/1	M25 (west) off Left	97.4%	20.9	16.3
1/3+1/4	M25 (west) off Ahead	110.7%	86.8	79.5
2/2+2/1	A3 (north) off Left Ahead	102.2%	33.3	30.8
2/3	A3 (north) off Ahead	105.5%	28.4	23.3
3/2+3/1	M25 (east) off Left Ahead	112.2%	73.4	73.1

Lane No.	Lane Name	DoS (%)	MMQ (PCU)	Total Delay (PCUHr)
3/3	M25 (east) off Ahead	83.2%	9.0	4.8
4/2+4/1	A3 (south) off Left	76.9%	10.0	5.2
4/3+4/4	A3 (south) off Ahead	62.9%	10.5	3.9
9/1	Circ @ M25 (west) off Ahead	46.0%	6.7	0.9
9/2	Circ @ M25 (west) off Ahead Right	91.4%	6.5	1.7
9/3	Circ @ M25 (west) off Right	42.1%	1.7	0.6
10/1	Circ @ A3 (north) off Ahead	82.0%	13.5	3.7
10/2	Circ @ A3 (north) off Ahead Right	100.3%	18.1	3.5
10/3	Circ @ A3 (north) off Right	59.2%	4.6	0.4
11/1	Circ @ M25 (east) off Ahead	75.5%	11.8	1.6
11/2	Circ @ M25 (east) off Ahead Right	100.4%	19.2	3.9
11/3	Circ @ M25 (east) off Right	46.9%	2.1	0.6
12/1	Circ @ A3 (south) off Ahead	90.5%	7.2	1.7
12/2	Circ @ A3 (south) off Ahead Right	99.7%	8.0	2.0
12/3	Circ @ A3 (south) off Right	88.5%	3.2	2.3
PRC (%)	-24.7%			
Total Delay	259.62			

Table E-22 Operational Performance: M25 junction 10- 2022 Do Something AM Peak

Lane No.	Lane Name	DoS (%)	MMQ (PCU)	Total Delay (PCUHr)
1/1	M25 (west) off Ahead	72.5%	11.2	3.8
1/2	M25 (west) off Ahead	72.4%	11.2	3.8
2/2+2/1	A3 (north) off Ahead	81.7%	11.9	5.2
2/3	A3 (north) off Ahead	81.7%	11.9	5.2
3/1	M25 (east) off Ahead	56.9%	3.7	1.9
3/2	M25 (east) off Ahead	56.6%	3.6	1.9
4/1	A3 (south) off Ahead	69.3%	9.5	3.5
4/2	A3 (south) off Ahead	69.2%	9.5	3.5
9/1	Circ @ A3 (north) off Ahead	61.8%	4.3	0.2
9/2	Circ @ A3 (north) off Ahead Right	59.8%	3.7	0.2
9/3	Circ @ A3 (north) off Right	81.0%	9.8	4.7

Lane No.	Lane Name	DoS (%)	MMQ (PCU)	Total Delay (PCUHr)
9/4	Circ @ A3 (north) off Right	83.4%	10.1	4.8
10/1	Circ @ M25 (west) off Ahead	52.6%	5.8	1.4
10/2	Circ @ M25 (west) off Ahead	53.4%	6.0	1.5
10/3	Circ @ M25 (west) off Ahead Right	45.1%	1.4	0.0
10/4	Circ @ M25 (west) off Right	45.1%	1.4	0.0
11/1	Circ @ A3 (south) off Ahead	72.2%	1.9	0.6
11/2	Circ @ A3 (south) off Ahead	72.7%	1.9	0.6
11/3	Circ @ A3 (south) off Ahead Right	21.7%	3.1	0.6
11/4	Circ @ A3 (south) off Right	21.7%	3.1	0.6
12/1	Circ @ M25 (west) off Ahead	25.7%	3.3	1.3
12/2	Circ @ M25 (west) off Ahead	25.5%	3.3	1.3
12/3	Circ @ M25 (west) off Right	82.2%	2.5	1.4
12/4	Circ @ M25 (west) off Right	82.2%	2.5	1.4
PRC (%)	8.0%			
Total Delay	49.24			

Table E-23 Operational Performance: M25 junction 10 - 2022 Do Something PM Peak

Lane No.	Lane Name	DoS (%)	MMQ (PCU)	Total Delay (PCUHr)
1/1	M25 (west) off Ahead	64.7%	9.4	2.9
1/2	M25 (west) off Ahead	64.7%	9.4	2.9
2/2+2/1	A3 (north) off Ahead	71.8%	8.9	3.9
2/3	A3 (north) off Ahead	72.0%	8.9	3.8
3/1	M25 (east) off Ahead	56.1%	3.6	1.9
3/2	M25 (east) off Ahead	55.8%	3.6	1.9
4/1	A3 (south) off Ahead	49.7%	6.1	2.0
4/2	A3 (south) off Ahead	49.8%	6.1	2.0
9/1	Circ @ A3 (north) off Ahead	46.3%	8.3	2.4
9/2	Circ @ A3 (north) off Ahead Right	45.0%	8.1	2.3
9/3	Circ @ A3 (north) off Right	72.1%	1.8	0.7
9/4	Circ @ A3 (north) off Right	73.8%	2.2	0.8
10/1	Circ @ M25 (west) off Ahead	51.4%	0.8	0.1
10/2	Circ @ M25 (west) off Ahead	50.5%	0.4	0.0

Lane No.	Lane Name	DoS (%)	MMQ (PCU)	Total Delay (PCUHr)
10/3	Circ @ M25 (west) off Ahead Right	36.2%	5.0	1.3
10/4	Circ @ M25 (west) off Right	36.3%	5.0	1.3
11/1	Circ @ A3 (south) off Ahead	65.6%	4.4	1.2
11/2	Circ @ A3 (south) off Ahead	66.1%	4.4	1.2
11/3	Circ @ A3 (south) off Ahead Right	24.2%	2.7	0.2
11/4	Circ @ A3 (south) off Right	24.2%	2.6	0.2
12/1	Circ @ M25 (west) off Ahead	27.8%	0.6	0.4
12/2	Circ @ M25 (west) off Ahead	27.7%	0.6	0.4
12/3	Circ @ M25 (west) off Right	72.4%	8.3	2.5
12/4	Circ @ M25 (west) off Right	72.5%	8.3	2.5
PRC Across All Arms (%)	22.0%			
Total Delay Across All Arms (PCUHr)	38.70			

Table E-24 Operational Performance: M25 junction 10- 2037 Do Something AM Peak

Lane No.	Lane Name	DoS (%)	MMQ (PCU)	Total Delay (PCUHr)
1/1	M25 (west) off Ahead	75.6%	11.6	4.2
1/2	M25 (west) off Ahead	75.5%	11.6	4.2
2/2+2/1	A3 (north) off Ahead	86.9%	14.6	6.9
2/3	A3 (north) off Ahead	87.0%	14.6	6.6
3/1	M25 (east) off Ahead	61.3%	3.8	2.1
3/2	M25 (east) off Ahead	61.0%	3.7	2.0
4/1	A3 (south) off Ahead	72.7%	10.3	3.9
4/2	A3 (south) off Ahead	72.6%	10.3	3.9
9/1	Circ @ A3 (north) off Ahead	69.6%	2.3	1.1
9/2	Circ @ A3 (north) off Ahead Right	69.8%	2.3	1.1
9/3	Circ @ A3 (north) off Right	84.7%	12.3	4.2
9/4	Circ @ A3 (north) off Right	84.7%	12.3	4.2
10/1	Circ @ M25 (west) off Ahead	56.1%	7.1	1.7
10/2	Circ @ M25 (west) off Ahead	49.4%	5.9	1.5
10/3	Circ @ M25 (west) off Ahead Right	51.0%	1.4	0.0
10/4	Circ @ M25 (west) off Right	51.0%	1.4	0.0

Lane No.	Lane Name	DoS (%)	MMQ (PCU)	Total Delay (PCUHr)
11/1	Circ @ A3 (south) off Ahead	83.5%	3.6	0.9
11/2	Circ @ A3 (south) off Ahead	84.1%	3.6	0.9
11/3	Circ @ A3 (south) off Ahead Right	21.1%	3.0	0.5
11/4	Circ @ A3 (south) off Right	21.0%	3.0	0.5
12/1	Circ @ M25 (west) off Ahead	22.8%	1.5	0.8
12/2	Circ @ M25 (west) off Ahead	22.7%	1.5	0.8
12/3	Circ @ M25 (west) off Right	79.0%	10.7	1.5
12/4	Circ @ M25 (west) off Right	79.1%	10.7	1.5
PRC Across All Arms (%)	3.4%			
Total Delay Across All Arms (PCUHr)	55.01			

Table E-25 Operational Performance: M25 junction 10- 2037 Do Something PM Peak

Lane No.	Lane Name	DoS (%)	MMQ (PCU)	Total Delay (PCUHr)
1/1	M25 (west) off Ahead	74.2%	11.6	4.0
1/2	M25 (west) off Ahead	74.2%	11.6	4.0
2/2+2/1	A3 (north) off Ahead	79.3%	10.2	5.2
2/3	A3 (north) off Ahead	79.3%	10.2	4.7
3/1	M25 (east) off Ahead	58.3%	4.0	2.1
3/2	M25 (east) off Ahead	58.1%	4.0	2.1
4/1	A3 (south) off Ahead	61.2%	8.1	2.8
4/2	A3 (south) off Ahead	61.3%	8.1	2.8
9/1	Circ @ A3 (north) off Ahead	53.3%	3.1	0.1
9/2	Circ @ A3 (north) off Ahead Right	50.5%	2.6	0.1
9/3	Circ @ A3 (north) off Right	75.2%	9.0	3.9
9/4	Circ @ A3 (north) off Right	78.5%	9.5	4.0
10/1	Circ @ M25 (west) off Ahead	63.3%	6.9	1.3
10/2	Circ @ M25 (west) off Ahead	56.9%	5.6	1.3
10/3	Circ @ M25 (west) off Ahead Right	39.0%	1.4	0.0
10/4	Circ @ M25 (west) off Right	39.0%	1.4	0.0
11/1	Circ @ A3 (south) off Ahead	66.0%	1.3	0.6
11/2	Circ @ A3 (south) off Ahead	66.4%	1.3	0.6

Lane No.	Lane Name	DoS (%)	MMQ (PCU)	Total Delay (PCUHr)
11/3	Circ @ A3 (south) off Ahead Right	26.5%	3.6	0.6
11/4	Circ @ A3 (south) off Right	26.5%	3.5	0.6
12/1	Circ @ M25 (west) off Ahead	28.9%	3.7	1.4
12/2	Circ @ M25 (west) off Ahead	28.8%	3.7	1.3
12/3	Circ @ M25 (west) off Right	78.2%	2.6	1.3
12/4	Circ @ M25 (west) off Right	78.4%	2.6	1.3
PRC Across All Arms (%)	13.5%			
Total Delay Across All Arms (PCUHr)	46.05			

Table E-26 Average Journey Time Comparison M25 junction 10 - 0700-0800 (s)

To	From	2022		2037	
		DM	DS	DM	DS
A3 (north)	M25 (east)	221	176	213	179
	M25 (west)	376	282	390	294
M25 (east)	A3 (south)	494	309	400	320
	A3 (north)	431	347	932	348
A3 (south)	M25 (west)	249	239	270	245
	M25 (east)	259	249	322	253
M25 (west)	A3 (north)	281	201	388	201
	A3 (south)	329	332	368	341

Table E-27 Average Journey Time Comparison M25 junction 10 - 0800-0900 (s)

To	From	2022		2037	
		DM	DS	DM	DS
A3 (north)	M25 (east)	198	174	250	176
	M25 (west)	339	279	542	287
M25 (east)	A3 (south)	639	309	1397	331
	A3 (north)	1282	349	2825	351
A3 (south)	M25 (west)	250	237	385	245
	M25 (east)	319	244	626	249
M25 (west)	A3 (north)	1551	199	2411	202
	A3 (south)	752	328	1370	355

Table E-28 Average Journey Time Comparison M25 junction 10 - 1600-1700 (s)

To	From	2022		2037	
		DM	DS	DM	DS
A3 (north)	M25 (east)	199	176	199	176
	M25 (west)	280	253	280	253
M25 (east)	A3 (south)	289	253	289	253
	A3 (north)	285	265	285	265
A3 (south)	M25 (west)	238	220	238	220
	M25 (east)	275	257	275	257
M25 (west)	A3 (north)	252	187	252	187
	A3 (south)	339	297	339	297

Table E-29 Average Journey Time Comparison M25 junction 10 - 1700-1800 (s)

To	From	2022		2037	
		DM	DS	DM	DS
A3 (north)	M25 (east)	205	182	205	182
	M25 (west)	306	257	306	257
M25 (east)	A3 (south)	300	290	300	290
	A3 (north)	309	276	309	276
A3 (south)	M25 (west)	243	221	243	221
	M25 (east)	304	262	304	262
M25 (west)	A3 (north)	244	185	244	185
	A3 (south)	344	331	344	331

Table E-30 Level of Service Comparison M25 junction 10 - 0700-0800 (s)

Arm/Movement	2022		2037	
	DM	DS	DM	DS
A3 southbound off-slip	F	A	E	B
M25 westbound off-slip	F	C	D	C
A3 northbound off-slip	B	C	C	C
M25 eastbound off-slip	C	B	D	B
Northern Circulatory	A	B	B	B
Eastern Circulatory	A	A	A	A
Southern Circulatory	C	C	D	C
Western Circulatory	B	B	C	B

Table E-31 Level of Service Comparison M25 junction 10 - 0800-0900 (s)

Arm/Movement	2022		2037	
	DM	DS	DM	DS
A3 southbound off-slip	C	A	E	A
M25 westbound off-slip	F	C	F	C
A3 northbound off-slip	C	B	D	C
M25 eastbound off-slip	F	B	F	B
Northern Circulatory	A	B	B	B
Eastern Circulatory	B	A	C	A
Southern Circulatory	D	C	F	C
Western Circulatory	D	B	F	B

Table E-32 Level of Service Comparison M25 junction 10 - 1600-1700 (s)

Arm/Movement	2022		2037	
	DM	DS	DM	DS
A3 southbound off-slip	C	A	D	A
M25 westbound off-slip	D	C	D	C
A3 northbound off-slip	C	B	C	B
M25 eastbound off-slip	C	B	B	B
Northern Circulatory	B	A	B	A
Eastern Circulatory	A	A	B	A
Southern Circulatory	B	B	B	B
Western Circulatory	B	A	B	A

Table E-33 Level of Service Comparison M25 junction 10 - 1700-1800 (s)

Arm/Movement	2022		2037	
	DM	DS	DM	DS
A3 southbound off-slip	C	A	C	A
M25 westbound off-slip	C	B	D	C
A3 northbound off-slip	B	B	B	B
M25 eastbound off-slip	B	B	B	B
Northern Circulatory	B	A	B	A
Eastern Circulatory	A	A	A	A
Southern Circulatory	B	B	B	B
Western Circulatory	B	A	B	A

Appendix F. Junction model results – Painshill/Seven Hills junctions

Table F-34 Operational Performance: Painshill/Seven Hills - 2022 DM AM Peak

Lane No.	Lane Name	DoS (%)	MMQ (PCU)	Total Delay (PCUHr)
J1: Painshill				
1/1	A3 (south) Off-Slip Left	106.4%	35.8	29.3
1/2	A3 (south) Off-Slip Ahead Left	107.9%	47.9	39.9
2/1	Byfleet Road EB Left Ahead	69.9%	9.6	2.9
2/2	Byfleet Road EB Ahead	54.4%	6.7	1.8
3/1	A3 (north) Off-Slip Left Ahead	55.3%	5.9	2.3
3/2	A3 (north) Off-Slip Ahead	55.3%	5.7	2.2
4/1	Cobham Bridge Left Ahead	64.4%	8.3	2.8
4/2	Cobham Bridge Ahead	54.0%	6.7	2.2
8/1	Circ @ A3 (south) Off Ahead	52.8%	4.4	0.8
8/2	Circ @ A3 (south) Off Right Ahead	66.0%	8.3	1.4
9/1	Circ @ Byfleet Road Ahead Right	98.2%	7.2	1.2
10/1	Circ @ A3 (north) Off Ahead	86.6%	12.1	2.5
10/2	Circ @ A3 (north) Off Right	66.0%	2.5	1.1
11/1	Circ @ Cobham Bridge Ahead Right	87.1%	8.0	2.2
11/2	Circ @ Cobham Bridge Ahead Right	93.1%	6.8	2.3
J2: B365 / A245				
1/1+1/2	Seven Hills Road (north) Left Ahead Right	81.7%	20.1	6.2
2/1	Byfleet Road (East - Eastbound) Ahead	45.2%	0.4	0.4
2/2+2/3	Byfleet Road (East - Eastbound) Ahead Right	25.2%	0.2	0.2
3/1	Byfleet Road (East - Westbound) Left Ahead	87.6%	35.4	7.0
3/2+3/3	Byfleet Road (East - Westbound) Right	57.8%	9.0	5.9
4/1	Seven Hills Road (south)	2.3%	0.0	0.0
5/1	Seven Hills Road (south) Right Left Ahead	28.2%	1.2	0.7
7/1	Byfleet Road (West - Eastbound) Left	26.7%	3.4	1.2
7/2+7/3	Byfleet Road (West - Eastbound) Ahead	141.7%	191.9	176.1
9/1+9/2	Feltonfleet School Right Left	137.7%	14.2	11.5
PRC (%)	-57.5%			
Total Delay (PCUHr)	304.10			

Table F-35 Operational Performance: Painshill/Seven Hills - 2022 DM PM Peak

Lane No.	Lane Name	DoS (%)	MMQ (PCU)	Total Delay (PCUHr)
J1: Painshill				
1/1	A3 (south) Off-Slip Left	111.4%	47.2	41.1
1/2	A3 (south) Off-Slip Ahead Left	111.7%	58.4	50.9
2/1	Byfleet Road EB Left Ahead	80.0%	13.0	4.1
2/2	Byfleet Road EB Ahead	51.2%	6.1	1.6
3/1	A3 (north) Off-Slip Left Ahead	56.7%	4.6	2.2
3/2	A3 (north) Off-Slip Ahead	59.3%	4.6	2.2
4/1	Cobham Bridge Left Ahead	72.2%	10.1	3.5
4/2	Cobham Bridge Ahead	47.5%	5.7	1.8
8/1	Circ @ A3 (south) Off Ahead	45.6%	4.0	0.6
8/2	Circ @ A3 (south) Off Right Ahead	51.0%	5.3	0.8
9/1	Circ @ Byfleet Road Ahead Right	95.3%	6.4	1.0
10/1	Circ @ A3 (north) Off Ahead	72.2%	8.6	1.3
10/2	Circ @ A3 (north) Off Right	49.7%	2.2	0.7
11/1	Circ @ Cobham Bridge Ahead Right	81.1%	5.5	1.7
11/2	Circ @ Cobham Bridge Ahead Right	84.5%	5.8	1.9
J2: B365 / A245				
1/1+1/2	Seven Hills Road (north) Left Ahead Right	79.6%	18.4	5.8
2/1	Byfleet Road (East - Eastbound) Ahead	49.1%	0.5	0.5
2/2+2/3	Byfleet Road (East - Eastbound) Ahead Right	24.8%	0.2	0.2
3/1	Byfleet Road (East - Westbound) Left Ahead	72.7%	20.5	3.5
3/2+3/3	Byfleet Road (East - Westbound) Right	64.9%	10.5	7.2
4/1	Seven Hills Road (south)	2.0%	0.0	0.0
5/1	Seven Hills Road (south) Right Left Ahead	43.4%	1.9	1.1
7/1	Byfleet Road (West - Eastbound) Left	14.7%	1.8	0.6
7/2+7/3	Byfleet Road (West - Eastbound) Ahead	129.3%	161.9	144.2
9/1+9/2	Feltonfleet School Right Left	126.8%	16.4	12.3
PRC (%)	-43.7%			
Total Delay	290.78			

Table F-36 Operational Performance: Painshill/Seven Hills - 2037 DM AM Peak

Lane No.	Lane Name	DoS (%)	MMQ (PCU)	Total Delay (PCUHr)
J1: Painshill				
1/1	A3 (south) Off-Slip Left	106.5%	37.5	30.6
1/2	A3 (south) Off-Slip Ahead Left	106.6%	45.4	36.8
2/1	Byfleet Road EB Left Ahead	79.8%	12.4	4.2
2/2	Byfleet Road EB Ahead	55.1%	6.8	2.0
3/1	A3 (north) Off-Slip Left Ahead	129.1%	65.0	61.8
3/2	A3 (north) Off-Slip Ahead	129.3%	62.9	59.8
4/1	Cobham Bridge Left Ahead	102.4%	26.1	19.8
4/2	Cobham Bridge Ahead	89.9%	12.7	7.0
8/1	Circ @ A3 (south) Off Ahead	51.9%	4.0	0.9
8/2	Circ @ A3 (south) Off Right Ahead	75.3%	6.5	1.6
9/1	Circ @ Byfleet Road Ahead Right	94.3%	7.7	0.8
10/1	Circ @ A3 (north) Off Ahead	68.8%	4.4	0.9
10/2	Circ @ A3 (north) Off Right	45.3%	3.7	0.9
11/1	Circ @ Cobham Bridge Ahead Right	51.5%	3.4	0.5
11/2	Circ @ Cobham Bridge Ahead Right	59.7%	3.3	0.4
J2: B365 / A245				
1/1+1/2	Seven Hills Road (north) Left Ahead Right	72.3%	15.5	3.9
2/1	Byfleet Road (East - Eastbound) Ahead	52.7%	0.6	0.6
2/2+2/3	Byfleet Road (East - Eastbound) Ahead Right	36.5%	0.5	0.3
3/1	Byfleet Road (East - Westbound) Left Ahead	135.2%	247.5	220.3
3/2+3/3	Byfleet Road (East - Westbound) Right	118.2%	65.9	67.5
4/1	Seven Hills Road (south)	0.7%	0.0	0.0
5/1	Seven Hills Road (south) Right Left Ahead	17.4%	1.1	0.6
7/1	Byfleet Road (West - Eastbound) Left	41.6%	5.0	2.0
7/2+7/3	Byfleet Road (West - Eastbound) Ahead	181.7%	292.6	278.9
9/1+9/2	Feltonfleet School Right Left	181.7%	37.1	32.7
PRC (%)	-54.1%			
Total Delay	496.38			

Table F-37 Operational Performance: Painshill/Seven Hills - 2037 DM PM Peak

Lane No.	Lane Name	DoS (%)	MMQ (PCU)	Total Delay (PCUHr)
J1: Painshill				
1/1	A3 (south) Off-Slip Left	106.4%	35.8	29.3
1/2	A3 (south) Off-Slip Ahead Left	107.2%	45.6	37.6
2/1	Byfleet Road EB Left Ahead	101.5%	37.5	24.4
2/2	Byfleet Road EB Ahead	51.5%	6.1	1.8
3/1	A3 (north) Off-Slip Left Ahead	55.7%	3.7	1.9
3/2	A3 (north) Off-Slip Ahead	58.7%	3.8	2.0
4/1	Cobham Bridge Left Ahead	70.1%	10.0	3.2
4/2	Cobham Bridge Ahead	48.1%	5.9	1.7
8/1	Circ @ A3 (south) Off Ahead	45.3%	3.8	0.6
8/2	Circ @ A3 (south) Off Right Ahead	51.2%	4.5	0.8
9/1	Circ @ Byfleet Road Ahead Right	98.0%	8.1	0.9
10/1	Circ @ A3 (north) Off Ahead	80.1%	12.3	2.0
10/2	Circ @ A3 (north) Off Right	42.4%	1.3	0.4
11/1	Circ @ Cobham Bridge Ahead Right	85.1%	5.4	1.7
11/2	Circ @ Cobham Bridge Ahead Right	85.6%	5.7	1.8
J2: B365 / A245				
1/1+1/2	Seven Hills Road (north) Left Ahead Right	84.9%	20.3	7.1
2/1	Byfleet Road (East - Eastbound) Ahead	51.8%	0.5	0.5
2/2+2/3	Byfleet Road (East - Eastbound) Ahead Right	27.9%	0.2	0.2
3/1	Byfleet Road (East - Westbound) Left Ahead	75.3%	23.0	4.2
3/2+3/3	Byfleet Road (East - Westbound) Right	73.4%	10.5	8.1
4/1	Seven Hills Road (south)	2.1%	0.0	0.0
5/1	Seven Hills Road (south) Right Left Ahead	36.6%	1.8	1.0
7/1	Byfleet Road (West - Eastbound) Left	17.5%	2.3	0.7
7/2+7/3	Byfleet Road (West - Eastbound) Ahead	132.0%	196.9	176.3
9/1+9/2	Feltonfleet School Right Left	131.8%	17.6	13.5
PRC (%)	-46.6%			
Total Delay	321.83			

Table F-38 Operational Performance: Painshill/Seven Hills - 2022 Do Something AM Peak

Lane No.	Lane Name	DoS (%)	MMQ (PCU)	Total Delay (PCUHr)
J1: Painshill				
1/1	A3 (s) Off-slip Left	68.7%	10.8	2.7
1/2	A3 (s) Off-slip Ahead	64.7%	7.1	3.0
2/1	Byfleet Road EB Left	32.6%	0.2	0.2
2/2	Byfleet Road EB Ahead	41.4%	4.8	1.4
2/3	Byfleet Road EB Ahead	72.3%	10.6	3.4
3/1	A3 (n) Off-slip Left Ahead	81.7%	9.0	4.7
3/2	A3 (n) Off-slip Ahead	84.0%	9.1	5.0
4/1	Cobham Bridge Left Ahead	76.9%	10.1	4.2
4/2	Cobham Bridge Ahead	76.0%	10.4	4.3
5/1	A3 (s) On-slip Ahead	48.5%	7.1	1.2
5/2	A3 (s) On-slip Ahead	47.3%	7.4	1.2
8/1	Circ @ A3 (s) off Ahead	74.3%	7.3	1.2
8/2	Circ @ A3 (s) off Right Ahead	70.3%	8.5	1.3
9/1	Circ @ Byfleet Road Ahead Right	88.3%	7.6	0.7
10/1	Circ @ A3 (n) off Ahead	84.9%	14.3	2.7
10/2	Circ @ A3 (n) off Right	66.3%	1.5	0.6
11/1	Circ @ Cobham Bridge Ahead Right	88.0%	7.0	1.8
11/2	Circ @ Cobham Bridge Ahead Right	93.3%	8.0	2.0
J2: B365 / A245				
1/1	Seven Hills Road (n) Left	82.0%	23.4	7.8
3/2+3/1	Byfleet Road (East - Westbound) Left Ahead	93.3%	39.4	7.9
3/3	Byfleet Road (East - Westbound) Right	51.1%	9.2	2.8
3/4	Byfleet Road (East - Westbound) Right	54.7%	10.1	3.1
5/1+5/2	Seven Hills Road (s) Right Left Ahead	53.5%	2.4	2.0
7/1	Byfleet Road (West - Eastbound) Ahead Left	71.9%	14.1	5.3
7/2+7/3	Byfleet Road (West - Eastbound) Ahead	82.5%	17.8	8.6
8/1	Seven Hills Road (n)	28.8%	0.2	0.2
12/1	Seven Hills Road (s) Ahead Right	1.7%	0.0	0.0
13/1	Feltonfleet School Right Left	9.8%	0.1	0.1
PRC (%)	-3.6%			
Total Delay	79.31			

Table F-39 Operational Performance: Painshill/Seven Hills - 2022 Do Something PM Peak

Lane No.	Lane Name	DoS (%)	MMQ (PCU)	Total Delay (PCUHr)
J1: Painshill				
1/1	A3 (s) Off-slip Left	70.4%	11.4	2.9
1/2	A3 (s) Off-slip Ahead	64.9%	6.4	2.9
2/1	Byfleet Road EB Left	29.4%	0.2	0.2
2/2	Byfleet Road EB Ahead	47.7%	5.9	1.6
2/3	Byfleet Road EB Ahead	72.7%	11.0	3.4
3/1	A3 (n) Off-slip Left Ahead	78.5%	6.4	3.7
3/2	A3 (n) Off-slip Ahead	78.3%	6.1	3.5
4/1	Cobham Bridge Left Ahead	87.9%	14.3	6.5
4/2	Cobham Bridge Ahead	58.7%	7.2	2.6
5/1	A3 (s) On-slip Ahead	57.5%	5.8	1.1
5/2	A3 (s) On-slip Ahead	54.0%	6.4	1.0
8/1	Circ @ A3 (s) off Ahead	41.5%	4.8	1.4
8/2	Circ @ A3 (s) off Right Ahead	55.3%	5.1	1.5
9/1	Circ @ Byfleet Road Ahead Right	84.5%	7.1	1.2
10/1	Circ @ A3 (n) off Ahead	75.9%	10.1	2.2
10/2	Circ @ A3 (n) off Right	59.8%	13.0	2.2
11/1	Circ @ Cobham Bridge Ahead Right	84.5%	8.5	1.7
11/2	Circ @ Cobham Bridge Ahead Right	85.4%	9.2	1.7
J2: B365 / A245				
1/1	Seven Hills Road (n) Left	80.8%	22.4	7.5
3/2+3/1	Byfleet Road (East - Westbound) Left Ahead	70.7 : 70.7%	13.1	1.9
3/3	Byfleet Road (East - Westbound) Right	52.3%	9.4	2.9
3/4	Byfleet Road (East - Westbound) Right	57.5%	10.7	3.3
5/1+5/2	Seven Hills Road (s) Right Left Ahead	73.8%	4.2	3.3
7/1	Byfleet Road (West - Eastbound) Ahead Left	69.0%	13.7	5.1
7/2+7/3	Byfleet Road (West - Eastbound) Ahead	79.8%	16.4	7.9
8/1	Seven Hills Road (n)	25.0%	0.2	0.2
12/1	Seven Hills Road (s) Ahead Right	2.5%	0.0	0.0
13/1	Feltonfleet School Right Left	13.1%	0.1	0.1
PRC (%)	2.4%			
Total Delay	73.51			

Table F-40 Operational Performance: Painshill/Seven Hills - 2037 Do Something AM Peak

Lane No.	Lane Name	DoS (%)	MMQ (PCU)	Total Delay (PCUHr)
J1: Painshill				
1/1	A3 (s) Off-slip Left	81.1%	15.8	4.4
1/2	A3 (s) Off-slip Ahead	72.6%	8.5	3.7
2/1	Byfleet Road EB Left	32.5%	0.2	0.2
2/2	Byfleet Road EB Ahead	52.7%	6.7	2.0
2/3	Byfleet Road EB Ahead	75.0%	11.3	3.8
3/1	A3 (n) Off-slip Left Ahead	75.7%	6.7	3.6
3/2	A3 (n) Off-slip Ahead	76.6%	6.5	3.5
4/1	Cobham Bridge Left Ahead	76.9%	10.0	4.2
4/2	Cobham Bridge Ahead	77.5%	10.9	4.5
5/1	A3 (s) On-slip Ahead	45.9%	7.0	1.2
5/2	A3 (s) On-slip Ahead	46.5%	7.4	1.2
8/1	Circ @ A3 (s) off Ahead	67.4%	6.6	1.0
8/2	Circ @ A3 (s) off Right Ahead	65.5%	7.3	1.1
9/1	Circ @ Byfleet Road Ahead Right	91.7%	8.2	0.6
10/1	Circ @ A3 (n) off Ahead	92.0%	17.1	2.3
10/2	Circ @ A3 (n) off Right	61.2%	2.2	0.7
11/1	Circ @ Cobham Bridge Ahead Right	78.8%	6.2	1.4
11/2	Circ @ Cobham Bridge Ahead Right	81.4%	6.8	1.5
J2: B365 / A245				
1/1	Seven Hills Road (n) Left	86.7%	25.5	9.2
3/2+3/1	Byfleet Road (East - Westbound) Left Ahead	95.3%	47.3	10.4
3/3	Byfleet Road (East - Westbound) Right	54.6%	9.9	3.1
3/4	Byfleet Road (East - Westbound) Right	58.4%	10.8	3.4
5/1+5/2	Seven Hills Road (s) Right Left Ahead	52.5%	2.3	2.0
7/1	Byfleet Road (West - Eastbound) Ahead Left	77.9%	16.4	6.3
7/2+7/3	Byfleet Road (West - Eastbound) Ahead	86.9%	21.2	9.9
8/1	Seven Hills Road (n)	30.9%	0.2	0.2
12/1	Seven Hills Road (s) Ahead Right	1.7%	0.0	0.0
13/1	Feltonfleet School Right Left	9.8%	0.1	0.1
PRC (%)	-5.9%			

Lane No.	Lane Name	DoS (%)	MMQ (PCU)	Total Delay (PCUHr)
Total Delay	85.62			

Table F-41 Operational Performance: Painshill/Seven Hills - 2037 Do Something PM Peak

Lane No.	Lane Name	DoS (%)	MMQ (PCU)	Total Delay (PCUHr)
J1: Painshill				
1/1	A3 (s) Off-slip Left	76.7%	13.7	3.7
1/2	A3 (s) Off-slip Ahead	49.4%	5.8	2.0
2/1	Byfleet Road EB Left	35.1%	0.3	0.3
2/2	Byfleet Road EB Ahead	53.4%	6.9	2.0
2/3	Byfleet Road EB Ahead	91.0%	19.0	7.8
3/1	A3 (n) Off-slip Left Ahead	64.7%	4.6	2.4
3/2	A3 (n) Off-slip Ahead	70.4%	5.0	2.7
4/1	Cobham Bridge Left Ahead	88.6%	13.2	6.6
4/2	Cobham Bridge Ahead	80.7%	11.0	4.9
5/1	A3 (s) On-slip Ahead	58.1%	8.8	2.1
5/2	A3 (s) On-slip Ahead	58.0%	8.8	2.1
8/1	Circ @ A3 (s) off Ahead	68.2%	5.1	1.9
8/2	Circ @ A3 (s) off Right Ahead	71.6%	6.1	2.2
9/1	Circ @ Byfleet Road Ahead Right	92.2%	8.0	1.5
10/1	Circ @ A3 (n) off Ahead	86.1%	13.0	3.3
10/2	Circ @ A3 (n) off Right	72.6%	15.9	2.4
11/1	Circ @ Cobham Bridge Ahead Right	78.7%	7.9	1.5
11/2	Circ @ Cobham Bridge Ahead Right	76.6%	8.1	1.6
J2: B365 / A245				
1/1	Seven Hills Road (n) Left	90.3%	27.6	10.8
3/2+3/1	Byfleet Road (East - Westbound) Left Ahead	75.4%	15.2	2.2
3/3	Byfleet Road (East - Westbound) Right	57.2%	10.4	3.4
3/4	Byfleet Road (East - Westbound) Right	59.8%	11.1	3.6
5/1+5/2	Seven Hills Road (s) Right Left Ahead	83.1%	5.0	4.1
7/1	Byfleet Road (West - Eastbound) Ahead Left	82.3%	19.6	7.5
7/2+7/3	Byfleet Road (West - Eastbound) Ahead	89.8%	23.8	11.4
8/1	Seven Hills Road (n)	27.1%	0.2	0.2

Lane No.	Lane Name	DoS (%)	MMQ (PCU)	Total Delay (PCUHr)
12/1	Seven Hills Road (s) Ahead Right	2.5%	0.0	0.0
13/1	Feltonfleet School Right Left	13.1%	0.1	0.1
PRC (%)	-2.5%			
Total Delay	94.21			

Table F-42 Average Journey Time Comparison Painshill/Seven Hills - 0700-0800 (s)

From	To	2022		2037	
		DM	DS	DM	DS
A3 (north)	Cobham Bridge	139	109	105	113
	Seven Hills Road S	319	190	269	191
	Byfleet Road (west)	373	262	322	265
	Seven Hills Road N	332	260	281	271
	Feltonfleet School	353	219	256	226
Cobham Bridge	A3 (south)	112	116	110	115
	Seven Hills Road S	234	137	233	142
	Byfleet Road (west)	284	211	285	214
	Seven Hills Road N	248	206	243	212
	A3 (north)	166	144	151	141
	Feltonfleet School	198	152	198	154
A3 (south)	Seven Hills Road S	309	101	501	107
	Byfleet Road (west)	362	177	530	184
	Seven Hills Road N	317	179	499	191
	Cobham Bridge	186	134	271	137
	Feltonfleet School	360	115	568	129
Seven Hills Road S	Byfleet Road (west)	132	136	134	139
	Seven Hills Road N	120	126	124	118
	A3 (north)	160	142	161	138
	Cobham Bridge	167	160	169	168
	A3 (south)	203	247	213	195
	Feltonfleet School	0	0	0	0
Byfleet Road (west)	Seven Hills Road N	352	142	446	144
	A3 (north)	402	163	490	165
	Cobham Bridge	399	184	491	176
	A3 (south)	431	264	530	209
	Seven Hills Road S	568	293	685	241
	Feltonfleet School	425	326	527	270
Seven Hills Road N	A3 (north)	170	160	163	160
	Cobham Bridge	169	186	166	179
	A3 (south)	205	268	210	213
	Seven Hills Road S	120	302	120	255
	Byfleet Road (west)	166	324	161	293

From	To	2022		2037	
		DM	DS	DM	DS
	Feltonfleet School	160	346	167	285
Feltonfleet School	A3 (north)	169	163	181	158
	Cobham Bridge	172	178	182	184
	A3 (south)	210	272	228	232
	Seven Hills Road S	0	0	0	0
	Byfleet Road (west)	261	154	264	154
	Seven Hills Road N	272	146	293	143

Table F-43 Average Journey Time Comparison Painshill/Seven Hills - 0800-0900 (s)

From	To	2022		2037	
		DM	DS	DM	DS
A3 (north)	Cobham Bridge	136	109	102	112
	Seven Hills Road S	322	179	279	194
	Byfleet Road (west)	371	249	334	271
	Seven Hills Road N	316	244	282	253
	Feltonfleet School	326	203	254	226
Cobham Bridge	A3 (south)	122	145	105	107
	Seven Hills Road S	253	138	247	148
	Byfleet Road (west)	305	211	295	218
	Seven Hills Road N	251	199	242	195
	A3 (north)	158	153	141	138
	Feltonfleet School	224	155	213	160
A3 (south)	Seven Hills Road S	631	85	728	137
	Byfleet Road (west)	677	159	772	195
	Seven Hills Road N	624	154	716	180
	Cobham Bridge	402	120	438	134
	Feltonfleet School	608	100	693	138
Seven Hills Road S	Byfleet Road (west)	130	142	137	148
	Seven Hills Road N	124	131	127	147
	A3 (north)	150	154	157	158
	Cobham Bridge	159	170	161	177
	A3 (south)	203	269	209	212
	Feltonfleet School	0	0	0	0

From	To	2022		2037	
		DM	DS	DM	DS
Byfleet Road (west)	Seven Hills Road N	435	141	486	143
	A3 (north)	479	164	527	164
	Cobham Bridge	474	181	528	176
	A3 (south)	504	278	561	207
	Seven Hills Road S	656	306	707	253
	Feltonfleet School	482	331	534	278
Seven Hills Road N	A3 (north)	164	151	157	156
	Cobham Bridge	163	176	161	176
	A3 (south)	197	278	204	211
	Seven Hills Road S	123	308	119	251
	Byfleet Road (west)	167	378	161	321
	Feltonfleet School	144	355	158	284
Feltonfleet School	A3 (north)	1177	178	1169	180
	Cobham Bridge	1186	200	1143	207
	A3 (south)	1155	323	1245	220
	Seven Hills Road S	0	0	0	0
	Byfleet Road (west)	1433	173	1405	181
	Seven Hills Road N	1465	161	1447	166

Table F-44 Average Journey Time Comparison Painshill/Seven Hills - 1600-1700 (s)

From	To	2022		2037	
		DM	DS	DM	DS
A3 (north)	Cobham Bridge	91	125	90	140
	Seven Hills Road S	189	190	175	200
	Byfleet Road (west)	245	265	231	278
	Seven Hills Road N	251	281	227	290
	Feltonfleet School	169	227	157	245
Cobham Bridge	A3 (south)	130	119	189	135
	Seven Hills Road S	138	109	134	145
	Byfleet Road (west)	198	189	193	217
	Seven Hills Road N	205	197	192	232
	A3 (north)	157	144	163	154
	Feltonfleet School	123	127	123	163
A3 (south)	Seven Hills Road S	121	80	118	82
	Byfleet Road (west)	177	153	172	160
	Seven Hills Road N	187	174	180	175
	Cobham Bridge	127	135	159	123
	Feltonfleet School	96	98	94	98
Seven Hills Road S	Byfleet Road (west)	141	136	144	142
	Seven Hills Road N	141	128	126	127
	A3 (north)	170	146	166	143
	Cobham Bridge	185	150	170	159
	A3 (south)	204	182	194	191
	Feltonfleet School	0	0	0	0
Byfleet Road (west)	Seven Hills Road N	310	136	416	144
	A3 (north)	360	156	471	166
	Cobham Bridge	357	166	469	177
	A3 (south)	369	188	474	215
	Seven Hills Road S	0	0	0	0
	Feltonfleet School	433	245	461	262
Seven Hills Road N	A3 (north)	218	154	231	158
	Cobham Bridge	213	168	231	173
	A3 (south)	230	195	237	218
	Seven Hills Road S	161	229	180	248
	Byfleet Road (west)	226	316	227	0

From	To	2022		2037	
		DM	DS	DM	DS
	Feltonfleet School	434	250	344	274
Feltonfleet School	A3 (north)	617	181	332	169
	Cobham Bridge	619	190	338	189
	A3 (south)	630	217	334	227
	Seven Hills Road S	0	0	0	0
	Byfleet Road (west)	660	169	315	166
	Seven Hills Road N	712	162	338	154

Table F-45 Average Journey Time Comparison Painshill/Seven Hills - 1700-1800 (s)

From	To	2022		2037	
		DM	DS	DM	DS
A3 (north)	Cobham Bridge	89	103	89	105
	Seven Hills Road S	179	173	180	182
	Byfleet Road (west)	240	249	238	259
	Seven Hills Road N	246	268	221	278
	Feltonfleet School	162	195	161	199
Cobham Bridge	A3 (south)	123	121	200	156
	Seven Hills Road S	134	111	141	151
	Byfleet Road (west)	194	190	198	225
	Seven Hills Road N	202	202	186	250
	A3 (north)	150	143	157	151
	Feltonfleet School	117	126	121	167
A3 (south)	Seven Hills Road S	132	79	124	88
	Byfleet Road (west)	188	153	180	169
	Seven Hills Road N	201	178	181	191
	Cobham Bridge	116	130	140	124
	Feltonfleet School	110	97	103	102
Seven Hills Road S	Byfleet Road (west)	146	128	140	139
	Seven Hills Road N	117	122	119	123
	A3 (north)	145	129	155	132
	Cobham Bridge	162	150	156	145
	A3 (south)	188	171	185	177
	Feltonfleet School	0	0	0	0

From	To	2022		2037	
		DM	DS	DM	DS
Byfleet Road (west)	Seven Hills Road N	375	136	479	142
	A3 (north)	417	154	521	164
	Cobham Bridge	414	166	520	177
	A3 (south)	424	186	527	210
	Seven Hills Road S	0	0	0	0
	Feltonfleet School	458	229	523	266
Seven Hills Road N	A3 (north)	160	155	168	158
	Cobham Bridge	157	169	166	179
	A3 (south)	175	195	175	217
	Seven Hills Road S	128	226	122	251
	Byfleet Road (west)	167	0	164	0
	Feltonfleet School	170	250	146	272
Feltonfleet School	A3 (north)	554	151	258	154
	Cobham Bridge	562	166	254	167
	A3 (south)	558	197	277	217
	Seven Hills Road S	0	0	0	0
	Byfleet Road (west)	596	153	281	152
	Seven Hills Road N	660	137	296	136

Table F-46 Level of Service Comparison Painshill - 0700-0800 (s)

Arm/Movement	2022		2037	
	DM	DS	DM	DS
A3 Southbound off-slip	E	D	C	D
Cobham Bridge Westbound Approach	C	C	C	C
A3 Northbound off-slip	F	C	F	C
Byfleet Road Eastbound Approach	C	D	C	C
Northern Circulatory	B	B	B	A
Eastern Circulatory	B	B	A	A
Southern Circulatory	C	B	B	B
Western Circulatory	A	B	A	B

Table F-47 Level of Service Comparison Painshill - 0800-0900 (s)

Arm/Movement	2022		2037	
	DM	DS	DM	DS
A3 Southbound off-slip	F	D	C	D
Cobham Bridge Westbound Approach	D	D	C	C
A3 Northbound off-slip	F	B	F	C
Byfleet Road Eastbound Approach	C	E	C	C
Northern Circulatory	B	A	B	A
Eastern Circulatory	A	B	A	A
Southern Circulatory	C	B	B	B
Western Circulatory	A	B	A	B

Table F-48 Level of Service Comparison Painshill - 1600-1700 (s)

Arm/Movement	2022		2037	
	DM	DS	DM	DS
A3 Southbound off-slip	C	D	B	E
Cobham Bridge Westbound Approach	D	C	E	D
A3 Northbound off-slip	C	C	C	B
Byfleet Road Eastbound Approach	C	B	C	C
Northern Circulatory	B	A	B	A
Eastern Circulatory	A	A	A	A
Southern Circulatory	B	B	B	C
Western Circulatory	B	A	C	B

Table F-49 Level of Service Comparison Painshill - 1700-1800 (s)

Arm/Movement	2022		2037	
	DM	DS	DM	DS
A3 Southbound off-slip	B	C	B	C
Cobham Bridge Westbound Approach	D	C	E	E
A3 Northbound off-slip	C	C	C	B
Byfleet Road Eastbound Approach	B	B	B	C
Northern Circulatory	A	A	A	A
Eastern Circulatory	A	A	A	A
Southern Circulatory	A	B	A	C
Western Circulatory	B	A	B	B

Table F-50 Level of Service Comparison Seven Hills - 0700-0800 (s)

Arm/Movement	2022		2037	
	DM	DS	DM	DS
Seven Hills North	B	D	B	D
Byfleet Road (east- ahead)	E	D	F	D
Byfleet Road (east-right turn)	D	D	D	E
Seven Hills Road South	D	D	D	D
Byfleet Road (west)	F	C	F	C
Feltonfleet Access	F	A	F	A

Table F-51 Level of Service Comparison Seven Hills - 0800-0900 (s)

Arm/Movement	2022		2037	
	DM	DS	DM	DS
Seven Hills North	C	C	B	C
Byfleet Road (east- ahead)	F	C	F	D
Byfleet Road (east-right turn)	E	C	E	D
Seven Hills Road South	D	E	D	E
Byfleet Road (west)	F	C	F	C
Feltonfleet Access	F	A	F	A

Table F-52 Level of Service Comparison Seven Hills - 1600-1700 (s)

Arm/Movement	2022		2037	
	DM	DS	DM	DS
Seven Hills North	F	C	F	D
Byfleet Road (east- ahead)	C	C	C	C
Byfleet Road (east-right turn)	D	D	D	D
Seven Hills Road South	E	E	D	E
Byfleet Road (west)	F	C	F	C
Feltonfleet Access	F	A	F	A

Table F-53 Level of Service Comparison Seven Hills - 1700-1800 (s)

Arm/Movement	2022		2037	
	DM	DS	DM	DS
Seven Hills North	C	C	C	D
Byfleet Road (east- ahead)	C	C	C	C
Byfleet Road (east-right turn)	E	E	D	E
Seven Hills Road South	D	D	D	D

Arm/Movement	2022		2037	
	DM	DS	DM	DS
Byfleet Road (west)	F	C	F	C
Feltonfleet Access	F	A	F	A

Appendix G. Junction model results – Ockham Interchange

Table G-54 Operational Performance: Ockham Park - 2022 DM

Time Period	Lane	Queue (PCU)	Delay (s)	RFC
AM	A3 (north)	0.4	1.77	0.29
	Ockham Rd North	1.0	6.42	0.49
	Portsmouth Road	1.0	3.21	0.48
PM	A3 (north)	0.4	1.69	0.28
	Ockham Rd North	0.6	5.00	0.38
	Portsmouth Road	0.5	2.40	0.34

Table G-55 Operational Performance: Ockham Park - 2037 DM AM Peak

Lane No.	Lane Name	DoS (%)	MMQ (PCU)	Total Delay (PCUHr)
1/1	Circ @ A3 SB Off-slip Right	34.8%	2.7	0.7
1/2	Circ @ A3 SB Off-slip Right	0.0%	0.0	0.0
2/2+2/1	A3 SB Off-slip Ahead	57.4%	7.2	2.4
5/1	Circ @ Wisley Airfield Approach Ahead	16.5%	1.6	0.4
5/2	Circ @ Wisley Airfield Approach Ahead	56.9%	10.1	2.3
6/2+6/1	Wisley Airfield Access Approach Left	140.5%	138.9	132.6
9/2+9/1	Ockham Road North Entry Ahead	137.7%	91.9	80.5
10/1	Circ @ Portsmouth Road Right	60.0%	0.7	0.7
10/2+10/3	Circ @ Portsmouth Road Right	70.7%	5.4	3.2
12/2+12/1	Portsmouth Road Entry Ahead	65.9%	7.4	3.4
13/1	Circ @ A3 On-Slip Exit Ahead	40.3%	0.3	0.3
13/2+13/3	Circ @ A3 On-Slip Exit Right Ahead	54.6%	12.6	0.5
15/2+15/1	A3 On-slip Exit Left Ahead	64.5%	9.0	2.5
15/3	A3 On-slip Exit Ahead	61.6%	8.9	2.4
16/1	Mill Lane Rbt Approach Left	0.0%	0.0	0.0
18/1	Mill Lane Approach Right Left	0.0%	0.0	0.0
PRC (%)	-56.2%			
Total Delay	231.81			

Table G-56 Operational Performance: Ockham Park - 2037 DM PM Peak

Lane No.	Lane Name	DoS (%)	MMQ (PCU)	Total Delay (PCUHr)
1/1	Circ @ A3 SB Off-slip Right	47.8%	2.1	0.9

Lane No.	Lane Name	DoS (%)	MMQ (PCU)	Total Delay (PCUHr)
1/2	Circ @ A3 SB Off-slip Right	0.0%	0.0	0.0
2/2+2/1	A3 SB Off-slip Ahead	58.9%	12.4	5.5
5/1	Circ @ Wisley Airfield Approach Ahead	18.3%	2.8	0.8
5/2	Circ @ Wisley Airfield Approach Ahead	55.3%	12.3	4.2
6/2+6/1	Wisley Airfield Access Approach Left	94.3%	10.7	7.6
9/2+9/1	Ockham Road North Entry Ahead	98.9 : 70.0%	7.3	4.0
10/1	Circ @ Portsmouth Road Right	62.7%	0.8	0.8
10/2+10/3	Circ @ Portsmouth Road Right	63.7%	4.6	2.6
12/2+12/1	Portsmouth Road Entry Ahead	60.1%	6.4	2.9
13/1	Circ @ A3 On-Slip Exit Ahead	32.6%	0.2	0.2
13/2+13/3	Circ @ A3 On-Slip Exit Right Ahead	46.6%	12.4	0.5
15/2+15/1	A3 On-slip Exit Left Ahead	52.2%	6.3	1.7
15/3	A3 On-slip Exit Ahead	40.8%	4.7	1.2
16/1	Mill Lane Rbt Approach Left	0.0%	2.1	0.0
18/1	Mill Lane Approach Right Left	0.0%	0.0	0.0
PRC (%)	-9.9%			
Total Delay	32.81			

Table G-57 Operational Performance: Ockham Park - 2022 Do Something AM Peak

Lane No.	Lane Name	DoS (%)	MMQ (PCU)	Total Delay (PCUHr)
1/1	Circ @ A3 SB Off-slip Right	22.0%	1.1	0.3
1/2	Circ @ A3 SB Off-slip Right	0.0%	0.0	0.0
2/2+2/1	A3 SB Off-slip Ahead	52.0%	6.1	1.7
5/1	Circ @ Wisley Airfield Approach Ahead	5.4%	0.4	0.1
5/2	Circ @ Wisley Airfield Approach Ahead	49.2%	0.0	0.0
6/2+6/1	Wisley Airfield Access Approach Left	27.8%	1.4	1.1
7/1	Circ @ Ockham Rd N Exit Left	68.8%	4.2	1.2
7/2	Circ @ Ockham Rd N Exit Right	7.7%	0.3	0.0
9/2+9/1	Ockham Road North Entry Ahead	69.2%	6.0	3.9

Lane No.	Lane Name	DoS (%)	MMQ (PCU)	Total Delay (PCUHr)
10/1+10/2	Circ @ Portsmouth Road Right	68.8%	7.4	0.2
10/3	Circ @ Portsmouth Road Right	59.9%	3.9	1.0
12/2+12/1	Portsmouth Road Entry Ahead	54.3%	5.1	2.4
13/1	Circ @ A3 On-Slip Exit Ahead	38.1%	0.3	0.3
13/2+13/3	Circ @ A3 On-Slip Exit Right Ahead	42.4%	10.2	0.4
15/2+15/1	A3 On-slip Exit Left Ahead	37.6%	0.3	0.3
15/3	A3 On-slip Exit Ahead	37.5%	0.3	0.3
16/1	Mill Lane Rbt Approach Left	0.0%	1.1	0.0
18/1	Mill Lane Approach Right Left	0.0%	0.0	0.0
PRC (%)	30.1%			
Total Delay	13.18			

Table G-58 Operational Performance: Ockham Park - 2022 Do Something PM Peak

Lane No.	Lane Name	DoS (%)	MMQ (PCU)	Total Delay (PCUHr)
1/1	Circ @ A3 SB Off-slip Right	39.8%	1.7	0.6
1/2	Circ @ A3 SB Off-slip Right	0.0%	0.0	0.0
2/2+2/1	A3 SB Off-slip Ahead	46.3%	5.9	1.6
5/1	Circ @ Wisley Airfield Approach Ahead	13.3%	1.2	0.2
5/2	Circ @ Wisley Airfield Approach Ahead	51.8%	0.5	0.2
6/2+6/1	Wisley Airfield Access Approach Left	50.1%	2.9	1.9
7/1	Circ @ Ockham Rd N Exit Left	67.4%	9.3	1.5
7/2	Circ @ Ockham Rd N Exit Right	6.9%	0.1	0.0
9/2+9/1	Ockham Road North Entry Ahead	66.1%	4.8	3.4
10/1+10/2	Circ @ Portsmouth Road Right	60.0%	11.5	0.3
10/3	Circ @ Portsmouth Road Right	56.8%	1.7	0.4
12/2+12/1	Portsmouth Road Entry Ahead	41.3%	3.5	1.5
13/1	Circ @ A3 On-Slip Exit Ahead	29.1%	0.2	0.2
13/2+13/3	Circ @ A3 On-Slip Exit Right Ahead	34.9%	8.4	0.3
15/2+15/1	A3 On-slip Exit Left Ahead	28.7%	0.2	0.2
15/3	A3 On-slip Exit Ahead	26.5%	0.2	0.2

Lane No.	Lane Name	DoS (%)	MMQ (PCU)	Total Delay (PCUHr)
16/1	Mill Lane Rbt Approach Left	0.0%	0.0	0.0
18/1	Mill Lane Approach Right Left	0.0%	0.0	0.0
PRC (%)	33.6%			
Total Delay	12.45			

Table G-59 Operational Performance: Ockham Park - 2037 Do Something AM Peak

Lane No.	Lane Name	DoS (%)	MMQ (PCU)	Total Delay (PCUHr)
1/1	Circ @ A3 SB Off-slip Right	52.4%	2.4	0.5
1/2	Circ @ A3 SB Off-slip Right	0.0%	0.0	0.0
2/2+2/1	A3 SB Off-slip Ahead	57.8%	8.5	2.4
5/1	Circ @ Wisley Airfield Approach Ahead	13.2%	0.6	0.2
5/2	Circ @ Wisley Airfield Approach Ahead	86.3%	4.2	1.7
6/2+6/1	Wisley Airfield Access Approach Left	71.7%	6.4	4.1
7/1	Circ @ Ockham Rd N Exit Left	90.2%	13.8	1.5
7/2	Circ @ Ockham Rd N Exit Right	27.9%	1.0	0.2
9/2+9/1	Ockham Road North Entry Ahead	88.7%	6.3	5.5
10/1+10/2	Circ @ Portsmouth Road Right	90.1%	16.0	0.8
10/3	Circ @ Portsmouth Road Right	79.0%	5.8	1.2
12/2+12/1	Portsmouth Road Entry Ahead	79.2%	10.3	6.5
13/1	Circ @ A3 On-Slip Exit Ahead	53.7%	0.6	0.6
13/2+13/3	Circ @ A3 On-Slip Exit Right Ahead	64.2%	15.1	0.9
15/2+15/1	A3 On-slip Exit Left Ahead	53.0%	0.6	0.6
15/3	A3 On-slip Exit Ahead	52.9%	0.6	0.6
16/1	Mill Lane Rbt Approach Left	0.0%	0.0	0.0
18/1	Mill Lane Approach Right Left	0.0%	0.0	0.0
PRC (%)	-0.2%			
Total Delay	27.21			

Table G-60 Operational Performance: Ockham Park - 2037 Do Something PM Peak

Lane No.	Lane Name	DoS (%)	MMQ (PCU)	Total Delay (PCUHr)
1/1	Circ @ A3 SB Off-slip Right	62.3%	2.7	0.9
1/2	Circ @ A3 SB Off-slip Right	0.0%	0.0	0.0
2/2+2/1	A3 SB Off-slip Ahead	56.1%	8.1	3.0
5/1	Circ @ Wisley Airfield Approach Ahead	15.5%	0.1	0.1
5/2	Circ @ Wisley Airfield Approach Ahead	65.6%	0.7	0.2
6/2+6/1	Wisley Airfield Access Approach Left	60.8%	4.6	3.3
7/1	Circ @ Ockham Rd N Exit Left	76.9%	11.4	1.4
7/2	Circ @ Ockham Rd N Exit Right	20.1%	0.7	0.2
9/2+9/1	Ockham Road North Entry Ahead	76.7%	5.0	4.1
10/1+10/2	Circ @ Portsmouth Road Right	68.8%	13.6	0.2
10/3	Circ @ Portsmouth Road Right	76.7%	4.1	0.8
12/2+12/1	Portsmouth Road Entry Ahead	60.4%	6.4	3.3
13/1	Circ @ A3 On-Slip Exit Ahead	36.4%	0.3	0.3
13/2+13/3	Circ @ A3 On-Slip Exit Right Ahead	51.7%	11.8	0.6
15/2+15/1	A3 On-slip Exit Left Ahead	35.9%	0.3	0.3
15/3	A3 On-slip Exit Ahead	34.0%	0.3	0.3
16/1	Mill Lane Rbt Approach Left	0.0%	0.0	0.0
18/1	Mill Lane Approach Right Left	0.0%	0.0	0.0
PRC (%)	17.1%			
Total Delay	18.85			

Table G-61 Average Journey Time Comparison Ockham Park - 0700-0800 (s)

From	To	2022		2037	
		DM	DS	DM	DS
A3 (north)	Ockham Road N	64	69	68	68
	Portsmouth Road	70	87	81	86
	Airfield Link	0	64	65	64
	A3 (north)	117	135	216	152
Ockham Road North	Portsmouth Road	73	90	80	90
	A3 (north)	121	120	195	140
	Airfield Link	0	128	0	131

From	To	2022		2037	
		DM	DS	DM	DS
Portsmouth Road	A3 (north)	104	100	210	124
	Ockham Road N	80	117	173	114
	Airfield Link	0	108	158	118
Airfield Link	Ockham Road N	0	65	0	71
	Portsmouth Road	0	74	83	82
	A3 (north)	0	98	199	125

Table G-62 Average Journey Time Comparison Ockham Park - 0800-0900 (s)

From	To	2022		2037	
		DM	DS	DM	DS
A3 (north)	Ockham Road N	63	69	74	67
	Portsmouth Road	69	87	100	87
	Airfield Link	0	63	75	63
	A3 (north)	114	0	349	147
Ockham Road North	Portsmouth Road	69	89	207	91
	A3 (north)	113	116	378	133
	Airfield Link	0	128	0	130
Portsmouth Road	A3 (north)	99	94	321	116
	Ockham Road N	81	114	258	126
	Airfield Link	0	101	236	119
Airfield Link	Ockham Road N	0	65	0	77
	Portsmouth Road	0	75	204	92
	A3 (north)	0	94	384	128

Table G-63 Average Journey Time Comparison Ockham Park - 1600-1700 (s)

	To	2022		2037	
		DM	DS	DM	DS
A3 (north)	Ockham Road N	63	70	68	72
	Portsmouth Road	69	88	83	99
	Airfield Link	0	61	67	65
	A3 (north)	99	120	136	129
Ockham Road North	Portsmouth Road	62	84	72	85
	A3 (north)	93	126	115	130

	To	2022		2037	
		DM	DS	DM	DS
	Airfield Link	0	132	0	133
Portsmouth Road	A3 (north)	80	88	92	97
	Ockham Road N	75	141	103	100
	Airfield Link	0	110	95	115
Airfield Link	Ockham Road N	0	63	0	68
	Portsmouth Road	0	76	79	79
	A3 (north)	0	101	120	109

Table G-64 Average Journey Time Comparison Ockham Park - 1700-1800 (s)

	To	2022		2037	
		DM	DS	DM	DS
A3 (north)	Ockham Road N	63	70	68	72
	Portsmouth Road	69	89	83	107
	Airfield Link	0	62	67	67
	A3 (north)	97	0	136	140
Ockham Road North	Portsmouth Road	62	83	72	85
	A3 (north)	92	124	115	129
	Airfield Link	0	131	0	138
Portsmouth Road	A3 (north)	79	88	94	100
	Ockham Road N	74	141	109	116
	Airfield Link	0	108	101	121
Airfield Link	Ockham Road N	0	61	0	67
	Portsmouth Road	0	75	79	78
	A3 (north)	0	100	120	107

Table G-65 Level of Service Comparison Ockham - 0700-0800 (s)

Arm/Movement	2022		2037	
	DM	DS	DM	DS
A3 Southbound off-slip	A	B	B	B
Airfield Link	N/A	B	C	C
Ockham Road North	B	C	C	C
Portsmouth Road	A	C	F	C
Northern Circulatory	N/A	B	B	B

Arm/Movement	2022		2037	
	DM	DS	DM	DS
Eastern Circulatory	N/A	A	A	A
Southern Circulatory	N/A	A	C	A

Table G-66 Level of Service Comparison Ockham - 0800-0900 (s)

Arm/Movement	2022		2037	
	DM	DS	DM	DS
A3 Southbound off-slip	A	B	C	B
Airfield Link	N/A	B	F	C
Ockham Road North	B	C	F	C
Portsmouth Road	A	B	F	C
Northern Circulatory	N/A	B	A	B
Eastern Circulatory	N/A	A	A	A
Southern Circulatory	N/A	A	D	A

Table G-67 Level of Service Comparison Ockham - 1600-1700 (s)

Arm/Movement	2022		2037	
	DM	DS	DM	DS
A3 Southbound off-slip	A	B	B	B
Airfield Link	N/A	B	B	B
Ockham Road North	A	C	A	C
Portsmouth Road	A	B	B	C
Northern Circulatory	N/A	B	A	B
Eastern Circulatory	N/A	A	A	A
Southern Circulatory	N/A	B	B	B

Table G-68 Level of Service Comparison Ockham - 1700-1800 (s)

Arm/Movement	2022		2037	
	DM	DS	DM	DS
A3 Southbound off-slip	A	B	B	C
Airfield Link	N/A	B	B	B
Ockham Road North	A	C	A	C
Portsmouth Road	A	B	B	C
Northern Circulatory	N/A	B	A	B
Eastern Circulatory	N/A	B	A	A
Southern Circulatory	N/A	B	B	B

Appendix H. Junction model results – Ripley

Table H-69 Operational Performance: 2022 Ripley

Time	Lane	DM			DS		
		Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)	RFC
AM	Rose Lane	0.2	10.78	0.19	0.2	10.27	0.17
	Right turn into Newark Lane	0.1	8.13	0.11	0.2	9.11	0.16
	Newark Lane Left Turn	12.5	82.39	0.95	5.1	44.19	0.84
	Newark Lane Right Turn	0.0	0.00	0.00	0.0	0.00	0.00
	Right turn into Rose Lane	0.1	9.42	0.09	0.2	9.79	0.14
PM	Rose Lane	0.1	9.08	0.08	0.1	9.12	0.05
	Right turn into Newark Lane	0.1	7.16	0.11	0.1	7.41	0.13
	Newark Lane Left Turn	3.2	27.18	0.77	3.8	31.24	0.80
	Newark Lane Right Turn	0.0	0.00	0.00	0.0	0.00	0.00
	Right turn into Rose Lane	0.1	8.47	0.05	0.1	9.54	0.05

Table H-70 Operational Performance: 2037 Ripley

Time	Lane	DM			DS		
		Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)	RFC
AM	Rose Lane	0.9	21.46	0.45	0.5	14.99	0.35
	Right turn into Newark Lane	0.4	11.29	0.25	0.4	13.84	0.26
	Newark Lane Left Turn	3.8	39.23	0.80	2.6	35.50	0.72
	Newark Lane Right Turn	0.0	0.00	0.00	0.0	0.00	0.00
	Right turn into Rose Lane	0.2	12.43	0.17	0.3	11.86	0.19
PM	Rose Lane	2.4	85.16	0.72	5.1	175.35	0.88
	Right turn into Newark Lane	0.4	10.67	0.28	0.3	10.05	0.23
	Newark Lane Left Turn	2.7	29.49	0.73	2.5	28.16	0.72
	Newark Lane Right Turn	0.3	69.47	0.23	0.0	0.00	0.00
	Right turn into Rose Lane	0.3	12.41	0.22	0.3	12.47	0.25

Table H-71 Average Journey Time Comparison Ripley - 0700-0800 (s)

	To	2022		2037	
		DM	DS	DM	DS
High Street (n)	Rose Lane	64	59	61	63
	High Street (s)	63	61	62	63

	To	2022		2037	
		DM	DS	DM	DS
	Newark Lane	83	83	92	99
Rose Lane	High Street (n)	88	93	121	98
	High Street (s)	50	50	55	54
	Rose Lane	71	73	81	91
High Street (s)	High Street (n)	81	80	109	85
	Rose Lane	46	64	76	68
	Newark Lane	57	56	58	0
Newark Lane	High Street (n)	159	157	236	177
	Rose Lane	144	140	202	165
	High Street (s)	0	0	239	159

Table H-72 Average Journey Time Comparison Ripley - 0800-0900 (s)

	To	2022		2037	
		DM	DS	DM	DS
High Street (n)	Rose Lane	73	72	75	82
	High Street (s)	67	68	68	73
	Newark Lane	84	84	98	112
Rose Lane	High Street (n)	90	88	235	119
	High Street (s)	54	54	65	76
	Rose Lane	70	70	85	106
High Street (s)	High Street (n)	77	75	263	84
	Rose Lane	0	60	138	72
	Newark Lane	51	49	103	75
Newark Lane	High Street (n)	112	101	511	230
	Rose Lane	98	87	379	215
	High Street (s)	0	0	419	255

Table H-73 Average Journey Time Comparison Ripley - 1600-1700 (s)

	To	2022		2037	
		DM	DS	DM	DS
High Street (n)	Rose Lane	67	68	70	68
	High Street (s)	61	64	66	65
	Newark Lane	82	86	97	92
Rose Lane	High Street (n)	75	75	87	84

	To	2022		2037	
		DM	DS	DM	DS
	High Street (s)	49	52	62	59
	Rose Lane	70	75	93	88
High Street (s)	High Street (n)	67	67	68	68
	Rose Lane	0	0	0	53
	Newark Lane	48	49	50	50
Newark Lane	High Street (n)	83	83	89	89
	Rose Lane	69	73	83	82
	High Street (s)	73	0	68	64

Table H-74 Average Journey Time Comparison Ripley - 1700-1800 (s)

	To	2022		2037	
		DM	DS	DM	DS
High Street (n)	Rose Lane	78	59	76	78
	High Street (s)	70	72	79	76
	Newark Lane	95	98	119	115
Rose Lane	High Street (n)	74	75	99	97
	High Street (s)	51	53	71	67
	Rose Lane	71	77	117	101
High Street (s)	High Street (n)	67	67	71	71
	Rose Lane	0	0	0	69
	Newark Lane	49	49	52	52
Newark Lane	High Street (n)	82	84	115	122
	Rose Lane	72	74	111	119
	High Street (s)	51	0	90	73

Table H-75 Level of Service Comparison Ripley - 0700-0800 (s)

Arm/Movement	2022		2037	
	DM	DS	DM	DS
Right turn into Newark Lane	B	C	C	D
Right turn into Rose lane	A	A	A	A
Newark Lane	F	F	F	F
Rose Lane	A	A	C	B

Table H-76 Level of Service Comparison Ripley - 0800-0900 (s)

Arm/Movement	2022		2037	
	DM	DS	DM	DS
Right turn into Newark Lane	B	B	C	E
Right turn into Rose lane	A	A	F	A
Newark Lane	E	D	F	F
Rose Lane	B	B	D	D

Table H-77 Level of Service Comparison Ripley - 1600-1700 (s)

Arm/Movement	2022		2037	
	DM	DS	DM	DS
Right turn into Newark Lane	B	B	C	C
Right turn into Rose lane	A	A	A	A
Newark Lane	A	B	C	C
Rose Lane	A	A	C	B

Table H-78 Level of Service Comparison Ripley - 1700-1800 (s)

Arm/Movement	2022		2037	
	DM	DS	DM	DS
Right turn into Newark Lane	B	B	D	D
Right turn into Rose lane	A	A	A	C
Newark Lane	A	B	E	E
Rose Lane	A	A	D	D

Figure H.1: Trip Distribution Portsmouth Road North Lane 2037 AM

Figure H.2: Trip Distribution Portsmouth Road North Lane 2037 PM

Figure H.3: Trip Distribution Newark Lane 2037 AM

Figure H.4: Trip Distribution Newark Lane 2037 PM

Figure H.5: Trip Distribution Portsmouth Road South Lane 2037 AM

Figure H.6: Trip Distribution Portsmouth Road South Lane 2037 PM

Figure H.7: Trip Distribution Rose Lane 2037 AM

Figure H.8: Trip Distribution Rose Lane 2037 PM

Appendix I. Road Safety Audit

SNC·LAVALIN

ATKINS
Member of the SNC-Lavalin Group

M25 Junction 10 / A3 Wisley Interchange Improvements

Stage 1 Road Safety Audit

Highways England

February 2019

Notice

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This document has 16 pages including the cover.

Document history

Revision	Purpose description	Originated	Checked	Reviewed	Authorised	Date
Rev 1	For Issue	NDH	MRG	MP	NDH	12/02/19

Client signoff

Overseeing Organisation	Highways England
RSA team organisation	Atkins
Report title	M25 Junction 10 / A3 Wisley Interchange Improvements Stage 1 Road Safety Audit
Job number	5158141-559
Document reference	5158141/559-Ald-NDH-HE-RSA1-0078
Client signature / date	

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Figures

1. Introduction

This report results from a stage 1 road safety audit (RSA) carried out for the M25 Junction 10 / A3 Wisley Interchange Improvements scheme.

The scheme involves improvements to the M25 Junction 10 and its approaches to/from the M25 and the A3; together with improvements to some local access routes and provisions for walkers, cyclists and horse-riders (WCHRs).

The RSA brief described no specific strategic decisions. However, the RSA team confirms and acknowledges that recommendations to make significant changes in relation to strategic decisions are unlikely to be acceptable.

The RSA brief and its supporting information (itemised in Appendix A of this RSA report), was supplied by Vana Andritsogianni (Atkins) on behalf of Graham Bown the Atkins project manager. The RSA brief and RSA team membership were approved by the Highways England project manager, Jonathan Wade.

The RSA team membership for this stage 1 RSA was as follows:

- **Audit team leader:** **Neil Hutchings MIHE MSoRSA**
  Senior Consultant
  Atkins Transportation, Aldershot
  (Certificate of Competency in RSA)
- **Audit team member:** **Mark Gregory BSc MSc MCIHT MSoRSA**
  Senior Road Safety Consultant
  Atkins Transportation, Chelmsford
  (Certificate of Competency in RSA)

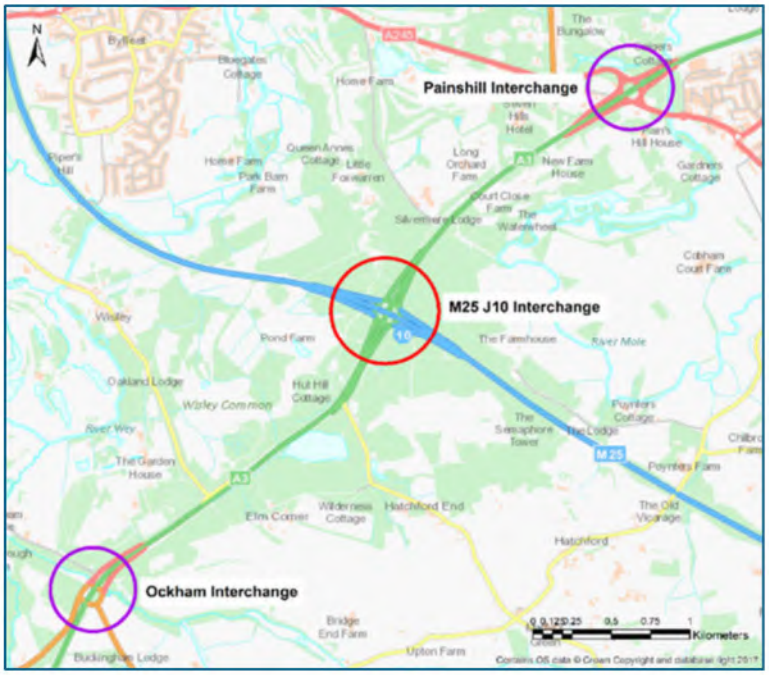
The RSA team visited the site together on Tuesday 8th November 2019 between 10:15 and 12:45. The weather was clear and bright, and the road surfaces were dry. Traffic on the circulatory carriageway of Junction 10, and on the M25 and A3 mainlines, was moderate and generally free free-flowing.

The terms of reference of this stage 1 RSA are as described in GG 119. The RSA team has examined and reported only on the road safety implications of the scheme as presented and has not examined or verified the compliance of the designs to any other criteria.

Scheme description

The M25 Junction 10 lies in the south west quadrant of the M25 London Orbital Motorway which coincides with the eastern edge of the Borough of Guildford and is also near the boroughs of Elmbridge and Woking. At M25 Junction 10 the A3, a key radial route from London to Portsmouth, crosses the M25 motorway. Refer to Figure 1-1, Scheme Location Plan.

Figure 1-1 – HE551518-ATK-HRR-XX-DR-CH-000101



The scheme will provide more capacity at Junction 10 by elongating the roundabout, providing four new slip roads which will all have free flowing left turning movements and therefore will allow all left-turning vehicles to pass through the junction unhindered by traffic signals.

The M25 will be widened from three to four lanes through Junction 10 to provide 'through junction running' which will also see modifications to all entry and exit slip roads to and from the M25 at Junction 10.

The A3 will be widened from three to four lanes either side of Junction 10, between the Ockham Interchange to the south and Painshill Interchange to the north. The A3 will remain as existing with two lanes in each direction as it crosses over the M25 and Junction 10.

For safety reasons, the widening on the A3 will necessitate the closure of some local side road junctions and private accesses that currently connect directly with the A3 mainline carriageway.

The A245 Byfleet Road will be widened to provide three lanes in each direction with free-flowing left-turning movements provided from the A3 northbound exit slip and to the A3 northbound entry slip.

Notes and clarifications

The RSA team requested clarification regarding the purpose and operation of new, gated link between Old Byfleet Road and Seven Hills Road (South).

In response, the design team have confirmed that this is a private gated access for Feltonfleet school and will be closed out of school hours. They stated:

- *"We have had some meetings with the school but not the detailed arrangements. It was agreed with the school that the link road would be not a public road but gated for the school use.* [It is assumed that] *it would be the school caretaker or similar* [who] *would open the gates with the gates open for whole of the school day."*

The RSA team also requested clarification regarding proposals related to the pedestrian refuge in the mouth of the junction between the A25 and Old Byfleet Road. The responses stated:

- *"The islands will be retained or replaced in the detailed design"; and*
- *"There is no plan at this stage. The islands should be shown in bold to indicate new islands in a similar location."*

In the absence of a firm proposal, the location of the refuge should be reviewed at a subsequent stage 2 RSA of the detailed design

2. Items raised at this stage 1 RSA

Where problems have a specific location, these are shown on the annotated plan in Appendix B. It should be noted that each problem is cross-referenced to a drawing number for location purposes only. The named drawing is not necessarily the source from which the problem was identified.

PROBLEM 1

Location: **Various** – M25 Junction 10, circulatory carriageway, approaches and exits [Dwg. 000105]

Summary: Lane widths and alignments and the risk of collisions

The lane widths appear to be very narrow at a number of locations around the roundabout and the approaches and exits. This might lead to a risk of collisions involving larger vehicles encroaching into adjacent lanes, particularly where the carriageway curves around the roundabout.

RECOMMENDATION

Swept paths around the roundabout and on the approaches and exits should be thoroughly checked. The lane widths and alignments should be appropriate to safely accommodate the vehicles expected to use the junction.

PROBLEM 2

Location: A - M25 Junction 10, exit to A3 north-eastbound [Dwg. 000105]

Summary: Reverse curve on exit road where vehicles might be accelerating

The exit from the roundabout towards the A3 north-eastbound goes through a reverse curve at a location where drivers might start to accelerate towards the A3 and where vehicles in the outside lane are deflected towards the nearside in advance of the lane merge ahead. This presents a risk of loss of control collisions or nose-to-tail collisions if drivers brake heavily or change course suddenly to avoid conflict.

RECOMMENDATION

The lane arrangements and alignment on the exit should be amended to provide smooth transitions between curves thereby reducing the risk of loss of control incidents.

PROBLEM 3

Location: B, C, D and E – M25 Junction 10, dedicated left-turn lanes [Dwg. 000105]

Summary: Visibility of narrow medians at dedicated left-turn lanes

The proposed medians segregating the dedicated left-turn lanes from the circulatory carriageway are relatively narrow and might be inconspicuous to drivers on the circulatory carriageway. This might particularly be the case for those approaching the medians tangentially from the circulatory carriageway signal stop lines. If drivers on the circulatory carriageway fail to recognise the presence or alignment of a median, they might mount the kerb or, in extreme cases, might cross the median into the left-turn lane at risk of colliding with vehicles in that lane. Alternatively, drivers on the circulatory carriageway, if they misjudge the alignment, might brake suddenly or make sudden course changes to avoid collision. This would present an increased risk of nose-to-tail or side-swipe collisions.

RECOMMENDATION

Measures to highlight the presence and alignment of the left-turn lane medians should be provided.

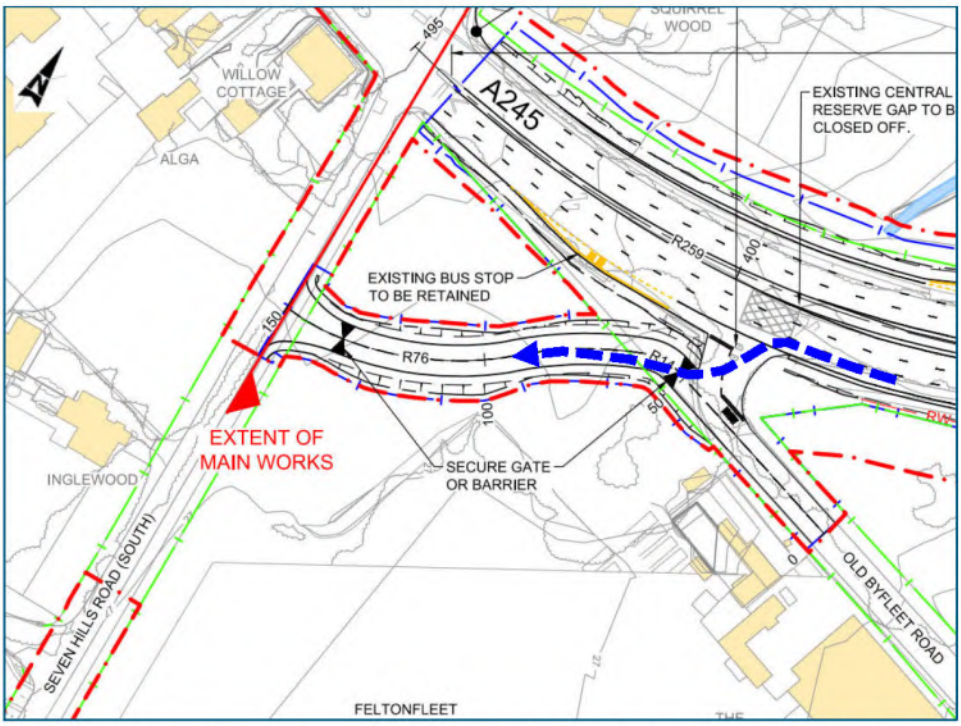
PROBLEM 4

Location: **F -** Gated access link between Old Byfleet Road and Seven Hills Road (South) [Dwg. 000127]

Summary: Risk of conflicts and resulting collisions at eastern end of access link and risk of rat-running

Drivers turning into Old Byfleet Road from the A245 and intending to enter the new access link (when open to traffic), might choose to take a straight course across Old Byfleet Road. This would present a risk of conflict with oncoming traffic heading towards the A245 or with vehicles exiting the access link (see Figure 2-1).

Figure 2-1 – Old Byfleet Road Access Link



In addition, in the absence of confirmed information relating to predicted flows and use of this access link there is potential for a number of hazards associated with this link road. For example:

- *If heavy turning flows occur, at school opening and closing times for example, traffic might queue back onto Old Byfleet Road or the A245 presenting a risk of nose-to-tail collisions or overtaking collisions;*
- *if the gates are left open throughout the school day, it seems likely that some unauthorised drivers might use the link to bypass traffic queues at the Seven Hills Road traffic signals. Increased flows in this regard might increase all the aforementioned risks under this Problem.*

RECOMMENDATION

The junction and access road layouts should be re-designed to discourage or prevent a direct course from A245 into the access link. The operational arrangements regarding the use of the link road, including how it will be marshalled, managed and 'policed', should be

firmly established. These arrangements should then be used to design out the risk of queuing problems and turning conflicts presented by the layout.

PROBLEM 5

Location: G – Access junction between A245 and Old Byfleet Road [Dwg. 000127]

Summary: Short corner radius and the risk of collisions involving turning vehicles

The corner the western side of the junction between Old Byfleet Road and the A245 has a very short radius. As a result, vehicles turning left out of the junction and onto the acceleration lane might be likely to encroach into the A245 nearside lane and be at risk of being struck by fast-moving traffic. The risks might be exacerbated when there is a stationary bus in the bus stop as vehicles emerging from Old Byfleet Road might stop whilst partially in the acceleration lane and partially in the A2455 nearside lane if they cannot get past the bus due to through traffic

RECOMMENDATION

The junction should be provided with a longer radius to allow for the swept path of vehicles turning left out of Old Byfleet Road.

3. RSA team statement

We certify that this road safety audit has been carried out in accordance with GG 119.

RSA team

Road safety audit team leader

Name: **Neil Hutchings** MIHE MSoRSA

Signed: [redacted] .....

Position: Senior Consultant

Organisation: Atkins

Date: 11th February 2019

Road safety audit team member

Name: **Mark Gregory** BSc MSc MCIHT MSoRSA

Signed: [redacted] .....

Position: Senior Road Safety Consultant

Organisation: Atkins

Date: 11th February 2019

Appendices

Appendix A. Stage 1 RSA brief

A.1. RSA brief

- Stage 3 - Road Safety Audit Brief - SIGNED OFF - M25J10-A3

A.2. Documents

- HE551522-ATK-GEN-XX-RP-CH-000001 Design Fix 2 – Assessment Report
- HE551522-ATK-HGN-DF-CX-000001 Departures from Standards Checklist – V3.0
- HE551522-ATK-GEN-RP-CH-000002 Walking, Cycling and Horse-Riding Review Report
- HE551522-ATK-GEN-XX_Z-TN-CS-000001 Collision Assessment
- Classification-Speed limits table

A.3. Drawings

- HE551522-ATK-HGN-A3_ML-DR-CH-000101 to 000109 - General Arrangement Plans - Rev C01
- HE551522-ATK-HGN-A3_ML-DR-CH-000124 to 000128- General Arrangement Plans - Rev C01
- HE551522-ATK-HGN-A3_ML-DR-CH-000133 to 000134- General Arrangement Plans - Rev C01
- HE551522-ATK-HGN-XX-DR-CH-000001 – Typical Cross-Sections Key plan – Rev C03
- HE551522-ATK-HGN-XX_XS-DR-CX-000001 to 000002 - Typical Cross-Sections - Rev C02
- HE551522-ATK-HGN-XX_XS-DE-CX-000001 to 000004 – Typical Verge Details – Rev C02
- HE551522-ATK-HTA-J10_Z-DR-TR-900001 to 900006 – Traffic Forecast Flows - Rev C02
- HE551522-ATK-ENM-A3_ML-DR-CH-000001- to 000005 – Existing and Proposed NMU Routes – Rev C02
- HE551522-ATK-ENM-M25_ML-DR-CH-000006- to 0000011 - Existing and Proposed NMU Routes - Rev C02
- HE551522 - ATK - EGN -XX - GS - GI – 000001 – Environmental Constraints Plan – Rev P00
- HE551522-ATK-HML-A3_L1_J1_LS_J-DR-CH-000018 – Longitudinal Section A3 Southbound Diverge – C02
- HE551522-ATK-HML-A3_L1_J1_LS_M-DR-CH-000019 - Longitudinal Section A3 Northbound Merge – C02
- HE551522-ATK-HML-A3_L1_LS_K-DR-CH-000009 - Longitudinal Section M25 Southbound Merge – C02

- HE551522-ATK-HML-A3_L1_LS_L-DR-CH-000012 - Longitudinal Section M25 Northbound Diverge- C02
- HE551522-ATK-HML-A3_L2_J2_LS_K-DR-CH-000020 - Longitudinal Section Painshill Junction A3 Southbound Merge – C02
- HE551522-ATK-HML-A3_L2_J2_LS_L-DR-CH-000021 - Longitudinal Section Painshill Junction A3 Northbound Diverge – C02
- HE551522-ATK-HML-A3_L2_LS_J-DR-CH-000010 - Longitudinal Section M25 Southbound Diverge – C02
- HE551522-ATK-HML-A3_L2_LS_M-DR-CH-000011 - Longitudinal Section M25 Northbound Merge – C02
- HE551522-ATK-HML-A3_ML_LS-DR-CH-000001 to 000005 - Longitudinal Section A3 Mainline – C02
- HE551522-ATK-HML-J10_LS-DR-CH-000015 - Longitudinal Section M25 Roundabout – C02
- HE551522-ATK-HML-M25_L1_LS_J-DR-CH-000016- Longitudinal Section M25 Clockwise Diverge – C02
- HE551522-ATK-HML-M25_L1_LS_M-DR-CH-000017 - Longitudinal Section M25 Anti-Clockwise Merge – C02
- HE551522-ATK-HML-M25_L2_LS_K-DR-CH-000014 - Longitudinal Section M25 Clockwise Merge – C02
- HE551522-ATK-HML-M25_L2_LS_L-DR-CH-000013 - Longitudinal Section M25 Anti-Clockwise Diverge – C02
- HE551522-ATK-HML-M25_ML_LS-DR-CH-000006 to 000008 - Longitudinal Section M25 Mainline – C02
- HE551522-ATK-HSR-A3_L1_R1_LS-DR-CH-000022 - Longitudinal Section Wisley Lane Realignment – C02
- HE551522-ATK-HSR-A3_L1_R2_LS-DR-CH-000023 - Longitudinal Section ELM Lane – C02
- HE551522-ATK-HSR-A3_L1_R3_LS-DR-CH-000024 - Longitudinal Section Cockrow Access Track – C02
- HE551522-ATK-HSR-A3_L2_R4_LS-DR-CH-000025 - Longitudinal Section A3 Southbound Local Access Road (Redhill) – C02
- HE551522-ATK-HSR-A3_L2_R5_LS-DR-CH-000026 - Longitudinal Section A3 Northbound Local Access Road- C02
- HE551522-ATK-HSR-A3_L2_R6_LS-DR-CH-000027 - Longitudinal Section A245 and Old Byfleet Road – C02
- HE551522-ATK-HSR-M25_L1_R7_LS-DR-CH-000028 - Longitudinal Section Hatchford Park Overbridge – C02
- HE551522-ATK-HSR-M25_L1_R8_LS-DR-CH-000029 - Longitudinal Section NMU Overbridge – C02
- HE551522-ATK-HSR-M25_L2_R9_LS-DR-CH-000030 - Longitudinal Section Clearmount Overbridge – C02
- HE551522-ATK-HSR-M25_L2_R10_LS-DR-CH-000031 - Longitudinal Section Buxton Wood Overbridge – C02

- HE551522-ATK-HSN-A3_ML-DR-CH-000101 to 000109 – Signs and Markings - Rev C01
- HE551522-ATK-HSN-A3_ML-DR-CH-000124 to 000128 – Signs and Markings - Rev C01
- HE551522-ATK-HSN-A3_ML-DR-CH-000133 to 000134 – Signs and Markings - Rev C01
- HE551522 – ATK-HSN-A3_L1_ML-DR-CH-000001 to 000004, 000008 to 000011– Gantry Sign Faces – C01
- HE551522 – ATK-HSN-A3_L2_ML-DR-CH-000005 to 000007, 000012 – 000014 - Gantry Sign Faces – C01
- HE551522-ATK-HSN-M25_L1_ML-DR-CH-000015 to 000018 - Gantry Sign Faces – C01
- HE551522-ATK-HSN-M25_L2_ML-DR-CH-000019 to 000024 - Gantry Sign Faces – C01
- HE551522-ATK-HLG-A3_ML-DR-EO-000101 to 000109 , 000124 to 000128, 000133 to 000134– Preliminary Lighting Design -C01
- HE551522-ATK-HRR-A3_ML-DR-CH-000101 to 000109 - Safety Barrier-C01
- HE551522-ATK-HRR-A3_ML-DR-CH-000124 to 000128 - Safety Barrier-C01
- HE551522-ATK-HRR-A3_ML-DR-CH-000133 to 000134 - Safety Barrier-C01
- HE551522-ATK-HRR-M25_ML-DR-CH-000006 – 000011 - Safety Barrier Layout - C02
- HE551522-ATK-HTS-A3_J1-DR-CH-000001 - to 000002- OCKHAM JUNCTION TRAFFIC SIGNAL DESIGN – C01
- HE551522-ATK-HTS-A3_J2-DR-CH-000001 – 000002 - PAINSHILL JUNCTION TRAFFIC SIGNAL DESIGN – C01A
- HE551522-ATK-EGN-XX-GS-GI-000001-20181030 Environmental Constraints Plan
- HE551522-ATK-HTS-A3_L2-DR-CH-000003 - SEVEN HILLS JUNCTION TRAFFIC SIGNAL DESIGN – C01
- HE551522-ATK-HTS-J10_ML-DR-CH-000001 to 000004 - M25 J10 TRAFFIC SIGNAL DESIGN – C01
- HE551522-ATK-LDC-A3_ML-DR-ZL-021201 to 021204 - Speed Limit Plans

Appendix B. Problem location plan

The plans in this section illustrate the locations of the problems raised in Section 2 of this Stage 1 RSA report. The location for Problem 6 is not shown as it pertains to Junction 10 in general.

Figure B-1 – HE551522-ATK-HSN-A3_ML-DR-CH-000105

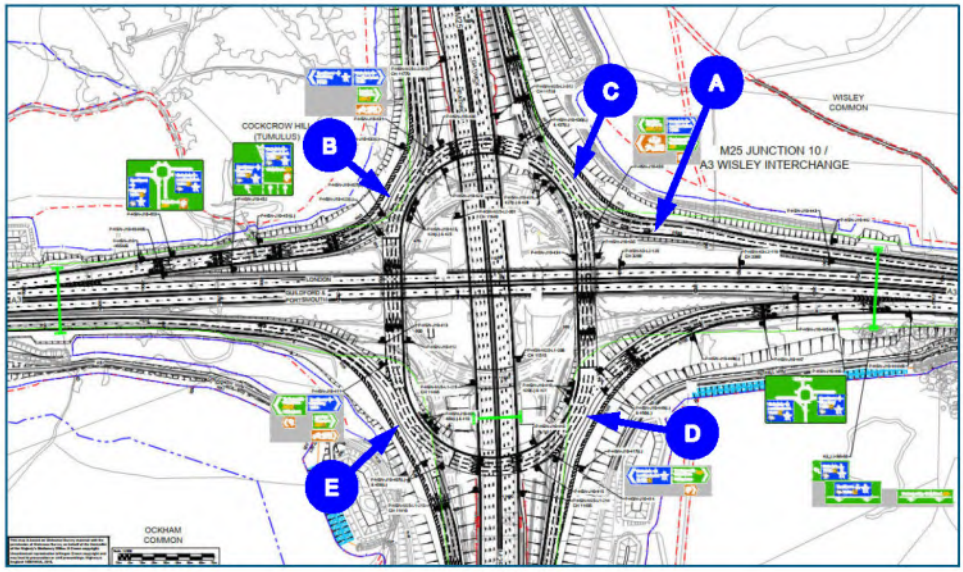
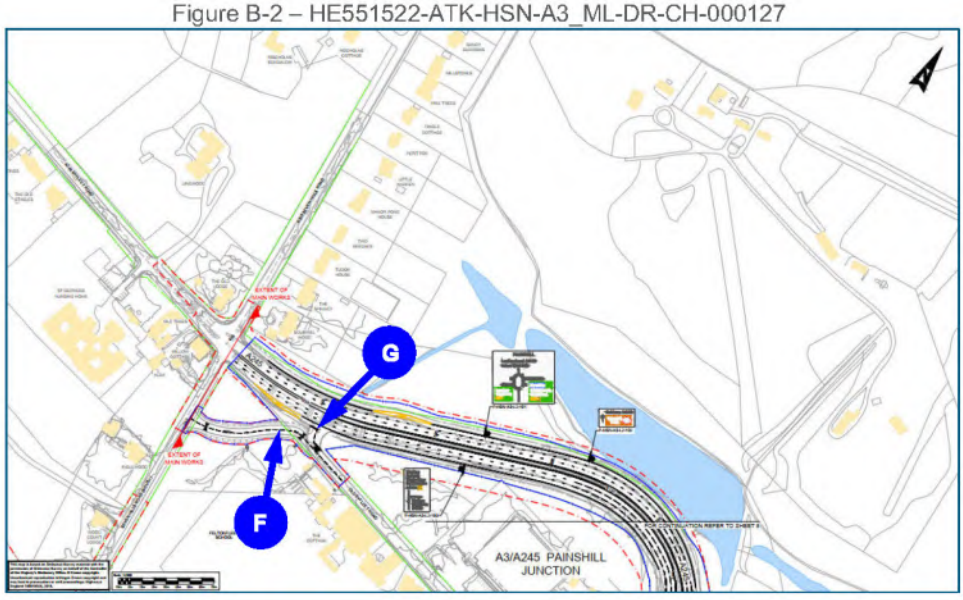


Figure B-2 – HE551522-ATK-HSN-A3_ML-DR-CH-000127



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