

M25 junction 10/A3 Wisley interchange TR010030

5.3 Habitats Regulations Assessment Stage 3-5: Assessment of alternatives, consideration of imperative reasons of overriding public interest (IROPI) and compensatory measures

Regulation 5(2)(g)
Planning Act 2008

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



Infrastructure Planning

Planning Act 2008

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

M25 junction 10/A3 Wisley interchange

Development Consent Order 202[x]

5.3 HABITATS REGULATIONS ASSESSMENT STAGES 3-5: ASSESSMENT OF ALTERNATIVES, CONSIDERATION OF IMPERATIVE REASONS OF OVERRIDING PUBLIC INTEREST (IROPI) AND COMPENSATORY MEASURES

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1. Executive summary

- 1.1.1 The proposed M25 junction 10/A3 Wisley interchange scheme (the Scheme) will require land take from the Thames Basin Heaths Special Protection Area (SPA) in order to improve the interchange.
- 1.1.2 The Stage 2 Statement to inform appropriate assessment (SIAA) (application document TR010030/APP/6.3) determined that the adverse effects resulting from the permanent land take of the Scheme alone could result in a permanent reduction in the extent and/or distribution of supporting habitat of the three qualifying species, and a permanent reduction in food resource.
- 1.1.3 This assessment demonstrates that:
1. There are no alternative solutions to the Scheme for the purpose of the Habitats Directive and Habitats Regulations;
 2. there are imperative reasons of overriding public interest (IROPI) why the Scheme should proceed notwithstanding the adverse effect on the integrity of the SPA; and
 3. Highways England has secured all necessary compensatory measures to secure the overall coherence of the Natura 2000 network.

1.2. Scheme objectives

- 1.2.1 The Scheme has been developed to meet Highways England's objectives as set out in the Client scheme requirements in Table 1 below.

Table 1: Client scheme requirements

Category	Objective
Route Operation	Support any projected traffic increases from other committed schemes on the strategic road network and avoid or mitigate against causing adverse effects elsewhere on the Local Road Network.
Customer	<p>Throughout the design and delivery stages, the scheme should ensure that customers and communities are fully considered. Specifically, this should include:</p> <ul style="list-style-type: none"> • Understanding the needs of all segments of customers (including vulnerable users), stakeholders and partners • Responding to those needs such that the end product delivers an improved customer experience • Assessing the impact of works on road users and communities, minimising disruption and delivering appropriate mitigation measure. The assessment should look at issues through customer's eyes.
Capacity	<p>Reduce the average delay (time lost per vehicle per mile) on the mainline A3 and on M25 through junction running.</p> <p>Smooth the flow of traffic by improving journey time reliability on the mainline A3.</p>

Category	Objective
Safety	Reduce annual collision frequency and severity ratio on the main line A3, slip roads and M25 junction 10 gyratory.
Social	<p>Support the projected population and economic growth in the area.</p> <p>Support walking and cycling by incorporating safe, convenient, accessible and attractive routes for pedestrians, cyclists and equestrians and improving crossing facilities.</p> <p>Take account of the concerns of local communities and other key stakeholders raised during consultations.</p>
Environment	<p>Support compliance with the UK's legally binding limits and targets on air quality and water quality status and support targets to cut greenhouse gas emissions and objectives for local air quality management areas.</p> <p>Avoid, mitigate and compensate for adverse effects on the integrity of the Thames Basin Heaths Special Protection Area and other statutory designated nature conservation sites and promote opportunities.</p> <p>Recognise the significance of designated heritage assets close to the route of the scheme, including at Painshill Park and at Wisley Gardens through incorporating suitable mitigation and/or design measures to avoid or reduce significant harm.</p> <p>Improve the quality of life for nearby residents, through addressing the effects of noise on people in the declared noise important area's (IA's) and ensuring that significant noise effects are mitigated.</p> <p>Ensure through good design, that an appropriate balance is achieved between functionality and the scheme's contribution to the quality of the surrounding environment, addressing existing problems wherever feasible, avoiding, mitigating or compensating for significant adverse impacts and promoting opportunities to deliver positive environmental outcomes.</p>

1.3. Consideration of alternatives

- 1.3.1 In deciding which of the three options to pursue, consideration was given to the 'relative performance with regard to the conservation objectives of the Natura 2000 site, the site's integrity and its contribution to the overall coherence of the Natura 2000 Network' as required by the Habitats Directive.
- 1.3.2 Option 14 (the Scheme) was identified as the preferred option in PCF Stage 2 (Option Selection). This option meets the Client Scheme Requirements whilst having the least adverse effect on the integrity of the SPA and its conservation objectives on the basis that land take is kept to a minimum.
- 1.3.3 Furthermore, no feasible, less-damaging alternatives have been identified during option appraisal and design evolution that would result in a lesser effect on the integrity of the SPA. As such this satisfies the test set out in the National Policy Statement for National Networks (NPS NN) that consent should not be granted unless there are no less-damaging feasible alternatives.

Imperative reasons of overriding public interest (IROPI)

- 1.3.4 The current capacity of junction 10 and the congestion at and between the

neighbouring junctions has a substantial adverse effect on the traffic flow of this part of the strategic road network (SRN) and contributes to many safety issues. Therefore, an improvement in traffic flows is a key reason for the Scheme. This would constitute a reason of both a social and an economic nature and also improve safety.

- 1.3.5 At M25 junction 10 the traffic modelling undertaken by Highways England shows that the Scheme is predicted to allow for increased throughput at the junction compared to a without scheme scenario. By 2037, the Scheme will allow an additional 2,200 additional trips (a 28% increase) to travel through the junction in the morning peak hour, indicating that the project will deliver a considerable improvement in capacity and aid traffic flow throughout the design life of the Scheme.
- 1.3.6 The Scheme is projected to result in a reduction of accidents by introducing operational improvements that alleviate or reduce the conflicts or congestion that contribute to the likelihood of accidents occurring. Across the whole of the affected road network (ARN), the Scheme is anticipated to result in a reduction in accidents of 5% compared to the without intervention scenario - an average of 10 accidents per year. At a more local level the Scheme is anticipated to reduce accidents among users of M25 junction 10 by 30%.
- 1.3.7 The Scheme will add capacity to the junction, improve the safety for road users, will be of benefit to existing and future residents and businesses and will unlock capacity for growth that would otherwise be restricted by the existing congestion and safety issues at M25 junction 10. The total monetised benefit of the Scheme has been calculated as approximately £400 million (present value) over a 60-year appraisal period.
- 1.3.8 The principal benefits to human health will be from provision of better access to and around the areas of the Scheme for non-motorised users (NMUs) and improved access to the area of common land and open space. The Scheme will deliver a substantial improvement in the ability of NMUs to move around the locality of the scheme and along the A3 corridor, as well as improving the attractiveness of these routes and so facilitating increased use.

Are the reasons imperative?

- 1.3.9 As well as the congestion and safety issues currently observed at junction 10 the imperative need for the Scheme is supported by its identification in national policy in various forms. The Scheme comprises two nationally significant infrastructure projects (NSIPs).
- 1.3.10 The Scheme and its inherent compensation and mitigation measures have been developed in response to the policies set out in the NPS NN and in response to development plan policies and designations where they are relevant¹.

Are the reasons overriding?

- 1.3.11 The conclusion of this HRA is that there are imperative reasons of overriding public interest that should direct consent to be granted for the Scheme notwithstanding that the Scheme will adversely affect the integrity of the SPA.

¹ Development Plan policies and designations where they are relevant are included in Appendix F

- 1.3.12 There are no likely significant effects in relation to any Natura 2000 site or Ramsar sites, or candidate sites, apart from the SPA. It has been concluded that potential impacts on the integrity of the Wisley and Ockham Commons component of the SPA cannot be ruled out beyond scientific doubt.
- 1.3.13 These impacts are caused by the permanent loss of 5.9 ha of SPA land and temporary loss of 8.6 ha of SPA land. These losses will be from the fringes of the SPA adjacent to the existing SRN and are not predicted to affect the breeding sites or core foraging, nesting or roosting habitat of any of the three bird species that are qualifying features of the SPA.
- 1.3.14 The Scheme comprises two NSIPs. The primary reason is improvement in traffic flows, which will have knock on benefits such as improving transport links for local businesses. The other reason is improving the safety of the junction and associated road network, as the Scheme is predicted to result in a significant percentage reduction in accidents at junction 10 and along this part of the A3 and reductions elsewhere on the associated road network.

Are the reasons in the long-term public interest?

- 1.3.15 The Scheme is a long-term infrastructure project in the public interest for the benefit of road users, users of public rights of way, and people living and working in the area. Nonetheless, many private interests would also benefit where, for example, businesses using the transport network would have reduced transport delays. The economic appraisal is based on a 60-year period. The predictions of traffic flow improvements consider immediate improvements and long-term ones, based on modelling of traffic in 2037.
- 1.3.16 The long-term public interest is also demonstrated by the support for the Scheme in national and local policy.

1.4. Suite of compensatory measures

- 1.4.1 The suite of compensatory measures will offset the negative effects of the Scheme, after mitigation, so that the overall coherence of the Natura 2000 Network is maintained.
- 1.4.2 The permanent loss of 5.9 ha of the SPA, and temporary loss of 8.6 ha, will be confined to the woodland edge of the SPA and therefore will not directly affect the heathland habitats nor the qualifying species that they support.
- 1.4.3 Although the loss of this woodland habitat will not lead to a physical reduction in the number or distribution of qualifying species, this land take will reduce the overall size of the SPA. The land take will therefore result in a reduction in the habitats that contribute to the overall supporting habitat of the SPA (for example, providing a woodland buffer between the roads and the open heathland areas) and the invertebrate resource for the wider SPA (and possibly the SPA qualifying species).
- 1.4.4 Therefore, the suite of compensatory measures need to compensate for the loss of SPA land and for potential reductions in invertebrate resource within the SPA.
- 1.4.5 The suite of compensatory measures consist of the provision of SPA compensation land at a ratio of 1:1 for the 5.9 ha of permanent land take, and an

SPA enhancement area ratio of 3:1 for the 14.5 ha of permanent and temporary land take. This is additional to the restoration of the areas of temporary land take.

- 1.4.6 The Scheme will provide 8.1 ha of SPA compensation land immediately adjacent to the Ockham and Wisley Commons SSSI component of the SPA. This will involve grazed fields being planted as grazed wood pasture to increase their invertebrate resource whilst providing foraging opportunities for SPA qualifying species (nightjar and woodlark).
- 1.4.7 The SPA enhancement areas will do just this, involving 47.4 ha of habitat management works that will improve the existing Scots pine dominated mixed woodland habitats within the SPA to benefit the qualifying species in the following ways:
1. Total clearance of approximately 22.5 ha of wooded areas to create open habitat and enable heathland regeneration. This will provide more nesting and foraging habitat for the qualifying species, thus increasing their carrying capacity. The heathland regeneration will provide a much more diverse habitat type for invertebrates, thus increasing the food potential of the qualifying species.
 2. Areas of thinning totalling approximately 24.9 ha, where the woodlands will be thinned to encourage increased woodland diversity and provide more open habitats. The thinning of woodland will create open glades to support foraging qualifying species (particularly nightjar and woodlark) and enable increased diversity (both of species and structure) of the mixed woodland, providing a much more diverse habitat type for invertebrates, thus increasing the food potential of the qualifying species

2. Introduction

2.1. Terms of reference

- 2.1.1 Atkins Limited (Atkins) has been appointed by Highways England to prepare a habitats regulations assessment (HRA) for the M25 junction 10/A3 Wisley interchange Scheme ('the Scheme').
- 2.1.2 HRA is required by regulations 63 and 64 of the Conservation of Habitats and Species Regulations 2017 for all plans and projects which are likely to have an effect on a European site and are not directly connected with or necessary to the management of the European site. Regulation 84 of the Habitats and Species Regulations 2017 explicitly applies regulation 63 to applications for development consent under the Planning Act 2008.
- 2.1.3 The Scheme is not directly connected with, or necessary to, the nature conservation management of any European sites.
- 2.1.4 European sites include Special Area of Conservation (SACs) and SPA. HRA is also required, as a matter of UK Government policy for listed Wetlands of International Importance (Ramsar sites), potential SPAs (pSPA), candidate SACs (cSAC) and proposed Ramsar sites (pRamsar) for the purposes of considering plans and projects, which may affect them². Hereafter all of the above designated nature conservation sites are referred to as 'European sites'.
- 2.1.5 The stages of HRA process are:
1. **Stage 1 – Screening:** To test whether a plan or project either alone or in combination with other plans and projects is likely to have a significant effect on a European site;
 2. **Stage 2 – Appropriate Assessment:** To determine whether it can be ascertained, in view of the conservation objectives, that the plan or project (either alone or in combination with other projects and plans) would have no adverse effect on the integrity of a European site. If the potential for adverse effects on the integrity of a European site cannot be avoided, potential mitigation measures to alleviate those adverse effects should be proposed and assessed;
 3. **Stage 3 – Assessment of alternative solutions:** Where it is not possible to ascertain no adverse effect on the integrity of a European site, but a decision maker is minded to proceed, notwithstanding the negative outcome to an appropriate assessment, it is first necessary to establish the absence of alternative solutions (e.g. alternative locations and designs of development); and,
 4. **Stage 4 - Assessment of imperative reasons of overriding public interest (IROPI):** Where no alternative solutions can be identified and where reasonable scientific doubt remains as to the absence of adverse effects on site integrity, authorisation may be granted in exceptional circumstances.

² National Planning Policy Framework. Department for Communities and Local Government. March 2012.

5. Stage 5 - Compensatory measures: These must be put in place to ensure the overall coherence of the network is protected.

- 2.1.6 The conclusion of the Stage 1 HRA Screening was that an Appropriate Assessment was required and this is reported in the Habitat Regulations Assessment Stage 2: statement to inform appropriate assessment (SIAA), (application document TR010030/APP/5.3).
- 2.1.7 The SIAA determined that the adverse effects resulting from the permanent land take of the Scheme alone could result in a permanent reduction in the extent and/ or distribution of supporting habitat of the three qualifying species, and a permanent reduction in food resource. Therefore, under Article 6 (4) of the Habitats Directive, Stage 3 of the HRA (Assessment of Alternative Solutions) is triggered, which may in turn lead to Stage 4 (Assessment of IROPI) and Stage 5 (Compensatory measures).
- 2.1.8 This report comprises Stages 3-5 of the HRA process: assessment of alternatives, the imperative reasons of overriding public interest and the compensatory measures.

2.2. Consultation

- 2.2.1 Detailed consultation has been undertaken with key stakeholders throughout the HRA process (as recorded in the HRA stakeholder consultation report in Annex B of this report). Consultees have included Natural England, the Forestry Commission, Surrey Wildlife Trust (SWT), Surrey County Council (SCC) and the Royal Society for the Protection of Birds (RSPB).

2.3. Competent Expert Evidence

- 2.3.1 The lead author of this report is a principal ecologist and the lead ornithologist for Atkins UK, with over 10 years' experience of undertaking ornithological studies and has authored HRA screening assessments for managed realignment, development and reservoir maintenance schemes. The lead author undertook all of the bird surveys for the Scheme and has an excellent understanding of the distribution of the SPA qualifying species and the areas within which they have been recorded.
- 2.3.2 This assessment has been produced with support and quality assurance inputs from experienced associate directors, with a range of relevant experience and regularly undertaking roles as authors and technical reviewers for HRAs for road and rail schemes across England and Wales. This experience includes producing HRAs for Highways England and local authorities, including road schemes, transport plans, local plans and providing guidance for clients across the UK on this subject, and writing the HRA Screening report for the London 2012 Olympic Park. It also includes being ecology advisor on the assessment of alternatives to nuclear power plant sites for the Department for Energy and Climate Change, and currently one of the lead authors on the Habitats Regulations Assessment of a confidential project relating to national policy matters.
- 2.3.3 The HRA has been reviewed by the external lawyers advising on this project, namely BDB Pitmans. They have significant experience of the HRA process and

advised on the only other scheme, so far as can be ascertained, authorised by a DCO that involved an IROPI derogation.

- 2.3.4 The HRA has also been produced with advice and the benefit of critical review by DTA Ecology Ltd, a leading consultancy in the interpretation and application of the Habitats Regulations, and authors of the Habitats Regulations Assessment Handbook³.

³ Guidance on the assessment of plans or projects under the UK Habitats Regulations, produced by DTA Publishing.

3. HRA Stage 3: Consideration of alternative solutions

- 3.1.1 The European Commission guidance on article 6(4) provides that, where adverse effects on integrity have been identified, the scheme promoter should consider the thorough revision or withdrawal of the scheme. If the scheme must nevertheless proceed, then alternative solutions must be ruled out under article 6(4), IROPI must be demonstrated and all necessary compensatory measures secured.
- 3.1.2 Before considering alternative solutions, the need for the scheme has to be clearly demonstrated. Once demonstrated, the alternatives then need to be considered in light of their performance against the scheme objectives and their effect on the integrity of the SPA. This section sets out:
1. the strategic need for the Scheme (including consideration of the 'do nothing' option);
 2. the Scheme objectives;
 3. whether there are alternative solutions in terms of:
 6. strategic alternative solutions (e.g. modal shift to increased public transport use); and
 7. alternative approaches to junction improvements.
 4. consideration whether there are alternative solutions with a lesser effect on the integrity of the SPA.

3.2. The strategic need for the Scheme

- 3.2.1 The M25 junction 10 is positioned on a critical section of the strategic road network (SRN). The M25 forms part of the 'Ten-T' Trans-European Transport Network and is therefore a nationally important link providing access to global markets and connections to the Heathrow, Gatwick and the channel ports for much of the UK as well as for the south east region. The A3 is also an important strategic route, linking London with the international port of Portsmouth, as well as Guildford, which is the largest centre of employment in Surrey.
- 3.2.2 The M25 junction 10 sits on the edges of the Borough of Guildford, and the Borough of Elmbridge; with the Borough of Woking also nearby. Together these boroughs have a population of over 375,000 and all have strong and diverse economies, containing offices of multi-national companies as well as local retail, business centres and important public services such as Royal Surrey Hospital.
- 3.2.3 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. The M25 and the A3, which converge at M25 junction 10, are both key corridors connect people to employment, services and leisure activities.
- 3.2.4 The strategic need for the project is set out in below by considering the effects of a 'do nothing' option on traffic flows and demonstrating that 'doing nothing' is not

a feasible alternative solution.

The existing situation

Traffic flow

- 3.2.5 The western section of the M25 is the busiest in terms of annual average daily traffic flow (AADT) on the entire SRN⁴. Information taken from the Highways England WebTRIS⁵ database for 2017 records AADTs of:
1. 120,000 vehicles pass through junction 10 along the M25
 2. 48,000 vehicles turning from the M25 to the A3
 3. 53,000 vehicles pass through junction 10 along the A3
 4. 48,000 vehicles turning from the A3 to the M25
- 3.2.6 In total approximately 270,000 vehicles pass through, or turn at, the junction every day. The implications of these very high traffic volumes on delay, reliability and safety are described below.

Junction capacity

- 3.2.7 Traffic modelling⁶ undertaken for M25 junction 10 demonstrates that several arms of junction 10 are shown as being at or over capacity at peak times (see Table 3.2) At certain times all of the off-slips (from both the M25 and A3) and several of the circulatory links are shown to be operating at or over capacity.
- 3.2.8 At the Painshill and Seven Hills junctions, traffic modelling indicates that the existing junction operates over practical capacity in peak hours with the most prominent issues being delay on the A3 off-slips (northbound in the AM peak, southbound in the PM peak) and on the westbound approach to Seven Hills.

Reliability

- 3.2.9 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.
- 3.2.10 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.
- 3.2.11 The analysis⁷ 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

⁴ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/610669/tra0303.ods

⁵ <http://webtris.highwaysengland.co.uk/>

⁶ Traffic Modelling Report: HE551522-ATK-GEN-XX_Z-RP-TR-000007

⁷ Traffic Modelling Report: HE551522-ATK-GEN-XX-RP-TR-000003

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.

Link delay

- 3.2.12 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).
- 3.2.13 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 2016⁸. This value is typically exceeded in the AM and PM peaks on both the A3 and M25 approaches to M25 junction 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.

Accidents

- 3.2.14 In 2013 Highways England's National Intelligence Unit undertook analysis on accident data across the SRN for the period 2009 to 2011. M25 junction 10 was found to have the highest number of casualties at any junction on the SRN for that period.
- 3.2.15 Whilst this analysis has not been updated by Highways England for a more current study period, accident and casualty statistics around the M25 network for the five-year period between 2012 and 2016 supplemented with the Department for Transport's STATS19 dataset were reviewed. The M25 junction 10 had the second highest number of accidents on the M25, with approximately 27 accidents per year recorded in a 1km buffer including and around the junction.
- 3.2.16 When analysing just those accidents which can be attributed specifically to the junction (by removing all accidents on mainlines), M25 junction 10 had the third highest number of accidents (11 per year), and the highest number of casualties (22 per year) on the entire M25. M25 junction 10 had more than double the average number of casualties at junctions on the M25 over the analysed period.
- 3.2.17 M25 junction 10 also had a higher number of accidents and casualties compared to other M25 junctions that are of broadly similar nature, such as junctions 23, 28 and 29. Moreover, M25 junction 10 has 29% more accidents per year compared to junction 12, which is also in the southwest quadrant of the M25, has high volumes of traffic, but has a free-flow layout.
- 3.2.18 The most prevalent types of collisions on this scheme are nose to tail (55%) and lane change (26%). This is unsurprising given the relatively short length of the scheme and the presence of a major interchange and two other junctions in a relatively confined area. These types of collisions are associated with junctions.
- 3.2.19 There are concentrations of these types of collisions on all the approaches and off-slips to the M25 junction 10 roundabout, on the M25 westbound on-slip and on the northbound off-slip to Painshill junction, with the highest numbers on the

⁸ http://www.orr.gov.uk/_data/assets/pdf_file/0017/23444/benchmarking-highways-England-performance-2016-progress-report.pdf

M25 off-slips in both directions. There are also clusters of collisions related to the Wisley Lane turning and to the Starbucks site entrance (the site of the former San Domenico hotel).

- 3.2.20 Casualty data does not provide definitive information on the cause of collisions, but contributory factors are provided. Across the scheme area the third most common cause was 'sudden braking', highlighting how congestion is likely to have disproportionately contributed to collisions.

The impact of not implementing the scheme

- 3.2.21 It has already been demonstrated that the existing performance of the junction is poor in terms of capacity, delays, reliability and user safety. In the future, proposed growth in the local area and the surrounding region will only increase these problems.

Local growth

- 3.2.22 Planning data provided by the local authorities of Guildford, Elmbridge and Woking has identified a proposed increase of 18,500 houses and 10,500 jobs in to the vicinity of M25 junction 10 by 2037. The major sites expected to deliver this level of growth include:
1. Wisley Airfield – 2,000 homes and 750 jobs
 2. Godsen Hill Farm – 2,000 homes and 1,150 jobs
 3. Blackwell Farm – 1,800 homes and 900 jobs
 4. McLaren headquarters – 1,400 jobs
- 3.2.23 Many of the major sites listed above along with the combined impact of the smaller development sites in the three boroughs will be expected to contribute to increases in traffic flow, and consequent increases in accidents, congestion and delay at M25 junction 10; details of which are provided below.

Traffic flow using junction 10

- 3.2.24 Table 3.1 presents the forecast traffic flows from the M25 junction 10 strategic highway traffic model⁹ in the without intervention scenario for traffic which uses M25 junction 10.
- 3.2.25 The two-way AADT on the M25 through junction 10 is expected to be 155,000 vehicles per day in 2037. This is equivalent to an 35% increase of traffic volumes on these links from the base data.
- 3.2.26 From the M25 to the A3, via junction 10, is expected to be 61,000 AADT a 27% increase. Through junction 10, on the A3, is expected to be 83,000 AADT a 31% increase. From the A3 to the M25 is expected to be 60,000 AADT only a 14% increase. Note there is expected to be a reduction by 2022 for this movement due to considerable congestion issues accessing the mainline and traffic re-routing to alternate options. By 2037 the demand increase is expected to result in an overall increase.

⁹Traffic Model Report: HE551522-ATK-GEN-XX-RP-TR-000002

Table 3.1: Future year without intervention traffic flows

Link	AADT			ADDT % change from Base scenario	
	Base	2022	2037	2022	2037
Through J10 on M25	114,600	135,000	155,100	18%	35%
from the M25 to A3	48,500	52,400	61,400	8%	27%
Through J10 on A3	62,500	70,600	82,700	13%	32%
from the A3 to M25	52,600	49,600	59,700	-6%	14%
Total	278,200	307,600	358,900	11%	29%

Average vehicle delay

- 3.2.27 Without intervention, vehicle delays during the peak hours are expected to rise significantly for movements through and around M25 junction 10 because of increased traffic demand. Table 3.2 below presents the average vehicle delay during the peak hours (07:00-09:00 & 16:00-18:00). The A3 northbound movements are likely to experience high delay increases, with delay in 2037 expected significantly higher compared to the base scenario (in year 2015).

Table 3.2: Forecast average network Journey time and Vehicle Delay at M25 junction 10 without intervention – Peak hours

Time	2015	2022	2037
Average network Journey time (mins)			
0700-0800	9m 39s	9m 52s	12m 54s
0800-0900	9m 35s	15m 21s	25m 51s
1600-1700	8m 44s	8m 13s	8m 52s
1700-1800	8m 9s	8m 17s	9m 37s
Peak	8m 1s	10m 22s	13m 40s
Average delay (mins)			
0700-0800	6m 8s	5m 23s	8m 25s
0800-0900	6m 5s	10m 52s	21m 22s
1600-1700	4m 31s	4m 1s	4m 40s
1700-1800	3m 56s	4m 5s	5m 25s
Peak	4m 39s	6m	9m 18s

Safety

- 3.2.28 Highways England has a target to reduce the numbers of people killed or seriously injured (KSI) on the whole of the strategic road network by 40% or more by the end of 2020 against the 2005-2009 average baseline. Using the DfT's COBA-LT software to model the expected situation in the first modelling forecast year of 2022, the number of KSIs expected on the road network around

M25 junction 10 is expected to increase by approximately 4% in the without intervention scenario compared to the 2005-2009 baseline.

Economic performance of the network

- 3.2.29 An assessment of the increased cost of delay on vehicles using the local area highway network has been undertaken using the M25 junction 10 strategic highway model's Do Minimum scenario (i.e. without intervention). By comparing the level of delay in the base year model with the anticipated level of delay in all years up to 2037, a calculation of the cost of additional delay can be derived by multiplying the delay in each future year minus base delay by the DfT's Value of Time from the WebTAG databook¹⁰.
- 3.2.30 The analysis indicates that between 2017 and 2037, the additional delay on the local network will cost the economy approximately £180 million at today's prices (Present Value) in lost time experienced by road users.

Local development

- 3.2.31 Since the RIS1 announcement in 2014, the concept of an improvement to M25 junction 10 has been considered as committed enhancement to the road network. The official commitment to deliver a scheme capable of increasing capacity at the junction has enabled the local planning authorities to effectively plan their forward requirements of residential and employment growth. The development plans being pursued by Guildford, Elmbridge and Woking borough councils are predicated upon the delivery of the scheme.
- 3.2.32 Failing to secure the improvement at M25 junction 10 will significantly restrict the ability of the local planning authorities to deliver the level of growth they are required by central government to facilitate in the next 20 years and beyond.
- 3.2.33 In 2017, Surrey's local authorities developed a Local Strategic Statement (LSS) to facilitate cooperation on key strategic planning issues. It sets out shared objectives around spatial, infrastructure and economic issues and a broad direction for spatial planning on strategic priorities. In acknowledging the highly strategic role that the M25, and in particular junction 10, plays in the operation of the local area the LSS states that:
- 3.2.34 "securing upgrades to the A3 through Guildford and the A3/M25 junction 10 at Wisley are crucial to the future growth of the area"¹¹
- 3.2.35 The Surrey Infrastructure Study which provided part of the evidence base for the LSS states that a scheme at the M25 junction 10 is a necessary infrastructure project addressing several local authorities to support the planned growth in the county.
- 3.2.36 The Guildford Local Plan, which was adopted in April 2019, highlights the need for the intervention in order to support its planned growth:
- "The implementation of the three Road Investment Strategy (RIS) schemes during the Plan period, alongside other critical infrastructure, is required in order to be able to accommodate future planned growth both outside and within the borough. It is therefore important that the promoters of sites close to the A3 and*

¹⁰ <https://www.gov.uk/government/publications/webtag-tag-data-book-may-2018>

¹¹ <https://www.surreycc.gov.uk/land-planning-and-development/planning/introduction-to-planning/strategic-development-policy>

M25 and strategic sites work closely with Highways England to ensure that their layout and access arrangement(s) are consistent with Highways England's emerging schemes".¹²

In summary

- 3.2.37 The M25 junction 10 is situated on one of the busiest parts of the strategic road network. Many of the 270,000 vehicles that pass through or around M25 junction 10 every day already experience unreliable journey times and delays at this location and this congestion in a high number of accidents and the highest number of casualties of all the junctions on the M25.
- 3.2.38 If nothing was done to address this, the situation would only get worse. Traffic volumes would increase, as would delays and the number of accidents and casualties. It would stifle economic growth.

3.3. Scheme objectives

- 3.3.1 The M25 junction 10/A3 Wisley interchange requirement is described in the initial RIS 1 statement as an:

"improvement of the interchange to allow free-flowing movement in all directions, together with improvements to the neighbouring Painshill interchange on the A3 to improve safety and reduce congestion".

- 3.3.2 Recognising that the scheme objectives could be met without fully free-flowing movements in all directions, the DfT (through Change Control) amended the RIS description in November 2017 to:

"improvement of the Wisley interchange to allow free-flowing movements, together with improvements to the neighbouring Painshill interchange on the A3 to improve safety and reduce congestion across the two sites."

- 3.3.3 The Scheme has been developed to meet Highways England's objectives as set out in the Client scheme requirements in Table 3.3 below.

Table 3.3: Client Scheme Requirements

Category	Objective
Route Operation	1. Support any projected traffic increases from other committed schemes on the strategic road network and avoid or mitigate against causing adverse effects elsewhere on the Local Road Network.
Customer	2. Throughout the design and delivery stages, the scheme should ensure that customers and communities are fully considered. Specifically, this should include: <ol style="list-style-type: none"> Understanding the needs of all segments of customers (including vulnerable users), stakeholders and partners

¹² <https://getinvolved.guildford.gov.uk/consult/ti/LPMM18/viewCompoundDoc?docid=10358516&sessionid=&voteid=&partId=10372884>

Category	Objective
	<ul style="list-style-type: none"> b) Responding to those needs such that the end product delivers an improved customer experience c) Assessing the impact of works on road users and communities, minimising disruption and delivering appropriate mitigation measure. The assessment should look at issues through customer's eyes.
Capacity	<ul style="list-style-type: none"> 1. Reduce the average delay (time lost per vehicle per mile) on the mainline A3 and on M25 through junction running. 2. Smooth the flow of traffic by improving journey time reliability on the mainline A3.
Safety	<ul style="list-style-type: none"> 3. Reduce annual collision frequency and severity ratio on the main line A3, slip roads and M25 J10 gyratory.
Social	<ul style="list-style-type: none"> 4. Support the projected population and economic growth in the area. 5. Support walking and cycling by incorporating safe, convenient, accessible and attractive routes for pedestrians, cyclists and equestrians and improving crossing facilities. 6. Take account of the concerns of local communities and other key stakeholders raised during consultations.
Environment	<ul style="list-style-type: none"> 7. Support compliance with the UK's legally binding limits and targets on air quality and water quality status and support targets to cut greenhouse gas emissions and objectives for local air quality management areas. 8. Avoid, mitigate and compensate for adverse effects on the integrity of the Thames Basin Heaths Special Protection Area and other statutory designated nature conservation sites and promote opportunities. 9. Recognise the significance of designated heritage assets close to the route of the scheme, including at Painshill Park and at Wisley Gardens through incorporating suitable mitigation and/or design measures to avoid or reduce significant harm. 10. Improve the quality of life for nearby residents, through addressing the effects of noise on people in the declared noise important area's (IA's) and ensuring that significant noise effects are mitigated. 11. Ensure through good design, that an appropriate balance is achieved between functionality and the scheme's contribution to the quality of the surrounding environment, addressing existing problems wherever feasible, avoiding, mitigating or compensating for significant adverse impacts and promoting opportunities to deliver positive environmental outcomes.

3.4. Feasible alternative solutions

- 3.4.1 Studies looking at issues and opportunities at M25 junction 10 in relation to the junction's current form date back to at least 2007. Having first considered available evidence and the options developed to date at the start of PCF Stage 0 (Strategy Shaping and Prioritisation), Atkins undertook a two-stage approach in developing options for the scheme. Firstly, rather than simply reviewing and enhancing the list of previously considered options, a number of

high-level, strategic solutions were developed which considered ways to solve the problems identified. Secondly, with the strategic option selected, more detailed scheme options were developed and assessed. Consideration was given to whether the alternative solutions were financially, legally and technically feasible in line with the requirements of the National Policy Statement for National Networks (NPSNN).

Strategic solutions sifting process

- 3.4.2 At the start of the project, during PCF Stage 0 initial optioneering was carried out for the M25 junction 10/A3 Wisley interchange improvement scheme. Strategic solutions were identified which could lead to solving the known transport problems. Each of the strategic solutions considered were assessed on the basis of professional judgement and the assessments are summarised below in Table 3.4.
- 3.4.3 Public transport alternatives (bus or rail) were discounted during this process on the basis that they would fail to meet the scheme objectives on the basis that trips using M25 junction 10 are distributed across a wide area and it would not be possible for public transport to attract sufficient existing users to resolve the current congestion and safety concerns (Appendix A).
- 3.4.4 Other high-level, strategic solutions were developed that considered ways to manage transport demand but the scale over which they would need to apply and political will to deliver mean that neither in isolation or in combination, were any of the other non-highway intervention options considered likely to address the problems at M25 junction 10 and meet the scheme objectives.

The strategic solution considered most able to tackle the study problems and meet study objectives was some form of junction improvement.

Table 3.4: Strategic Solutions Assessment

Solution	Summary comment
Do nothing	Doing nothing would continue to result in congestion, delays and unreliable journey times as well as significant safety concerns. It would not support economic growth.
Improved rail capacity provision	Aim – to reduce car-based demand at M25 junction 10 by providing a rail-based public transport alternative Issue - Rail routes in this area tend to be radial to/from London yet the interchange with the M25 enables all sorts of orbital movements to be made. As such, substantial mode shift is unlikely to be achieved Impact – considered to be limited and road users would still experience congestion, delays and unreliable journey times as well as significant safety concerns.
Improved bus provision	Aim – to reduce car-based demand at M25 junction 10 by providing a bus-based public transport alternative Issue – would require the provision of a large number of frequent bus services across a wide range of dispersed origins and destinations to match movements currently made by car.

Solution	Summary comment
	<p>This would require a large fleet at considerable financial cost and may still not be sufficiently attractive to existing road users.</p> <p>Impact - considered to be limited and all road users, including those on the buses, would still experience congestion, delays and unreliable journey times as well as significant safety concerns.</p>
Road user charging	<p>Aim – to reduce car-based demand at M25 junction 10 by managing the demand to travel</p> <p>Issue – requires local and potentially national political will to deliver such a scheme and the economics of such a proposition may not be viable. There is no local or national consensus for this at present.</p> <p>Impact – whilst a road user charging scheme targeting movements at junction 10 and Painshill could address a number of identified scheme traffic related problems, it may well suppress travel demand and hence affect economic growth without a wide range of supporting travel measures or encourage traffic on to alternative routes which may make safety and congestion worse.</p>
Parking strategy	<p>Aim – to reduce car-based demand at M25 junction 10 by managing the demand to travel</p> <p>Issue – requires co-ordinated parking strategies across all nearby towns (and potentially beyond given the range of trip origins and destinations made through M25 junction 10) and political will to deliver dramatic increases in parking provision and charges.</p> <p>Impact – whilst unlikely to result in significant reductions in congestion, delays and unreliable journey times it may also hinder economic growth in towns where the parking strategies are adopted if road users switched destinations.</p>
Park and Ride	<p>Aim – to reduce car-based demand at M25 junction 10 by providing a public transport alternative</p> <p>Issue – assumed to be Guildford focused and in all likelihood, any park and ride for Guildford would involve a site between M25 junction 10 and Guildford and thus traffic would still pass through M25 junction 10.</p> <p>Impact - considered to be limited and road users would still experience congestion, delays and unreliable journey times as well as significant safety concerns.</p>
Travel Demand Management Package	<p>Aim – to reduce car-based demand at M25 junction 10 by providing an alternative to travelling</p> <p>Issue – requires large scale adoption across a very wide area.</p> <p>Impact – whilst targeted and co-ordinated travel demand management at key employer / school sites in the area may help to reduce the need to travel (home working) or travel more sustainably (e.g. car pool) the impact at M25 junction 10 is considered to be limited and road users would still experience congestion, delays and unreliable journey times as well as significant safety concerns</p>
Junction Improvements	<p>Aim – to provide extra capacity for all vehicles using M25 junction 10</p>

Solution	Summary comment
	<p>Issues – the junction is surrounded by special category land, including sites designated as Special Protection Areas.</p> <p>Impact - most likely to address identified transport problems of congestion, delay and safety whilst supporting economic growth but challenge will be to balance scale of improvements and environmental impact.</p>

- 3.4.5 Following the assessment that junction improvement would be the most appropriate strategic solution to meet the study objectives more detailed scheme options were developed and assessed. With this in mind, an incremental approach to developing a long list of options that included dedicated left turns, partial free-flowing movements and fully free-flowing movements at M25 junction 10 was adopted.

Alternative approaches to junction improvements – Option Identification

Long list of 21 options.

- 3.4.6 At the start of PCF Stage 1, a high-level traffic modelling exercise was undertaken to determine whether the options identified at PCF Stage 0 would provide sufficient capacity for a design life of ten to 15 years as no modelling was undertaken at Stage 0. Not all of the options were forecast to provide sufficient capacity around the M25 junction 10 roundabout, so the testing, using a LINSIG model of the M25 junction 10, considered the scale of intervention that would be required to ensure that the interchange would operate below capacity in ten and fifteen years' time¹³. It was found that either the roundabout would need to be significantly enlarged or at least all left turns and two busy right turns would need to be removed from the existing roundabout.
- 3.4.7 As a result of this assessment, a longlist of 21 options was devised, which fell into the following three main groups:
1. Keeping the existing roundabout and adding other infrastructure;
 2. Modifying the existing roundabout; and
 3. Removing the roundabout.
- 3.4.8 Within the longlist, 11 options were discarded as they were not considered feasible because they either:
1. Did not meet the scheme objectives, particularly in terms of traffic operation/capacity or safety; or
 2. The costs were so high that Highways England would not promote the scheme on that basis.
- 3.4.9 The longlist of 21 options is shown in Table 3.5; along with the assessment results regarding the option's feasibility from a capacity or cost perspective.

¹³ M25 J10 / A3 Wisley Interchange Improvements - Technical Appraisal Report – 1 November 2016, Para 5.2.2

Table 3.5: Performance of potentially feasible options

Option	Approach	Description	Potentially feasible?
1	Keep existing roundabout	Use of Ockham and Painshill for right turns (J10 left turn only)	No - capacity
2	Keep existing roundabout	Dedicated left filtered turns	No – capacity
3	Keep existing roundabout	Dedicated left turn lanes	No – capacity
4	Keep existing roundabout	Dedicated left turns plus use of Ockham for U-turn right turn	No – capacity
5	Keep existing roundabout	Dedicated left turns plus use of Painshill for U-turn right turn	No – capacity
6	Keep existing roundabout	Dedicated left turns plus use of Ockham for M25 J9 to Painshill and Painshill for M25 J11 to Ockham	No – capacity
7	Keep existing roundabout	Dedicated left turns plus free-flow right turn (A3S to M25 J11)	No – capacity
8	Keep existing roundabout	Dedicated left turns plus free-flow right turn (A3S to M25 J11) plus M25 J9 Painshill via Ockham	Yes
9	Keep existing roundabout	Dedicated left turns plus two free flow right turns A3 to M25 J9 and A3 to M25 J11	Yes
10	Keep existing roundabout	Dedicated left turns plus two free flow right turns M25 J11 to A3 and M25 J9 to A3	Yes
11	Keep existing roundabout	Keep Wisley but add new roundabout at Old Lane and operate these two as dumbbell	No – capacity
12	Modify roundabout	Skewed elongated with left filters	Yes
13	Modify roundabout	Elongated	No - capacity
14	Modify roundabout	Elongated + dedicated left filters	Yes
15	Modify roundabout	Elongated + dedicated left turns	Yes
16	Remove roundabout	Cyclic	Yes
17	Remove roundabout	Skewed free flow diamond	Yes
18	Remove roundabout	4 level stack	Yes
19	Remove roundabout	Whirlpool	Yes
20	Remove roundabout	Clover leaf	No – cost
21	Remove roundabout	Clover stack	No - cost

- 3.4.10 The remaining ten options were assessed at an Options Workshop in February 2016, involving Highways England's Major Projects management team and Environmental Specialist, a representative from Connect Plus Services (who maintain the M25), and key staff from the Atkins project team¹⁴.
- 3.4.11 In the workshop, each of the ten remaining, feasible options were considered in detail using a multi-criteria assessment framework based loosely around the DfT's Early Appraisal and Sifting Tool (EAST) was used to undertake the assessment. In addition to the project objectives, the criteria included: air quality, noise, landscape, natural environment, carbon emissions, feasibility, affordability and cost and flexibility. A commentary of the performance of the ten options against the objectives is presented below (Table 3.6) with detail found in the PCF Stage 1 Technical Appraisal Report¹⁵.

Table 3.6: Performance of feasible options against criteria

Option	Description	Comments and performance
Option 8	Keep existing roundabout Dedicated left turns plus free-flow right turn (A3S to M25 J11) plus M25 J9 Painshill via Ockham	Considered to be a worsening of the current situation for Route Operation, Safety, Social, Scale of Impact, Noise, Landscape, and the Natural Environment. Improvements to the current situation were found in terms of Capacity. No worsening or improvement were found for Achieving Real Efficiency, Helping NMUs, Air Quality, Carbon Emissions, and Risk. This option was considered to be within the scheme budget (Affordability and Cost), feasible to build and would allow some flexibility so it could be scaled up or down if the budget were to be revised.
Option 9	Keep existing roundabout Dedicated left turn plus two free flow right turns A3 to M25 J9 and A3 to M25 J11.	Considered to be a worsening of the current situation for Achieving Real Efficiency, Air Quality, Noise, Landscape, Natural Environment, Risk. Improvements to the current situation were found in terms of Route Operation, Capacity, Safety, and Scale of Impact. No worsening or improvement was found for, Social, Helping NMUs, and Carbon Emissions. This option was considered to on the scheme budget (Affordability and Cost), Feasible to build and would allow some flexibility so it could be scaled up or down if the budget were to be revised. The estimated total land take for this option is 17 ha
Option 10	Keep existing roundabout Dedicated left turns plus two free flow right turns M25 J11 to A3 and M25 J9 to A3.	Similar to option 9, this option was considered to be a worsening of the current situation for Achieving Real Efficiency, Air Quality, Noise, Landscape, Natural Environment, Risk. Improvements to the current situation were found in terms of Route Operation, Capacity, Safety, Helping NMUs, and Scale of Impact. No worsening or improvement was found for, Social, and Carbon Emissions.

¹⁴ M25 J10 / A3 Wisley Interchange Improvements - Value Management Workshop report – 11 October 2016¹⁵ M25 J10 / A3 Wisley Interchange Improvements - Technical Appraisal Report – 1 November 2016

Option	Description	Comments and performance
		<p>This option was considered to be on scheme budget (Affordability and Cost), Feasible to build and would allow some flexibility so it could be scaled up or down if the budget were to be revised.</p> <p>The estimated total land take for this option is 17 ha</p>
Option 12	Modify existing roundabout Skewed roundabout with left filters.	<p>Considered to be a worsening of the current situation for, Social, Helping NMUs, Landscape, Natural Environment, and Risk.</p> <p>Improvements to the current situation were found in terms of Route Operation, Capacity and Scale of Impact.</p> <p>No worsening or improvement was found for, Safety, Achieving Real Efficiency, Air Quality, Noise, and Carbon Emissions.</p> <p>This option was considered to be within scheme budget (Affordability and Cost), very difficult to build (Feasibility) and would only offer marginal Flexibility for scaling up or down if the budget were to be revised.</p> <p>The estimated total land take for this option is 7 ha</p>
Option 14	Modify existing roundabout Elongated roundabout with left filters.	<p>Considered to be a worsening of the current situation for, Social, Helping NMUs, Landscape, Natural Environment, and Risk.</p> <p>Improvements to the current situation were found in terms of Route Operation, Capacity, and Scale of Impact.</p> <p>No worsening or improvement was found for, Safety, Achieving Real Efficiency, Air Quality, Noise, and Carbon Emissions.</p> <p>This option was considered to be within scheme budget (Affordability and Cost), difficult to build (Feasibility) and would only offer some Flexibility for scaling up or down if the budget were to be revised.</p> <p>The estimated total land take for this option is 8 ha</p>
Option 15	Modify existing roundabout Elongated roundabout with separate free-flowing left slip roads.	<p>Considered to be a worsening of the current situation for, Social, Helping NMUs, Landscape, Natural Environment, and Risk.</p> <p>Improvements to the current situation were found in terms of Route Operation, Capacity, and Scale of Impact.</p> <p>No worsening or improvement was found for, Safety, Achieving Real Efficiency, Air Quality, Noise, and Carbon Emissions.</p> <p>This option was considered to be within scheme budget (Affordability and Cost), difficult to build (Feasibility) and would only offer marginal Flexibility for scaling up or down if the budget were to be revised.</p> <p>The estimated total land take for this option is 13 ha</p>
Option 16	Remove roundabout Cyclic style interchange.	<p>Considered to be a worsening of the current situation for, Achieving Real Efficiency, Noise, Landscape, Natural Environment, and Risk.</p> <p>Improvements to the current situation were found in terms of Route Operation, Capacity, Safety, Helping NMUs, and Scale of Impact.</p>

Option	Description	Comments and performance
		<p>No worsening or improvement was found for, Social, Air Quality, and Carbon Emissions.</p> <p>This option was considered to exceed the scheme budget (Affordability and Cost), straightforward to build (Feasibility) and would only offer marginal Flexibility for scaling up or down if the budget were to be revised.</p> <p>The estimated total land take for this option is 48 ha</p>
Option 17	Remove roundabout Skewed free flow diamond interchange	<p>Considered to be a worsening of the current situation for, Achieving Real Efficiency, Air Quality, Noise, Landscape, Natural Environment, Carbon Emissions, and Risk.</p> <p>Improvements to the current situation were found in terms of Route Operation, Capacity, Safety, Helping NMUs, and Scale of Impact.</p> <p>No worsening or improvement was found for Social.</p> <p>This option was considered to exceed the scheme budget (Affordability and Cost), difficult to build (Feasibility) and would only offer marginal Flexibility for scaling up or down if the budget were to be revised.</p> <p>The estimated total land take for this option is 43 ha</p>
Option 18	Remove roundabout Four level stack interchange.	<p>Considered to be a worsening of the current situation for, Achieving Real Efficiency, Air Quality, Noise, Landscape, Natural Environment, Carbon Emissions, and Risk.</p> <p>Improvements to the current situation were found in terms of Route Operation, Capacity, Safety, Helping NMUs, and Scale of Impact.</p> <p>No worsening or improvement was found for Social.</p> <p>This option was considered to exceed the scheme budget (Affordability and Cost), difficult to build (Feasibility) and would only offer marginal Flexibility for scaling up or down if the budget were to be revised.</p> <p>The estimated total land take for this option is 33 ha</p>
Option 19	Remove roundabout Whirlpool style interchange.	<p>Considered to be a worsening of the current situation for, Achieving Real Efficiency, Air Quality, Noise, Landscape, Natural Environment, Risk, and Affordability and Cost.</p> <p>Improvements to the current situation were found in terms of Route Operation, Capacity, Safety, Helping NMUs, Scale of Impact, and Feasibility.</p> <p>No worsening or improvement was found for, Social, Carbon Emissions, and Flexibility.</p> <p>This option was considered to exceed the scheme budget (Affordability and Cost), straightforward to build (Feasibility) and would only offer marginal Flexibility for scaling up or down if the budget were to be revised.</p> <p>The estimated total land take for this option is 39 ha</p>

3.4.12 Based on the scoring of the options at the workshop, the following options were selected for further assessment in PCF Stage 2:

1. Option 9 - retaining the existing roundabout but adds a fourth level layout to provide free flowing right turns from the A3 to the M25 whilst also providing free flowing left turns under a permanent green signal. Non-motorised users would continue to use the roundabout as they presently do.

2. Option 14 - modifying the existing roundabout by elongating the existing roundabout with additional lanes to provide more circulatory capacity and enable more traffic to discharge the roundabout whilst also providing free flowing left turns under a green signal as non-motorised users would continue to use the roundabout as they presently do.
3. Option 16 – replacing the roundabout with a cyclic layout (like M25 junction 12) that provides free-flow for all traffic movements. Alternative arrangements would be required for non-motorised users.

3.4.13 Common to all options would be widening the A3 from D3AP (dual three-lane all-purpose road) to D4AP (dual four-lane all-purpose road) as traffic figures highlighted that an extra lane would be required for safe weaving and merging on approaches to the junctions¹⁶. All options also included improvements at Painshill and the A245 to reduce congestion and improve safety.

3.4.14 Despite its environmental impact, including impact on the SPA, Option 16 was retained as it was the only option that would meet the aim of the study fully by providing the free-flowing movement in all directions. Options that elongated the existing roundabout had the least impact on SPA; with Option 14 having the least impact on the SPA of those options. However, using the evidence available at the early stage of PCF Stage 1, the performance of the elongated roundabouts were marginal in terms of meeting the scheme objectives in relation to congestion reduction and safety improvements. As such, Option 9 was retained as a viable option despite its impact on the SPA compared to Option 14, other elongated roundabout options.

Review of shortlisted options (9, 14 and 16) and rejection of option 16

3.4.15 At the start of PCF Stage 2 the assessment evidence was reviewed, and whilst only Option 16 would meet the aim of the study fully by providing the free-flowing movement in all directions, it would exceed the scheme budget and require the largest land take and have the largest impact on the SPA. The economic analysis shows that the extra expenditure, compared with Option 9, would not deliver extra benefits and therefore at non-statutory consultation a recommendation for rejecting Option 16 was sought. Feedback from consultation agreed with the recommendation, and a request to alter the wording of the RIS was made to the DfT and approved.

Refinement of Options 9 and 14 and selection of Option 14

3.4.16 Option 9 would involve greater land take within the SPA than Option 14 but Option 14 would not meet the other project objectives as well as Option 9. During PCF Stage 2 efforts were made to consider reducing the scale of Option 9 to reduce its land take and consequential environmental impacts and to improve the performance of Option 14.

3.4.17 The changes considered for Option 9 included:

1. Reducing the design speeds to allow tighter curve radii.
2. Moving the free-flowing left turns closer to the existing roundabout.

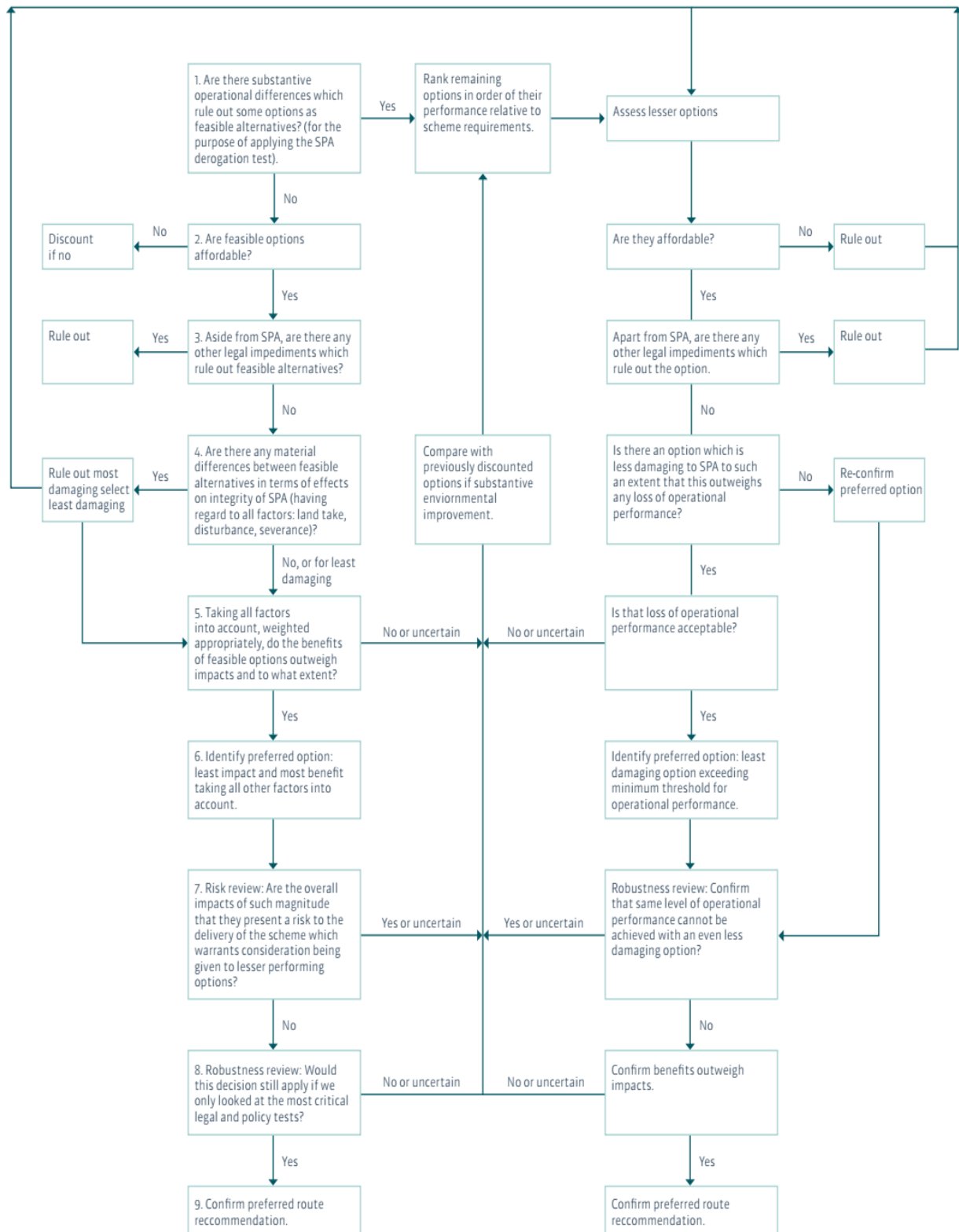
¹⁶ Design Manual for Roads and Bridges TD22/06

3. Reducing the width of the structures by lowering the design speed.

- 3.4.18 Despite these actions, land take for Option 9 was still considerably larger compared to Option 14, impact on the integrity of the SPA was larger, cost was still likely to be higher than Option 14 and as the speed limits reduced, so did the benefits.
- 3.4.19 The focus of modifications to Option 14 were to create fully free-flowing left turns and re-provide NMU facilities elsewhere at the junction, whilst ensuring the sufficient capacity was created for the circulatory carriageway. After modifications, it was demonstrated that such a design could still operate within capacity in the design year of 2037 whilst also reducing accidents.
- 3.4.20 The PCF Stage 2 Option Selection process was determined during a Value Management Workshop which saw the attendance of representatives from Highways England, Surrey County Council, Connect Plus Services, Atkins, Surrey Wildlife Trust and Natural England. The Environment Agency and Historic England were invited but were unable to attend.
- 3.4.21 The workshop ensured that value could be achieved by focusing option selection on compliance with the National Policy Statement for National Networks and other key legal tests. Discussions took place regarding a number of issues which concentrated on the problem/need for the scheme and the design issues relating to the environment.
- 3.4.22 The process map of the revised assessment process is shown in Figure 3.1 below. The process was developed having regard to the particular policy and legal challenges at junction 10, notably the duty to avoid or minimise adverse effects on the Thames Basin Heaths Special Protection Area; rather than to apply Highways England's methodology for PCF Stage 2. Under the Wild Birds Directives consent cannot be authorised for works that would give rise to an adverse effect on the integrity of a SPA designated under the Wild Birds Directive if a less damaging alternative solution exists.
- 3.4.23 The process essentially starts with testing which of the feasible options would be compliant with the scheme requirements (i.e. to relieve congestion, improve safety and support planned growth) and other relevant legal obligations, including air quality directive limits. Those that meet these tests are then considered in terms of their potential for adverse effects on the integrity of the SPA. To meet the requirements of the Directive, the option that is least damaging to the SPA, having regard to land take, severance and disturbance effects overall and in combination with other projects, will become the preferred option, unless its benefits do not outweigh its impacts.
- 3.4.24 The process map also takes account of the existence of other legal and policy tests, which must carry exceptional weight rather than equal balance, when considered in relation to other appraisal criteria. Whilst the SPA is essentially a legal test of the highest order, other key tests will also need to be satisfied, and the process map allows for these to be considered, some with substantial weight, as a later part of the option appraisal.

Figure 3.1: PCF Stage 2 Value Management Workshop Process Map

M25 J10/A3 Wisley Interchange:
Value Management Workshop Process Map



- 3.4.25 The operational assessment results are detailed below in Table 3.7 and show the extent to which there has been convergence in the results, with relatively little to choose between Option 9 and Option 14. This is in part due to improvements to Option 14 which includes segregated free flowing left turns at the roundabout rather than green filters and enhancements to the model which more accurately reflects current conditions (further details are found in the Economic Assessment Report).

Table 3.7: Assessment matrix for junction 10 components

Operational Criteria	Option 14	Option 9
Does the option deliver operational performance: Reduce delay (2037 from SATURN compared to DM)	Reduce delay AM: 36% PM: 45%	Reduce delay AM: 31% PM: 73%
Accommodate growth	Yes	Yes
Improve safety (60 yrs compared to DM)	26% reduction in accidents	45% reduction in accidents
Is the option affordable?	Yes	Yes
Do other impacts outweigh benefits?	BCR: 3.04	BCR: 2.80

- 3.4.26 Having established that both options were therefore feasible alternatives for the purposes of the assessment process map and the degree to which Option 9 offers benefits over 14 was not significant; the next stage was to consider both options against the legal tests identified Table 3.8 below. Option 14 was shown to have the smallest impact in terms of Protected Species and Special Area of Conservation.

Table 3.8: Assessment matrix for junction 10 components

Legal tests	Option 14	Option 9
Air Quality Directive - limit values	TBC but unlikely	TBC but unlikely
Water Framework Directive -change in classification status	Unlikely with mitigation	Unlikely with mitigation, although more extensive works than Option 14
Habitats Directive: Protected Species	Potential for great crested newt (GCN), bats and sand lizards within scheme footprint of 8ha	As per Option 14, but more extensive footprint of 24ha, so greater risk

Legal tests	Option 14	Option 9
Habitats Directive: Special Area of Conservation	Possible but unlikely	Possible but unlikely
Habitats/Birds Directive: Special Protection Area	3ha of land take (1.4% of SPA at Wisley) 0.04% of SPA overall. Unable to definitively rule out effects on integrity of SPA, but scope to compensate	11.5ha of land take (5% of SPA at Wisley) 0.1% of SPA overall + severance of fragmentation effects. Effects on integrity possible or likely. Compensation opportunities possible

3.4.27 Following the assessment through the process map, the Value Management workshop concluded that:

1. Option 14 should be pursued as it provides significant traffic and safety benefits up to 2037.
2. The benefits associated with Option 14 would be achieved at a lower environmental impact and cost than Option 9; including its impact on the SPA.
3. This should be accompanied with widening of the A3 between Ockham interchange and Painshill interchange from D3AP to D4AP. The A3 within M25 junction 10 is to remain D2AP.

3.4.28 However, it was recognised that there would still be a significant environmental impact with Option 14, including (based on measurements of the scheme at that stage) a 3ha loss of land within the SPA Special Protection Area land, although the loss would be substantially smaller than with Option 9 which would see an SPA loss of 11.5ha.

Further refinement of Option 14

3.4.29 Throughout PCF Stage 3 the design has been challenged to reduce the impact on the SPA and prove that no feasible alternative exists which takes more land. These changes have focuses on two main elements of the proposed elongated roundabout: The circulatory carriageway and the M25 clockwise on-slips.

3.4.30 The extent of the elongation of the M25 junction 10 interchange has reduced on the side of the western elongation.

3.4.31 The junction 10 slip road design was amended during the design development that reduced the width and length of the slip roads by changing from a three lane merge (TD 39/94 Figure 4/2a) to a two lane merge (TD 22/06 Type H with extended auxiliary lane) that narrowed and shortened the slip road by approximately 150m.

3.5. Consideration of feasible alternative solutions in terms of scale of effect on the SPA

3.5.1 For the reasons explained above, the 'do nothing' option was not considered a feasible alternative solution. Furthermore, at PCF Stage 0 it was demonstrated that strategic alternatives such as modal shift and demand management would not meet the project objectives so, were not feasible alternative solutions.

- 3.5.2 During PCF Stage 1 a total of 21 approaches to junction alterations were developed and considered, ten were identified as being feasible in traffic terms and of those, three were shortlisted for further development. None of those seven feasible options that were rejected would have had a lesser impact on the integrity of the SPA. Of those three that were selected, Option 16 was quickly rejected at the start of PCF Stage 2 as its environmental impact was very significant and it did not provide a better economic return than Option 9.
- 3.5.3 In deciding which of the three options to pursue after Stage 2 consideration was given to the 'relative performance with regard to the conservation objectives of the Natura 2000 site, the site's integrity and its contribution to the overall coherence of the Natura 2000 Network' as required by the Habitats Directive. In relation to this it was considered that, although the loss of woodland habitat from the different options may not lead a physical reduction in the number or distribution of SPA qualifying species, it would reduce the overall size of the SPA. The land take would therefore result in a reduction in the habitats that contribute to the overall fabric of the SPA (for example, providing a woodland buffer between the roads and the open heathland areas) and may result in a reduction in invertebrate resource for the SPA qualifying species.
- 3.5.4 The loss of invertebrate resources could have an impact on the following targets identified in the Natural England Supplementary Advice on Conserving and Restoring Features, and thus interrupt progress towards achieving the conservation objectives of the SPA:
1. Food availability: Maintain or restore the distribution, abundance and availability of key prey items at prey sizes preferred by all three of the qualifying features;
 2. Extent and distribution of supporting habitat for the breeding season: Maintain the extent, distribution and availability of suitable breeding habitat which supports each of the three qualifying features for all necessary stages of their breeding cycle (courtship, nesting, feeding and roosting).
- 3.5.5 Therefore, an option where land take was kept to a minimum to protect the conservation objectives of the SPA and avoid an adverse effect on the integrity of the SPA would be preferred.
- 3.5.6 In PCF Stage 2 effort was made to reduce the environmental impact of Option 9 and improve the traffic performance of Option 14. Whilst it was possible to improve the traffic performance of Option 14 to a level comparable of Option 9, it was not possible to materially reduce the environmental impact of Option 9. Therefore Option 14 was selected as it met the scheme objectives and involved less loss of land from the SPA than Option 9.
- 3.5.7 In addition to the formal option appraisal, the environment and engineering design team undertook a 'step back' review in November 2018, to consider whether there could be additional alternative solutions that had not been identified in previous option appraisal stages. No feasible alternative solution was identified. The key ideas explored are summarised below:
1. Replacing the existing junction with one in tunnel. This would be a substantially more expensive option than the proposal and would not be possible within the RIS scheme budget. There would be environmental

benefits with this option as it would reduce existing barriers to species' movements, but also disbenefits as there would be additional land take for temporary diversion during work, potentially including additional temporary land take within the SPA. In engineering terms this is not a feasible solution, as this would be an extensive structure underground in water-bearing clay, requiring pumping measures to deal with seepage into the infrastructure and draining rainwater that would flow into the tunnel system. There would also be safety implications of placing such a large junction underground.

2. Shifting the whole alignment north so land take is in land that is SSSI but not SPA. This would be a substantially more expensive option than the proposal and would not be possible within the RIS scheme budget. This would not avoid loss of land take in the SPA completely as the A3 widening would still be required. This could be possible in engineering terms, but it would require remodelling of the M25 to the east and west far beyond the existing scheme boundary. It would also reduce the weaving distance between Painshill junction and M25 junction 10, which already requires a departure in the proposed scheme. In addition to increased loss within the SSSI there would be likely to be increased loss of ancient woodland (an irreplaceable habitat, the loss of which has been minimised as far as practicable in the current design) and potential additional impacts on a Scheduled Monument and the settings of two listed buildings and a grade I registered park and garden.
3. A junction-wide speed reduction. This could benefit safety at certain times of day, but would not improve junction capacity and could increase delays. In practice, the accident profile follows the traffic profile, with fewer collisions at night when demand is lowest, and speeds are highest.
4. Fundamental remodelling of the junction to create a staggered junction (as at junction 9). This would be a substantially more expensive option than the proposal and would not be possible within the RIS scheme budget. Junction 10 is a core radial junction, and while alternative designs are possible at more minor junctions such as junction 9 they would not meet capacity requirements. It would also require extensive new infrastructure around the new junction, so land take within the SPA could increase.
5. Double-decking the road. This would be a substantially more expensive option than the proposal and would not be possible within the RIS scheme budget. It would also be likely to involve additional land take from the SPA and other areas because of the additional complexity and height required.
6. Strategic re-routing of traffic to alternative junctions combined with minor alterations at junction 10. No potential ways this could resolve the capacity issue have been identified. Junction 10 between the M25 and A3 is a core radial junction. The neighbouring junctions are more minor and would not have the same capacity or provide for travellers' journey aspirations.
7. Minor works at junction 10 with a new junction with the A245. This would not be possible within the RIS scheme budget. The A245 only takes a small proportion of the traffic, and junction 10 is already at capacity, so this would not resolve traffic flow or safety issues.

3.5.8 During preliminary design, components of the design have been challenged by the environment and engineering design teams to minimise habitat loss within

the SPA, recognising that to be robust this must take account of both permanent and temporary land take. The design identification and development stage identified and appraised various options for the scheme components that do and do not form part of the SRN in order to reduce the land take from and impact on the SPA. These scheme components comprised:

- The elongated roundabout and slips
- Side Roads and Private Means of Access (PMAs)
- Non-motorised User (NMU) routes
- Bridges
- Construction compounds and temporary works

3.5.9 Further detail on these is provided in Appendix B.

3.6. Conclusion

3.6.1 During the scheme development process a very wide range of alternative solutions to resolving the problems at junction 10 have been identified, developed, considered and assessed. This has included options that would not have required physical works within the SPA but those were not deemed feasible.

3.6.2 The process of option development and assessment has continued through to the preliminary design of individual scheme components so that there can be confidence that the least damaging feasible alternative has been developed.

3.6.3 No feasible, less-damaging alternatives have been identified during option appraisal and design evolution that would meet the objectives of the Scheme but result in a lesser effect on the integrity of the SPA. As such this satisfies the test set out in the Habitats Directive and Habitats Regulations.

4. HRA Stage 4: imperative reasons of overriding public interest (IROPI)

- 4.1.1 The Secretary of State (as the competent authority under the Habitats Directive and Habitats Regulations) will need to decide whether there are IROPI that justify undertaking this Scheme notwithstanding the adverse effect on the integrity of the SPA, this section sets out relevant information to inform this decision.
- 4.1.2 Under article 6 of the Habitats Directive, the nature of the IROPI that a competent authority can consider will depend on the nature of the site that will be affected:
1. If the site concerned hosts a priority habitat or species, the competent authority can only consider IROPI relating to human health, public safety, or beneficial consequences of primary importance to the environment (or other reasons only after having regard to the opinion of the European Commission). Annex 1 of the Habitats Directive indicate the European Sites that host priority habitats and species in England.
 2. For other sites, the competent authority can consider IROPI that include those relating to social or economic benefit, in addition to those of human health, public safety, or beneficial consequences of primary importance to the environment.
- 4.1.3 In accordance with the European Commission guidance on article 6, when assessing whether there are IROPI a competent authority must consider whether all three elements of IROPI are met:
1. Imperative: the plan or project is necessary (whether urgent or otherwise) for one or more of the reasons outlined above.
 2. Overriding: the interest served by the plan or project outweighs the harm to the integrity of the site as assessed in light of the weight to be given to the protection of such sites under the directive.
 3. Public Interest: a public good is delivered rather than a solely private interest. Public interest can occur at national, regional or even local level, provided the other elements of the test are met.

4.2. Priority habitats and species

- 4.2.1 There are no priority habitats or species within the Ockham and Wisley Commons SSSI component of the Thames Basin Heaths SPA. Therefore, the IROPI for the Scheme can include consideration of social or economic benefit provided by the Scheme.

4.3. Reasons for the Scheme

Social or economic reasons

- 4.3.1 The current capacity of junction 10 and the congestion at and between the three junctions has a substantial adverse effect on the traffic flow of this part of the

SRN and contributes to many of the safety issues outlined in Chapter 3. Therefore, an improvement in traffic flows is a key reason for the project. This would constitute a reason of both a social and an economic nature and also improve safety. These reasons are explained in more detail below.

Improvements to network capacity and traffic flow

- 4.3.2 The impact of the scheme on the highway network and traffic flow has been assessed with the M25 junction 10 strategic highway model. This enables a comparison of traffic flows and conditions between a scenario without the scheme (Do Minimum) and a scenario with the scheme (Do Something).
- 4.3.3 At M25 junction 10 the modelling shows that the scheme is predicted to allow for increased throughput at the junction compared to a without scheme scenario. By 2037, with the Scheme vehicles entering the junction from the A3 over the course of a day will rise to 67,000 (14% increase from the without scheme scenario) and from the M25 will rise to 64,000 (16% increase from the without scheme scenario). In the average AM peak hour, the project will allow an additional 2,200 additional trips (a 28% increase) to travel through the junction, indicating that the project has led to a considerable improvement in capacity (Appendix C).
- 4.3.4 Modelling of M25 junction 10¹⁷ shows that throughout the design life of the Scheme, all entries and circulatory links will operate within capacity – a contrast to the existing operation of the junction as discussed in Section 8.
- 4.3.5 The scheme will improve the operation of the Painshill and Ockham Park junctions compared to the without intervention scenario, which will in turn, improve traffic flow between local communities along the local roads that cross the A3 at these junctions¹⁸.
- 4.3.6 The additional highway capacity provided by the Scheme can be directly linked to the likelihood that planned growth in the area can be feasibly delivered, as noted in the Surrey County Council Local Strategic Statement:
- “securing upgrades to the A3 through Guildford and the A3/M25 junction 10 at Wisley are crucial to the future growth of the area”* ¹⁹
- 4.3.7 An aim of the scheme is to provide additional capacity on the SRN so that, once implemented, highway users will choose the strategic routes (the M25 and A3) over local roads for a longer proportion of their journey. The highway modelling undertaken for assessing the scheme shows that the cumulative number of kilometres travelled by vehicles on the Local Authority controlled roads (i.e. those that do not form part of the SRN) in the vicinity of the scheme will reduce following implementation of the scheme²⁰.

Improved public safety

- 4.3.8 The scheme is projected to result in a reduction of accidents by introducing operational improvements that alleviate or reduce the conflicts or congestion that contribute to the likelihood of accidents occurring, including:

¹⁷ HE551522-ATK-GEN-XX-RP-TR-000002

¹⁸ HE551522-ATK-GEN-XX-RP-TR-000002

¹⁹ <https://www.surreycc.gov.uk/land-planning-and-development/planning/introduction-to-planning/strategic-development-policy>

²⁰ HE551522-ATK-GEN-XX-RP-TR-000002

1. Free-flowing left turns at M25 junction 10.
2. Additional lanes on junction 10 with increased approach lengths to the signals, which will reduce the conflict between traffic entering and leaving the gyratory.
3. Improvements of geometry at the M25 junction 10 roundabout and slip roads.
4. Widening the A3 between the three junctions to reduce lane congestion and provide increased safety for weaving movements.
5. Improved and longer merge links, providing increased safety for weaving movements.
6. Closing side-road and private accesses on the A3 carriageways (such as Wisley Lane and Elm Lane) and provision of safer, alternative routes via the amended local road network.
7. Closing laybys on the A3 carriageways between Painshill and Ockham Park junctions.
8. Improvements at Painshill junction, including two dedicated left turn lanes.
9. Improvements at the A245 / Seven Hills Road junction, which is currently an accident hotspot.
10. Improvements at Ockham Park junction, including traffic signals.
11. Removal of non-motorised users from the A3 carriageway and verges between Painshill and Burnt Common junctions, and from junction 10, with provision of suitable alternative routes along local roads and/or separate new rights of way.
12. Provision of signalised crossings to assist with NMU movements at Painshill and Ockham Park junctions.

4.3.9 The DfT's COBA-LT software has been used to capture the accident impacts over the 60 year period following implementation of the Scheme, covering the affected road network (Appendix E). Across the whole of the affected road network, the scheme is anticipated to result in a reduction in accidents of 5% compared to the without intervention scenario - an average of 10 accidents per year²¹. At a more local level the Scheme is anticipated to have the following benefits:

1. Reduce accidents among users of M25 junction 10 by 30%.
2. Reduce accidents on the A3 mainline between Painshill and Ockham Park junctions by 24%.
3. Reduce accidents on the M25 mainline by 2%.

Economic benefits

User and transport related benefits

4.3.10 The benefits of the scheme on the public purse have been determined using the criteria specified in the DfT's web-based Transport Appraisal Guidance

²¹ HE551522-ATK-GEN-XX-RP-TR-000003

(webTAG). Using the tools and methods prescribed in webTAG has resulted in a calculation of the total monetised benefit of the scheme as being approximately £400 million (Present Value) over a 60-year appraisal period.

4.3.11 The total economic benefit is made up from:

1. £323 million (PV) from journey time savings and vehicle operating costs
2. £45 million (PV) from a reduction in accidents
3. £29 million (PV) from indirect tax revenues
4. £0.3 million (PV) from transport related environmental impacts (air quality, greenhouse gases and noise)

Supporting growth and development

- 4.3.12 The vision and the aims of the Surrey Transport Plan 2011 – 2026, Elmbridge Core Strategy 2011 Policy CS2 (Housing provision, location and distribution) and CS25 (Travel and Accessibility), Guildford Borough Council Submission Local Plan 2017 emerging Policy S2 (Planning for the borough - our spatial development strategy) and, in particular, the direct support of the Scheme in emerging Policies ID1 (Infrastructure and Delivery) and ID2 (Supporting the Department for Transport's Road Investment Strategy) all demonstrate that the proposed Scheme will be in the interests of the wider public. Policy ID1 identifies the Scheme in an Infrastructure Schedule that details the key infrastructure on which the delivery of the Plan depends.
- 4.3.13 The scheme will add capacity to the junction, improve the safety for road users, will be of benefit to existing and future residents and businesses and will unlock capacity for growth that would otherwise be restricted by the existing congestion and safety issues at M25 junction 10.
- 4.3.14 The local planning authorities of Guildford and Elmbridge within Surrey have, in part, predicated planning policy on the assumption that Highways England will deliver the improvement at M25 junction 10 as programmed in the RIS register.
- 4.3.15 Whilst a specific quantification cannot be given to how growth will be reduced in the event of the scheme not going ahead, the Surrey Infrastructure Plan, Surrey Local Strategic Statement and emerging Guildford Local Plan all state that the scheme is necessary if the planning authorities are to be able to deliver their planned growth. The economic success of Surrey is of importance to the UK economy and road improvements are essential to respond to development pressures and accommodate the extra journeys that new residential and commercial developments will create.

Human health

- 4.3.16 The principal benefits to human health will be from provision of better access to and around the areas of the scheme for non-motorised users (NMUs) and improved access to the area of common land and open space. The current facilities for NMUs to cross or use the SRN in this area are limited:
1. Along the A3 there is a narrow shared-use (pedestrian and cycle) path alongside or very close to the southbound carriageway or slip roads, which crosses junction 10 by means of the traffic signals at the stop line of each off-

slip and a path around the inside of the gyratory. This route is noisy, unattractive and feels unsafe, and crossing junction 10 is slow.

2. Bridleway 12 crosses at junction 10 in the same way, plus a Pegasus signal-controlled crossing on the A3 northbound on-slip.
3. Bridleway 8 crosses the M25 at Clearmount bridge to the west of junction 10, and Footpath 17 crosses Cockcrow bridge to the south of junction 10 but does not connect to other PRoW to the north. Bridleway 69 crosses the M25 at Hatchford Park bridge, about 1.2 km east of junction 10. A footbridge with stepped ramps crosses the A3 between Wisley Lane and Elm Lane.
4. There is a surfaced verge around the south side of Painshill junction roundabout, with crossing points at the slip roads but no signals. There is a surfaced verge around the north side of Ockham Park junction roundabout.

4.3.17 The scheme will deliver a substantial improvement in the ability of NMUs to move around the locality of the scheme and along the A3 corridor, as well as improving the attractiveness of these routes and so facilitating increased use. The principal elements of this improvement are:

1. Replacement of the existing bridges with NMU facilities at Clearmount and Cockcrow with new bridges over the widened SRN carriageways.
2. New NMU-only bridges over the A3 at Red Hill and over the M25 at Sandpit Hill, so providing grade-separated crossings over the SRN in all four directions from junction 10.
3. A new local road and bridleway crossing over the A3 at Wisley Lane.
4. A new shared-use route (pedestrian, cyclist and equestrian) along the A3 corridor (but segregated from the SRN) between Ockham Park junction and Painshill junction - including lengths along the new Wisley Lane diversion and Seven Hills Road (South). This route will include a surface suitable for road cyclists.
5. New bridleways (connected to the shared-use route above) designated along existing tracks between Cockcrow bridge, Clearmount bridge and Red Hill bridge, between Sandpit Hill bridge and Hatchford Park bridge and along Pointers Road.
6. New bridleways or footpaths to and across areas of replacement land.
7. Footpath diversions to avoid leaving dead-end routes.
8. Signalised crossing points at Ockham Park junction to enable sustainable trips between Ripley, Ockham, Wisley Airfield and the surrounding open land.

4.3.18 These improvements to non-motorised user infrastructure will be complementary to improvements in the wider area being considered by the local highway authority and to NMU facilities expected to be included in potential developments in the locality.

4.3.19 The replacement land required as part of the scheme will increase the expanse of land with public access around the junction 10 area, and the improved network of local roads and PRoW will enhance the ability of residents in the vicinity to access this enlarged area, without the need to drive.

Beneficial consequences of primary importance to the environment

- 4.3.20 The Scheme includes the provision of substantial areas of replacement common and open space land, to replace areas of common and open space land required for the Scheme. The provision of replacement land is made pursuant to sections 131 and 132 Planning Act 2008. Whilst this provision is not primarily for biodiversity benefit, it does provide a significant opportunity for approximately 44 ha of land to be brought under management as part of the wider estate of land with public access that includes the SPA and SSSI, as well as to incorporate measures that enhance the biodiversity of the land and improve its ability to support the habitats and species in the adjacent areas of SPA and SSSI.
- 4.3.21 The Scheme includes a 'green bridge' extension to Cockcrow bridge. A separate designated funds application will be made by the project team to secure additional funding from Highways England for this, as a replacement for the demolition of the existing Footpath 17 Cockcrow overbridge.
- 4.3.22 The 'green bridge' would act to create a habitat link between the two parts of the SPA, reducing the severance caused by the A3 running across the commons between the two main areas of heathland habitat. The additional space required to include the wider bridge deck and approaches would not need any land take beyond that required for the construction of the highways and associated works, so its initial effect on the SPA would be neutral. However, while this new link would not benefit the SPA qualifying bird species directly, it would benefit the habitats and species of the component SSSI and wider biodiversity and provides the focus for creating a habitat link between the two heathland areas, in combination with the woodland clearance works included in the suite of compensatory measures outlined in section 5. As this green bridge element is subject to separate funding it is not counted as part of the IROPI, but this opportunity provided by the Scheme is reported here for completeness of information.

4.4. Consideration of the reasons

- 4.4.1 The text below explores the reasons for the scheme in terms of whether they are imperative, whether they are overriding and whether they are in the long-term public interest. However, it is for the Inspectorate as competent authority to determine whether the reasons for the scheme constitute IROPI.

Are the reasons imperative?

- 4.4.2 As described in Section 3.2, many links on the existing M25 junction 10 and its approaches are significantly over-capacity in the baseline (2015) scenario, which leads to regular congestion and has an adverse effect on the frequency of accidents on this part of the SRN. Forecast traffic levels on the SRN for 2037 would exacerbate these problems as they show increased flows on the M25 by up to 24% and on the A3 by up to 40%, with delays at junction 10 increasing by 39% in the am peak and 53% in the pm peak. Therefore, failure to proceed would have considerable adverse social and/or economic consequences.

- 4.4.3 Furthermore, the M25 junction 10 is positioned on a critical section of the Strategic Road Network (SRN). The south-western part of the M25 is the busiest part of the SRN and the M25 forms part of the nationally important 'Ten-T' Trans-European Transport Network. The A3 is an important strategic route, linking London with Portsmouth and Guildford, which is the largest centre of employment in Surrey. Therefore, the Scheme is required to ensure that this node in the SRN can continue to function properly to support strategic economic development or regeneration.
- 4.4.4 As well as these issues at junction 10 the imperative need for the Scheme is supported by its identification in national policy in various forms as set out below. The Scheme is supported at various policy levels. A summary of relevant policy is provided in Appendix F. Key policy documents relevant to the Road Investment Strategy and this Scheme are noted below.
- 4.4.5 The NPSNN sets out the national policy for schemes such as the M25 junction 10/A3 Wisley interchange improvements. The NPSNN should be referred to as background, but the following extract regarding the importance of the Strategic Road Network is provided for ease of reference.

"2.10 The Government has therefore concluded that at a strategic level there is a compelling need for development of the national networks – both as individual networks and as an integrated system. The Examining Authority and the Secretary of State should therefore start their assessment of applications for infrastructure covered by this NPS on that basis."

.....

"Importance of the national road network

2.12 Roads are the most heavily used mode of transport in England and a crucial part of the transport network. By volume roads account for 90% of passenger miles and two thirds of freight. Every year road users travel more than 431 billion miles by road in Great Britain.

2.13 The Strategic Road Network provides critical links between cities, joins up communities, connects our major ports, airports and rail terminals. It provides a vital role in people's journeys, and drives prosperity by supporting new and existing development, encouraging trade and attracting investment. A well-functioning Strategic Road Network is critical in enabling safe and reliable journeys and the movement of goods in support of the national and regional economies.

2.14 The Strategic Road Network, although only making up 2% of roads in England, carries a third of all road traffic and two thirds of freight traffic. Some 85% of the public use the network as drivers or passengers in any 12-month period. Even those that never drive on the Strategic Road Network are reliant on it to deliver many of the goods that they need."

Department for Transport Single Departmental Plan (2015 – 2020 February 2015)

- 4.4.6 The Department for Transport published its single departmental plan in February 2016 (updated in May 2018) identifying the need to make journeys better, simpler, faster and more reliable and to support jobs, enable business growth, and bring the country closer together. The statements about how the plan's

objectives will be met include the following:

“Deliver the first Road Investment Strategy, comprising over 100 major road projects including major upgrades to the A303, A14 and new Lower Thames Crossing, and consult on the second Road Investment Strategy.”²²

- 4.4.7 M25 junction 10 A3 Wisley interchange improvements forms one of those 100 schemes.

Road Investment Strategy 1

- 4.4.8 The Government sets out its long-term investment plan in the road network, and particularly the Strategic Road Network, in the Road Investment Strategy 2015-2020 (RIS), which was published in December 2014 and was last updated in November 2016. The “Strategic Vision” within Part 1 of the RIS advises that it expects Highways England to:
- 4.4.9 “Make the network safer and improve user satisfaction, while smoothing traffic flow and encouraging economic growth. We want to see [the Applicant] delivering better environmental outcomes and helping cyclists, walkers, and other vulnerable users of the network at the same as time as achieving real efficiency and keeping the network in good condition.”
- 4.4.10 This vision includes both the SRN improvements and improvements to the local road and PRoW network in the imperative nature of the Scheme.
- 4.4.11 In March 2015 the RIS for the period 2015/16 - 2019/20 was presented to Parliament. The RIS 1 outlines a long-term programme for our motorways and major roads to be supported with a stable funding stream to plan for future conditions. All committed Schemes in the RIS are intended to enter construction during the plan period; i.e. before 31 March 2020.
- 4.4.12 The RIS 1 comprises:
1. a long-term vision for England’s motorways and major roads, outlining how smooth, smart and sustainable roads will be created
 2. a multi-year investment plan that will be used to improve the network and create better roads for users
 3. high-level objectives for the first roads period 2015 to 2020
- 4.4.13 The government agreed to establish the RIS 1.

Highways England Strategic Business Plan 2015 – 2020

- 4.4.14 The Highways England’s Strategic Business Plan (2015-2020) sets out the outcomes, Key Performance Indicators and associated targets for the Road Investment Strategy (RIS) schemes. The Business Plan recognises that the Strategic Road Network acts a key enabler of economic growth and prosperity and contributes significantly to people’s quality of life. Page 10 of the Business Plan states that ‘tackling congestion and delay, and providing better connections are at the forefront of our plans to provide a modern network that supports a modern economy’. This closely aligns with the problems being addressed by the

²² <https://www.gov.uk/government/publications/department-for-transport-single-departmental-plan/department-for-transport-single-departmental-plan-may-2018#make-journeys-easier-modern-and-reliable> accessed 7/11/18

Scheme.

- 4.4.15 Appendix II – Investment Mapping (pages 48 and 49) of the Business Plan lists schemes proposed for the South-East of England and project (7) is identified as improvements to M25 junction 10/A3 Wisley interchange, albeit omitting works at Ockham Park junction. Page 21 of the Business Plan advises that Route Strategies will be published containing the delivery plans for the next five years and giving a clear indication of the priorities.

Highways England Delivery Plan 2015 – 2020

- 4.4.16 The Highways England Delivery Plan builds on the Strategic Business Plan (SBP) which was published in response to the Government's RIS and sets out the how each of the strategic outcomes will be delivered. The strategic outcomes identified include:
1. Supporting economic growth – through a modernised and reliable network that reduces delay, creates jobs and helps business compete, and opens up new areas for development.
 2. Safe and serviceable network – where no one should be harmed when working or travelling on the network.
 3. More free-flowing network – where routine delays are more infrequent, and where journeys are safer and more reliable.
 4. Improved environment – where the impact of our activities is further reduced ensuring a long-term and sustainable benefit to the environment.
 5. More accessible and integrated network – that gives people the freedom to choose their mode of transport and enable safe movement across and alongside the network.
- 4.4.17 To measure the success of these outcomes the Delivery Plan also identifies a series of KPIs and associated targets. Many of these complement the outcomes that are set out within the RIS and these have been key in the identification, development, assessment and selection of the options for improving the M25 junction 10 improvements. The Scheme objectives correspond with the aims set out above.

Investing in Britain's Future (June 2013)

- 4.4.18 Investing in Britain's Future (IBF), published by HM Treasury in June 2013, sets out the Government's intention to build a strong UK economy by delivering infrastructure that competes with the best in the world.
- 4.4.19 Section 2 of the document states that:
- "Government intends to invest £28 billion on enhancements and maintenance of national and local roads to... build all available Highways Agency road projects, tackling the most congested parts of the network... [and] ...identify and fund solutions to tackle some of the most notorious and longstanding road hot spots in the country...[and] ...upgrade the national non-motorway network managed by the Highways Agency with a large proportion moved to dual-lane and grade separated road standard to ensure free-flowing traffic nationwide".*
- 4.4.20 The Scheme and its inherent compensation and mitigation measures have been

developed in response to the policies set out in the NPSNN and in response to development plan policies and designations where they are relevant. Further details on relevant local policies that add weight to the need for the Scheme are included in Appendix F.

4.4.21 In summary, there is an imperative need for the Scheme.

Are the reasons overriding?

4.4.22 When deciding whether the reasons are overriding, the Secretary of State will consider the benefits of the Scheme and the reasons for it against the predicted impact on the integrity of the SPA. The conclusion of this HRA is that there are IROPI such that consent for the Scheme may be granted, notwithstanding the adverse effect on the integrity of the SPA.

4.4.23 No likely significant effects have been identified in relation to any Natura 2000 site or Ramsar sites, or candidate sites, apart from the Thames Basin Heaths SPA. The qualifying features of this SPA are not priority habitats or species under Annex 1.

4.4.24 It has been concluded that potential impacts on the integrity of the Wisley and Ockham Commons component of the Thames Basin Heaths SPA cannot be ruled out beyond scientific doubt.

4.4.25 These impacts are caused by the permanent loss of 5.9 ha of SPA land and temporary loss of 8.6 ha of SPA land. These losses will be from the fringes of the SPA adjacent to the existing SRN and are not predicted to affect the breeding sites or core foraging, nesting or roosting habitat of any of the three bird species that are qualifying features of the SPA. The losses are not predicted to result in any reduction of the number of breeding territories of any of the three SPA bird species within the component Wisley and Ockham Commons SSSI or the wider SPA. However, it is recognised that the invertebrate community these birds feed on will be supported by the wider invertebrate community of the whole SPA and therefore there is potential for a reduction in the invertebrate resource supporting the breeding success of the SPA birds within the component SSSI, although not any of the other component SSSIs. The land lost temporarily will be restored as part of the Scheme.

4.4.26 The primary reason for the Scheme is improvement in traffic flows, which will have knock on benefits such as improving transport links for local businesses. The other reason is improving the safety of the junction and associated road network, as the Scheme is predicted to result in a significant percentage reduction in accidents at junction 10 and along this part of the A3 and reductions elsewhere on the associated road network, resulting in a benefit equivalent to £45 million over a 60 year period, compared to the predicted figures if the Scheme is not undertaken as well improvements to the safety of road users (Appendix D).

4.4.27 In summary, the benefits of the Scheme override the harm to the SPA.

Are the reasons in the long-term public interest?

4.4.28 The Scheme is a long-term infrastructure project in the public interest for the benefit of road users, users of public rights of way, and people living and working

in the area. Nonetheless, many private interests would also benefit where, for example, businesses using the transport network would have reduced transport delays. The economic appraisal is based on a 60-year period. The predictions of traffic flow improvements consider immediate improvements and long-term ones, based on modelling of traffic in 2037.

- 4.4.29 The long-term public interest is also demonstrated by the support for the Scheme in national and local policy.
- 4.4.30 In summary, the Scheme is in the long-term public interest..
- 4.4.31 It has been demonstrated that there are imperative reasons of overriding public interest such that consent for the Scheme may be given notwithstanding the adverse effects on the integrity of the SPA.

5. HRA Stage 5: compensatory measures

5.1. Strategy and approach

- 5.1.1 The SIAA for the project has ascertained that there will be no adverse effect on the integrity of the Thames Basin Heaths SPA as a result of degradation of habitats (by changes in air quality and/or hydrology), disturbance (by changes in noise, recreational use and/or lighting) or by the spread of non-native invasive plants species. The SIAA has taken into account the mitigation measures for the Scheme.
- 5.1.2 Mitigation measures are an integral part of the specifications of a plan or project, whereas compensatory measures are independent of the project.
- 5.1.3 Case law has established that where a project requires the permanent or temporary loss of areas of a European site, ensuring that those areas could no longer be suitable for the qualifying species, then any measures to ensure that the parts of the site that are likely to provide suitable habitat will not be reduced and indeed may be enhanced, may not be considered under Article 6(3) of the Habitats directive (i.e. as mitigation during the SIAA), but instead must be considered as compensatory measures under Article 6(4)²³.
- 5.1.4 The compensatory measures are intended to offset the negative effects of the plan or project, after mitigation, so that the overall coherence of the Natura 2000 Network is maintained.
- “The compensatory measures *sensu stricto* have to ensure the maintenance of the contribution of a site to the favourable conservation status of natural habitats types and habitats of species “within the biogeographical region concerned”.²⁴
- 5.1.5 The suite of compensatory measures proposed for this Scheme are intended to offset the negative effects of the Scheme (after mitigation).
- 5.1.6 The permanent loss of 5.9 ha of the Thames Basin Heaths SPA, and temporary loss of 8.6 ha, will be confined to the woodland edge of the SPA and therefore will not directly affect the heathland habitats nor the qualifying species that they support (refer to section 4.7 of Habitat Regulations Assessment Stage 2: statement to inform appropriate assessment (application document TR010030/APP/5.3) for a discussion on the functionally linked habitats that the qualifying species will utilise).
- 5.1.7 Although the loss of this woodland habitat will not lead to a physical reduction in the number or distribution of qualifying species, this land take will reduce the overall size of the SPA. The land take will therefore result in a reduction in the supporting habitat of the SPA (for example, providing a woodland buffer between the roads and the open heathland areas) and the invertebrate resource for the wider SPA (and possibly the SPA qualifying species).
- 5.1.8 Therefore, the suite of compensatory measures need to compensate for the loss of SPA land and for potential reductions in invertebrate resource within the SPA.
- 5.1.9 The suite of compensatory measures proposed are two-fold:

²³ Case C-164/17 Grace and Sweetman v An Bord Pleanála (refer to paragraph 57)

²⁴ European Commission (2007) Guidance document on Article 6(4) of the ‘Habitats Directive’ 92/43/EEC

1. Provision of SPA compensation land
2. SPA enhancement areas

- 5.1.10 The SPA compensation land will be recorded by the Natural England GIS database as SPA land and will be shown on the Multi-Agency Geographic Information for the Countryside (MAGIC) system. This will ensure that the SPA compensation land is given the same protection as SPA land (i.e. protected as a European Site) with regards to future planning proposals.
- 5.1.11 The SPA enhancement areas are within the SPA and are already afforded protection as a European Site.
- 5.1.12 The SPA compensation land and SPA enhancement areas are within the DCO boundary and are therefore secured as part of the Scheme. The DCO includes the necessary land and rights acquisition powers to ensure that the SPA compensation land can be acquired by Highways England and that Highways England can ensure the delivery of the SPA enhancement measures.

Consultation

- 5.1.13 The design of the suite of compensatory measures, including the selection of land parcels, appropriate ratios and management measures was undertaken and agreed under consultation with Natural England, Forestry Commission, SWT, RSPB and Surrey County Council.
- 5.1.14 Please refer to HRA consultation report (application document TR010030/APP/5.3) in Annex B of Habitat Regulations Assessment Stage 2: statement to inform appropriate assessment (application document TR010030/APP/5.3) for details of the consultation with stakeholders with regards to the suite of compensatory measures.
- 5.1.15 Please refer to Suite of compensatory measures selection process (application document TR010030/APP/5.3) in Annex C of Habitat Regulations Assessment Stage 2: statement to inform appropriate assessment (application document TR010030/APP/5.3) for a detailed explanation of the stakeholder engagement and decision process behind the creation of the suite of compensatory measures.

Ratios

- 5.1.16 The Scheme will require the permanent loss of 5.9 ha of SPA land and the temporary loss of 8.6 ha of SPA land, totalling an overall footprint of 14.5 ha of SPA land take.
- 5.1.17 A SPA compensation land ratio of 1:1 for the 5.9 ha of permanent land take, and an SPA enhancement area ratio of 3:1 for the permanent and temporary land take is proposed. This is additional to the restoration of the areas of temporary land take.
- 5.1.18 The broad principle Highways England are pursuing for SPA compensation land for the SPA is a 1:1 ratio for the areas of permanent loss, in order to avoid a reduction in the area of the SPA.
- 5.1.19 In contrast a precautionary approach was taken to the enhancement of land within the SPA. Research undertaken by Atkins and the stakeholders (Natural

England, SWT and RSPB) has identified that the appropriate enhancement ratio can vary greatly between schemes. Based on the present nature of the habitat being lost within the SPA (i.e. woodland habitat that does not directly support any qualifying species, but may contribute to the invertebrate food resource within the SPA) it has been proposed that a 3:1 enhancement ratio would be appropriate (i.e. for every hectare of permanent and temporary land take within the SPA, three hectares of enhancement area will be created within the SPA).

- 5.1.20 These ratios have been agreed with stakeholders (Natural England²⁵, SWT and the RSPB²⁶).
- 5.1.21 The ratios within the suite of SPA compensation measures are designed to ensure with confidence that all of the negative effects of the Scheme are offset. The 3:1 ratios proposed for the SPA enhancement areas are also supported by the European Commission guidance document on article 6(4) of the Habitats Directive 92/43/EEC²⁷, which states in section 1.5.4 that:
- 5.1.22 “There is wide acknowledgement that compensation ratios should be generally well above 1:1. Thus compensation ratios of 1:1 or below should only be considered when it is demonstrated that, with such an extent, the measures will be 100% effective in reinstating structure and functionality within a short period of time (e.g. without compromising the preservation of the habitats or the populations of key species likely to be affected by the plan or project).”
- 5.1.23 The Scheme will lead to the permanent loss of 5.9 ha of SPA habitat. In order to compensate for this loss of SPA land, two parcels of land immediately adjacent to the Ockham and Wisley Commons SSSI component of the SPA have been identified as compensatory land. These are:
1. Old Lane SPA compensation land; and,
 2. Wisley SPA compensation land.
- 5.1.24 The sum of these areas of land will add up to 8.1 ha, providing a 1:1 compensation for permanent land take from the SPA. Descriptions of these areas and any proposed management measures are included below. The SPA compensation land locations can be seen on Figure 13 of 5.3 Habitats Regulations Assessment Figures (application document TR010030/APP/5.3).
- C1²⁸ Old Lane SPA compensation land (2.0 ha)**
- 5.1.25 This location consists of a grazed grassland field, 2.0 ha in size, surrounded by woodland edge which is directly adjacent to an area of open heathland habitat within the SPA.
- 5.1.26 This field has been under Countryside Stewardship for ten years²⁹ and supports a variety of meadow plants that provide a nectar source for invertebrates when the heathland plants are not in flower.
- 5.1.27 This field would continue to be grazed, but trees would be planted in order to

²⁵ Suite of compensatory measures and ratios agreed during a meeting with Natural England on 9th October 2018

²⁶ Meeting with Surrey Wildlife Trust, Surrey County Council and RSPB on 28th June 2018.

²⁷ European Commission (2007) Guidance document on Article 6(4) of the ‘Habitats Directive’ 92/43/EEC

²⁸ These codes have been provided for convenience when interpreting Figure 15 of 5.3 Habitats Regulations Assessment Figures (application document TR010030/APP/5.3).

²⁹ Confirmed by James Adler, Surrey Wildlife Trust during a meeting on 16th October 2018

increase the invertebrate abundance of this field. This conversion to wood pasture would ensure that the florally diverse grass understory would be retained (providing a nectar resource), but would also enhance the invertebrate assemblage that the field supports by providing 20% canopy cover (based on the coverage of the canopy once the trees have reached maturity).

5.1.28 This wood pasture habitat may provide foraging opportunities for two of the SPA qualifying species, due to its open structure and enhanced invertebrate resource:

1. Nightjar: Studies by Sharps et al.³⁰, and Verstraten et al.³¹ have demonstrated that nightjars select open areas and young woodland (less than 10 years age) for foraging;
2. Woodlark: Woodlarks are known to require open areas with bare ground and short, sparse vegetation for foraging^{32,33}.

5.1.29 Benefits of the Old Lane SPA compensation land for the SPA qualifying species:

1. The increase of trees within the field would increase the invertebrate resource that the field contributes to the wider SPA;
2. The open nature of the wood pasture would ensure that nightjars (and possibly woodlarks – refer to the foraging requirements as discussed in Section 4.7 of the Habitat Regulations Assessment Stage 2: Statement to Inform Appropriate Assessment (application document TR010030/APP/5.3)) will be able to forage, or continue foraging, within the field (should they currently do so), but also that the likelihood that they would use the field for foraging may increase as there will be a greater invertebrate resource within the field.

C2 Wisley SPA compensation land (6.1 ha)

5.1.30 This area currently comprises 6.1 ha of grazed grassland, surrounded by woodland edge which is directly adjacent to an area of open heathland habitat within the SPA (and will be directly linked as part of the SPA enhancement area measures). Refer to Figure 13 of 5.3 Habitats Regulations Assessment Figures (application document TR010030/APP/5.3) for the location of the Wisley SPA compensation land.

5.1.31 This grass field would continue to be grazed, but additional trees would be planted in order to increase the invertebrate abundance of this field. This conversion to wood pasture would ensure that the grass understory would be retained (providing a nectar resource) but would also enhance the invertebrate assemblage that the field supports by providing 20% canopy cover (based on the coverage of the canopy once the trees have reached maturity).

5.1.32 Benefits of the Wisley SPA compensation land for the SPA qualifying species:

³⁰ Sharps, K., Henderson, I., Conway, G., Armour-Chelu, N. and Dolman, P. (2015) Home-range size and habitat use of European Nightjars *Caprimulgus europaeus* nesting in a complex plantation-forest landscape. *Ibis*, 157 (2). pp. 260-272.

³¹ Vertsraeten, G., Baeten, L. and Verheyen, K. (2011) Habitat preferences of European Nightjars *Caprimulgus europaeus* in forests on sandy soils. *Bird Study* Vol 58, Issue 2.

³² Bowden, C (1990) Selection of foraging habitats of woodlark (*Lullula arborea*) nesting in pine plantations. *Journal of Applied Ecology* 27(2): 410.

³³ RSPB Land management for woodlarks (<https://www.rspb.org.uk/our-work/conservation/conservation-and-sustainability/advice/conservation-land-management-advice/woodlarks/>; accessed 13/05/18).

1. The increase of trees within the field would increase the invertebrate resource that the field contributes to the wider SPA;
2. The open nature of the wood pasture would ensure that nightjars (and possibly woodlarks) would be able to forage, or continue foraging, within the field (should they currently do so), but also that the likelihood that they would use the field for foraging may increase as there would be a greater invertebrate resource within the field and an enhanced linkage to the existing open habitats of the SPA due to the opening up of a glade within the E8 Pond Farm west SPA enhancement area (refer to Figure 13 of 5.3 Habitats Regulations Assessment Figures (application document TR010030/APP/5.3)).

SPA compensation land summary

- 5.1.33 The SPA compensation land described above will contribute towards offsetting some of the adverse effects of the Scheme, namely:
1. The permanent loss of 5.9 ha of SPA habitat; and,
 2. The potential reduction in invertebrate resource.
- 5.1.34 However, the SPA compensation land areas will take several years for the planted trees to develop and lead to an enhanced invertebrate resource. In addition, the provision of the SPA compensation land will not offset the loss of 8.6 ha of temporary land take, and once replanted, the temporary land take will take several years to establish and provide an enhanced invertebrate resource.
- 5.1.35 Therefore, in order to ensure that the coherence of the Natura 2000 Network is maintained, additional SPA enhancement areas as set out below are provided as part of the suite of compensatory measures, to ensure that the populations of all three qualifying species within the Ockham and Wisley Commons SSSI component of the SPA remain stable, or even increase.

SPA enhancement areas

- 5.1.36 In addition to the SPA compensation areas described in the previous section, the suite of compensatory measures will also include SPA enhancement areas.
- 5.1.37 As explained in section 1.4.3 of the European Commission Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC, under the Birds Directive³⁴ compensation could include:
- 'work to improve the biological value of an area, which is either designated or will be designated, so that the carrying capacity or food potential are increased by a quantity corresponding to the loss on site affected by the project'.*
- 5.1.38 The SPA enhancement areas will do just this, involving habitat management works that will improve the existing Scots pine dominated mixed woodland habitats within the SPA to benefit the qualifying species in the following ways:
1. Total clearance of approximately 22.5 ha of wooded areas (where only trees with veteran features or potential bat features will be retained) to create open habitat and enable heathland regeneration. This will provide more nesting and foraging habitat for the qualifying species, thus increasing their carrying

³⁴ Directive 2009/147/EC

capacity. The heathland regeneration will provide a much more diverse habitat type for invertebrates, thus increasing the food potential of the qualifying species.

2. Areas of thinning totalling approximately 24.9 ha, where the woodlands will be thinned (focusing on young silver birch trees and Scots pines), to encourage increased woodland diversity and provide more open habitats. The thinning of woodland will create open glades to support foraging qualifying species (particularly nightjar and woodlark) and enable increased diversity (both of species and structure) of the mixed woodland, providing a much more diverse habitat type for invertebrates, thus increasing the food potential of the qualifying species³⁵³⁶.

- 5.1.39 Figure 13 of 5.3 Habitats Regulations Assessment Figures (application document TR010030/APP/5.3) shows the proposed enhancement works locations, and each location is described in detail below.

General principles for the SPA enhancement areas

- 5.1.40 Management objectives in the areas identified for enhancement will specifically focus on creating and maintaining suitable habitat and structural conditions to support the qualifying bird species of the SPA, either by providing nesting or foraging habitat, or by increasing the invertebrate resource of the SPA.
- 5.1.41 Suitable provision will be made to ensure that adequate resources are in place to secure the long-term maintenance of SPA enhancement areas. Refer to Section 5.2 of this report for further details.

Clearance for heathland restoration

- 5.1.42 Woodland will be cleared in order to allow heathland restoration, subject to the approval of the Forestry Commission. However, trees with important features will be retained. These will consist of:
1. Veteran trees and trees with veteran features; and
 2. Trees with potential bat roost features (including dead trees).

Thinning of woodland areas

- 5.1.43 The thinning of woodland areas will be divided into two types of thinning:
- 5.1.44 **Regeneration thinning:** this is the selective felling of parts of a woodland area (retaining all veteran trees or trees with veteran features, trees with bat roost potential and granny trees). This will include measures such as:
1. Creating open patches within the woodland (some of which will be managed to remain open and some will be allowed to regrow with more diverse woodland, both in age and species diversity);

³⁵ A study by Alexander *et al.* (2006) concluded that more diverse woodlands, in terms of spacing as well as variety of tree and shrub species will provide a more varied wildlife habitat. Alexander, K., Butler, J. and Green, T. (2006) The value of different tree and shrub species to wildlife. *British Wildlife* 18(1): 18-28.

³⁶ A study by the Forestry Commission concluded that the most effective way of increasing invertebrate richness within a woodland is to increase habitat variability by ensuring that the forest matrix includes long-term retentions, open spaces, dead wood and wet areas. Humphrey, J., Ferris, R. and Quine, C. (2003) Biodiversity in Britain's planted forests: Results for the Forestry Commission's Biodiversity Assessment Project. Forestry Commission; Edinburgh.

2. Increasing the size of existing open areas;
3. Creating and widening existing glades (some of which may be planted at the edges to provide a shrubby woodland edge habitat, some will be managed as heathland habitat); and
4. Selective felling of some trees and groups of trees, to allow retained trees to flourish³⁷, and encourage a more diverse species assemblage to regrow.

5.1.45 **Standard thinning:** This is a more typical selective thinning, where the number of trees within a woodland is reduced by removing trees (retaining all veteran trees or trees with veteran features, and trees with bat roost potential), allowing the retained trees to flourish and encouraging a more diverse species assemblage to return. This may include some selective planting, where necessary, to increase the species diversity.

E1 - Cockcrow Hill SPA enhancement area (1.9 ha)

- 5.1.46 An area of 1.9 ha of Scots pine-dominated mixed woodland to the north-east of hut hill will undergo total clearance (see Figure 13 of 5.3 Habitats Regulations Assessment Figures (application document TR010030/APP/5.3)).
- 5.1.47 This area of clearance is immediately adjacent to an area of open heathland, and the clearance works will increase the area of continuous open habitat in this location, linking the open habitat with Cockcrow Bridge.
- 5.1.48 This area of total clearance will allow heathland regeneration, increasing the continuous cover of heathland within Wisley Common and thus benefiting the SPA qualifying species.

E2 - Ockham Common / Sand Hill SPA enhancement area (17.3 ha)

- 5.1.49 An area of 17.3 ha of Scots pine-dominated mixed woodland running north-east from the main Ockham Common car park will undergo a mixture of total clearance and thinning (see Figure 13 of 5.3 Habitats Regulations Assessment Figures (application document TR010030/APP/5.3)).
- 5.1.50 This consists of an area of 9.4 ha of woodland to be completely cleared to allow heathland regeneration (which will increase the continuous area of heathland on Ockham Common, whilst also providing a link with Cockcrow bridge) and an area of 7.9 ha of woodland thinning:
 1. The edge between the cleared area and the thinned woodland should be a 'wavy edge' rather than a 'straight edge'. This is because nightjars regularly utilise woodland edges for foraging, and the wavy edge will not only increase the length of available foraging habitat, but will also provide sheltered pockets in differing wind directions;
 2. The area of woodland for clearance will include Sand Hill. The sides of this mound will be felled for heathland regeneration, but the top of the mound will be selectively thinned to leave a number of Scots pine trees;
 3. The area of woodland thinning will be regeneration thinning, with the widening of rides, opening of areas of the woodland, and selective felling of the outer

³⁷ An arboriculturalist will advise on the trees to be retained in order to reduce the risk of wind throw damage.

edge of the woodland to provide a diverse woodland edge effect for foraging nightjars (as mentioned previously, this edge will also be wavy).

- 5.1.51 The band of woodland between Cockcrow bridge and the existing heathland will be cleared, totalling 9.4 ha (with only veteran or ancient trees and/or trees with potential bat roost features being retained).
- 5.1.52 It is anticipated that this area of total clearance will allow heathland regeneration, increasing the continuous cover of heathland within Ockham Common and thus benefiting the SPA qualifying species.

E3 - Ockham Common / Old Lane SPA enhancement area (4.8 ha)

- 5.1.53 This consists of an area of 3.8 ha of woodland to be completely cleared to allow heathland regeneration, which will increase the continuous area of heathland on Ockham Common and also an area 1.0 ha of woodland thinning adjacent to the car park on Old Lane:
1. The edge between the cleared area and the thinned woodland should be a 'wavy edge' rather than a 'straight edge'. Nightjars regularly utilise woodland edges for foraging, and the wavy edge will not only increase the length of available foraging habitat, but will also provide sheltered pockets in various wind directions;
 2. The area of woodland thinning will be regeneration thinning, with the widening of rides, opening of areas of the woodland, and selective felling of the outer edge of the woodland to provide a diverse woodland edge effect for foraging nightjars (as mentioned previously, this edge will also be wavy).
- 5.1.54 The area of mixed woodland to be thinned, with trees being selectively removed. The focus for clearance will be on removing Scots pines and younger deciduous specimens (particularly silver birch and sycamore), whilst retaining the semi-mature and mature deciduous trees, and any trees with potential bat roost features.
- 5.1.55 It is anticipated that this thinning enhancement work will enable a more diverse (both in species and structure) mixed woodland to establish, as well as providing open areas that may allow some heathland regeneration and/ or foraging opportunities for qualifying species of the SPA.
- 5.1.56 The adjacent area of total clearance will only retain the veteran or ancient trees and/or trees with potential bat roost features. This area of woodland is bound on three sides by open heathland, and it is anticipated that the clearance will allow heathland regeneration, significantly increasing the connectivity of the surrounding open heathland areas, and thus benefiting the qualifying species.

E4 - Elm Lane SPA enhancement area (11.3 ha)

- 5.1.57 This will mainly consist of woodland thinning, with a belt of woodland to be cleared along the southern edge of Bolder Mere (see Figure 13 of 5.3 Habitats Regulations Assessment Figures (application document TR010030/APP/5.3)).
- 5.1.58 The area 1.8 ha of woodland clearance adjacent to Bolder Mere will reduce the shading of the lake edge, and will enhance the invertebrate resource that the lake provides to the wider SPA.

- 5.1.59 A further 9.5 ha the woodland will undergo regeneration thinning. The primary objective of this thinning will be to increase the diversity of the woodland, and therefore its invertebrate abundance. The focus for clearance will be on removing Scots pines and younger deciduous specimens (particularly silver birch and sycamore), whilst retaining the semi-mature and mature deciduous trees, and any trees with potential bat roost features. The enhancement works will also include some planting, potentially with evergreen species such as holly, to provide a visual screen between the A3 and the housing properties along Elm Lane.

E5 - Wisley Common SPA enhancement area (4.5 ha)

- 5.1.60 An area of 4.5 ha of Scots pine-dominated mixed woodland to the south-west of hut hill will undergo total clearance (see Figure 13 of 5.3 Habitats Regulations Assessment Figures (application document TR010030/APP/5.3)).
- 5.1.61 Much of this area has been recently thinned as part of the ongoing management of the woodland. It is proposed that this area will be completely cleared to allow heathland regeneration and increase the area of continuous heathland habitat on Wisley Common and thus benefit the SPA qualifying species by providing breeding and foraging habitat.

E6 – Hut Hill south SPA enhancement area (1.2 ha)

- 5.1.62 An area of 1.2 ha of mixed woodland dominated with young silver birch to the west of hut hill will undergo total clearance to increase the area of open heathland habitat in this location (see Figure 13 of 5.3 Habitats Regulations Assessment Figures (application document TR010030/APP/5.3)).
- 5.1.63 It is anticipated that this area of total clearance will allow heathland regeneration, thus increasing the continuous cover of heathland within Wisley Common and benefiting the SPA qualifying species.

E7 - Pond Farm south SPA enhancement area (2.4 ha)

- 5.1.64 This consists of two pockets of woodland either side of a path, that separate two open areas of heathland, totalling 2.4 ha (see Figure 13 of 5.3 Habitats Regulations Assessment Figures (application document TR010030/APP/5.3)).
- 5.1.65 One section (to the north) consists of mature trees such as oaks. Selective thinning of some of the younger tree specimens will enhance the diversity of this woodland area. The other section (to the south) contains dense birch growth.
- 5.1.66 This area will undergo thinning as a result of tree removal. This will include widening the existing path to provide an open linkage between the two areas of heathland, which may improve connectivity and foraging opportunities for qualifying species of the SPA.

E8 - Pond Farm west SPA enhancement area (4.2 ha)

- 5.1.67 An area of 4.2 ha of mixed woodland to the north-west of Pond Farm will undergo thinning (see Figure 13 of 5.3 Habitats Regulations Assessment Figures (application document TR010030/APP/5.3)).
- 5.1.68 The area of mixed woodland to be thinned is dominated by young silver birch

growth and will have trees selectively removed. This will include the creation of an open ride linking two existing areas of heathland to Wisley SPA compensation land.

- 5.1.69 This SPA compensation land will consist of grazed wood pasture and may provide foraging opportunities for nightjar and woodlark. Improvements in open habitat linkage between the SPA compensation land and the existing open habitat will enhance the functionality of this location for SPA qualifying species.

Reinstatement of temporary land take

- 5.1.70 The 8.6 ha of temporary land take will be reinstated at the end of the construction process. The reinstatement of land subject to temporary possession to its former condition is provided for in the DCO.
- 5.1.71 The temporary land take areas within the SPA currently consist of Scots pine dominated mixed woodland. The reinstatement will include a mixture of woodland edge and shrub habitats to provide a protective buffer for the retained areas of mixed woodland against wind fall, as well as providing a layered canopy that will provide a visual barrier between the footpaths and the roads.
- 5.1.72 Whilst the reinstated land will predominantly consist of woodland edge and shrub habitats, there will be some additional habitat creation in the form of areas of bare ground, sandy mounds and small depressions in provide a diverse range of microhabitats in order to support invertebrates (both as a potential food resource for qualifying species, but also as a feature of the Ockham and Wisley Commons SSSI).
- 5.1.73 The scheme layout plans (application document TR010030/APP/2.8) show the reinstatement proposals for the temporary land take areas.

Summary of the suite of compensatory measures and how they will ensure the coherence of the network is protected

- 5.1.74 The suite of compensatory measures has been designed under consultation with Natural England, Forestry Commission, SWT and RSPB, and agreed with these stakeholders as well as SCC and Guildford Borough Council. Refer to HRA consultation report (application document TR010030/APP/5.3) in Annex B of Habitat Regulations Assessment Stage 2: Statement to Inform Appropriate Assessment (application document TR010030/APP/5.3) for minutes of the relevant meetings. Refer to HRA suite of compensatory measures selection process (application document TR010030/APP/5.3) in Annex C of Habitat Regulations Assessment Stage 2: Statement to Inform Appropriate Assessment (application document TR010030/APP/5.3) for details of the decision-making process in determining the components of the suite of compensatory measures.
- 5.1.75 The adverse effects of the Scheme on the integrity of the SPA are:
1. The permanent loss of 5.9 ha of habitat from the SPA;
 2. The temporary loss of 8.6 ha of habitat from the SPA;
 3. A reduction in invertebrate resource as a result of this habitat loss.
- 5.1.76 The SPA compensation land described above will contribute towards offsetting

some of the adverse effects of the Scheme, namely:

1. The permanent loss of 5.9 ha of SPA habitat; and,
2. The potential reduction in invertebrate resource as a result of the loss of 5.9 ha of SPA habitat.

- 5.1.77 However, the SPA compensation land parcels will take several years to enhance their value as an invertebrate resource. In addition, the provision of the SPA compensation land will not offset the temporary loss of 8.6ha of SPA habitat, and the reinstatement of the temporary land take will take several years to establish as an invertebrate resource.
- 5.1.78 Therefore, additional SPA enhancement areas at a ratio of 3:1 for the temporary and permanent land take are provided as part of the suite of compensatory measures, to ensure that the overall coherence of the Natura 2000 Network is maintained.
- 5.1.79 The enhancement works will lead to the clearance of 22.5 ha of Scots pine dominated mixed woodland, allowing heathland habitats to regenerate. All three qualifying species only breed within the heathland areas of Ockham Common and Wisley Common, and the creation of new heathland areas within the SPA will increase the area of open heathland habitat by approximately 29%, from 78 ha to 101 ha. It is anticipated that this will increase the carrying capacity of the SPA for all three qualifying species.
- 5.1.80 Therefore, based on the existing evidence that an increase in the area of heathland within Wisley Common and Ockham Common from 29 ha in 1999 to 78 ha in 2011, led to large increases in all three SPA qualifying species³⁸ it can be assumed with confidence that the number of breeding territories of all three qualifying species will increase as a result of this increase in heathland habitat.
- 5.1.81 In addition, the long-term management plan for the cleared SPA enhancement areas will ensure that they are maintained as diverse heathland habitat containing a mixture of heather, bracken, open patches, isolated trees, water bodies and scrubby edges. This will provide an excellent invertebrate resource³⁹.
- 5.1.82 The enhancement works will also include the thinning of 24.9 ha of mixed woodland, creating some open areas and rides, as well as improving the diversity of the woodland (much of which is currently dominated by Scots pine of a similar age) by allowing other tree species to grow, as well as planting some deciduous tree species. The enhancement of the diversity of these areas of woodland will improve their value as an invertebrate resource⁴⁰, whilst also providing foraging areas for nightjars and woodlarks as a result of the creation of open areas and rides.
- 5.1.83 The 8.6 ha of temporary land take will be reinstated with a mixture of woodland

³⁸ Based on 2J's data, between 2003-2007, it was estimated that the Ockham and Wisley Common SSSI component of the Thames Basin Heaths SPA supported a mean of three individuals of Dartford warbler, two individuals of nightjar and a single woodlark. Between 2013-2017, this had increased to a mean of three Dartford warbler breeding territories, five nightjar breeding territories and four woodlark breeding territories (refer to Table B3 in Appendix B of the Habitat Regulations Assessment Stage 2: Statement to Inform Appropriate Assessment (application document TR010030/APP/5.3)).

³⁹ Buglife (2013) Promoting habitat mosaics for invertebrates: lowland heathland

(https://www.buglife.org.uk/sites/default/files/HM%20Heathland%20mosaic%20proof%20FINAL_1.pdf; accessed 04/10/18)

⁴⁰ Although Scots pine can support an array of invertebrate species, a more diverse mix, both in terms of spacing and in terms of variety of trees and shrubs, will provide more varied wildlife habitat and support a greater range of invertebrates (as explained in Alexander, K., Butler, J. and Green, T. (2006) The value of different tree and shrub species to wildlife. British Wildlife 18(1):pp18-28).

edge and shrub habitats to provide a protective buffer for the retained areas of mixed woodland against wind fall, as well as providing a layered canopy that will provide a visual barrier between the footpaths and the roads. This will also contribute to the invertebrate resource of the SPA.

5.1.84 This suite of compensatory measures will enable the populations of SPA qualifying species to remain stable or increase, and will ensure that the coherence of the Natura 2000 network is maintained.

5.1.85 Table 5.1 summarises the residual impacts on the Thames Basin Heaths SPA after the suite of compensatory measures have been implemented.

Table 5.1: Summary of residual impacts on the SPA after implementation of the suite of compensatory measures

Adverse effect	Compensation measure	Predicted residual impact
Permanent loss of 5.9 ha of SPA land	Inclusion of an additional 8.1 ha of SPA compensation land	Provision of 8.1 ha of SPA land, resulting in no net permanent loss of SPA area
Loss of 8.6 ha of temporary land take	Reinstatement of 8.6 ha of temporary land take with scrub and woodland planting	Reinstatement of 8.6 ha of temporary land take with scrub and woodland planting, resulting in no net permanent loss of SPA area
Reduction in invertebrate resource for qualifying features due to permanent loss of 5.9 ha of mixed woodland and temporary loss of 8.6 ha of mixed woodland)	Reinstatement of 8.6 ha of temporary land take with shrub and woodland planting (with additional habitat creation in the form of areas of bare ground, sandy mounds and small depressions to provide a diverse range of microhabitats in order to support invertebrates)	After construction, 8.6 ha of temporary land take will be reinstated with scrub and woodland planting. A total of 22.5 ha of dense Scots pine dominated mixed woodland will be cleared and replaced with open and diverse heathland habitats which will support a wide range of invertebrate species ⁴¹ . In addition, a further 24.9 ha of dense Scots pine dominated mixed woodland will be thinned to improve diversity. These measures will result in an overall increase of the invertebrate resource within the SPA . An increase of area of heathland habitat within the Ockham and Wisley Commons SSSI component of the Thames Basin Heaths SPA by 29% (from 78 ha to 101 ha) will increase the available nesting and foraging habitat for all three qualifying features. This enhancement measure will result in an overall increase in the carrying capacity of the SPA for all three SPA qualifying species.
	Woodland thinning measures to improve diversity of 24.9 ha of mixed woodland and create open heathland rides, as well as the planting of trees and scrub habitats within Old Lane SPA compensation land.	
	Woodland clearance to allow regeneration of 22.5 ha of diverse heathland habitat ⁴² , including a mixture of woodland edge habitats, open heathland, retained mature trees, deadwood features	

⁴¹ Buglife (2013) Promoting habitat mosaics for invertebrates: lowland heathland

(https://www.buglife.org.uk/sites/default/files/HM%20Heathland%20mosaic%20proof%20FINAL_1.pdf; accessed 04/10/18)

⁴² Although the woodland being cleared will provide some invertebrate resource, the diverse heathland being created will also provide invertebrate resource for the qualifying features. In addition, it is considered that the amount of available breeding habitat is likely to be the greatest constraint on the populations of all three qualifying features, rather than the availability of invertebrates.

5.2. Delivery mechanisms and timings

- 5.2.1 The SPA management and monitoring plan (document reference TR010030/APP/6.5) describes in outline how the SPA enhancement areas and compensation land will be managed and monitored in order to ensure that the coherence of the Natura 2000 Network is maintained.
- 5.2.2 Requirement 8 of the draft development consent order (document reference TR010030/APP/3.1) will require Highways England to submit to the Secretary of State for approval following consultation with the relevant planning authority and Natural England, details of the compensatory habitat creation and enhancement measures to be undertaken in respect of the SPA.

SPA compensation land

- 5.2.3 The SPA compensation land parcels (C1 Old Lane SPA compensation land and C2 Wisley SPA compensation land) have been included within the DCO red line boundary. The land required will be secured in favour of Highways England in the DCO, so that Highways England can undertake the necessary enhancement, creation and management works.
- 5.2.4 The proposed habitat improvement measures (as described in this section) will be undertaken during the site preparation works for the Old Lane SPA compensation land and Wisley SPA compensation land. These measures will include the planting of a variety of native trees⁴³. Although these habitats will be planted during the site preparation works, they will take several years to reach their full potential. However, they will compensate for the loss of SPA land with immediate effect.

SPA enhancement areas

- 5.2.5 The Scheme will not cause the loss of any existing heathland habitat, and therefore, will not result in the direct loss of any qualifying species. Due to the suite of compensatory measures not needing to compensate for the loss of heathland, it has been agreed with Natural England that it is not necessary for the habitat enhancement works to be established prior to the commencement of the Scheme construction⁴⁴.
- 5.2.6 Indeed, the creation of open areas close to the DCO boundary prior, or during, the construction works could potentially cause ecological issues (for example, by encouraging woodlarks to nest near the construction works and be at risk of disturbance or displacement as a result of the nearby works).
- 5.2.7 Whilst some of the enhancement works will take place during the construction process, the works will be staggered, and potentially sensitive areas close to the DCO boundary will be undertaken once construction has been completed. The SPA management and monitoring plan (document reference TR010030/APP/6.5) provides greater detail of this staggered process.

⁴³ Trees to be planted will be appropriate for the habitat type and local area. As per Alexander *et al.* (2006), different species supports a range of different invertebrates, so variety is key to enhancing the invertebrate resource.

⁴⁴ Natural England meeting minutes 09/10/2018, as recorded in Annex B HRA stakeholder consultation report

Reinstatement of temporary land take

- 5.2.8 Temporary land take will be reinstated once the construction of the Scheme has finished in that location. Details of the proposed timings for different locations, and the proposed reinstatement planting are described in the SPA management and monitoring plan.

5.3. Monitoring of suite of compensatory measures

- 5.3.1 The SPA management and monitoring plan outlines the monitoring arrangements to be undertaken. Requirement 8 in the draft DCO provides for a scheme for the monitoring of the SPA compensatory measures to be submitted to and approved by the Secretary of State following consultation with the relevant planning authority and Natural England.

6. Conclusions

- 6.1.1 The proposed M25 junction 10/A3 Wisley interchange Scheme will require land take from the Thames Basin Heaths SPA in order to improve the interchange. This Scheme is not connected with or necessary to site management for nature conservation.
- 6.1.2 The SIAA (Habitat Regulations Assessment Stage 2: Statement to Inform Appropriate Assessment (application document TR010030/APP/5.3)) has explained that the permanent loss of 5.9 ha of the SPA, and temporary loss of 8.6 ha will result in a reduction in the supporting habitats of the SPA (for example, providing a woodland buffer between the roads and the open heathland areas) and a reduction in the invertebrate resource of the SPA.
- 6.1.3 It is not possible to ascertain that this habitat loss of land would have no adverse effect on the integrity of the SPA 'alone', as a result of reductions in the extent and/or distribution of supporting habitat of the three qualifying species (i.e. habitat that supports foraging qualifying species by providing an invertebrate resource), and a potential reduction in food resource. Under Article 6 (4) of the Habitats Directive, Stage 3 of the HRA (Assessment of Alternative Solutions) was triggered, which in turn led to Stage 4 (Assessment of IROPI) and Stage 5 (Compensatory measures).
- 6.1.4 Of the 21 alternative solutions considered, the option selected (the Scheme) was the option which had the least impact on the integrity of the SPA. No feasible, less-damaging alternatives were identified during option appraisal and design evolution that would result in a lesser effect on the integrity of the SPA. As such this satisfies the test set out in the Habitats Directive and Habitats Regulations.
- 6.1.5 There are imperative reasons of overriding public interest such that consent may be granted for the Scheme notwithstanding adverse effects on the integrity of the SPA.
- 6.1.6 A suite of compensatory measures have been designed in consultation with key stakeholders (Natural England, the Forestry Commission, SWT, RSPB, Surrey County Council and Guildford Borough Council) that will offset the negative effects of the Scheme so that the overall coherence of the Natura 2000 Network is maintained.

Appendices

Appendix A. Assessment of Public Transport as an Alternative Solution

A.1.1 The analysis takes into consideration:

1. The pattern of travel demand catered by M25 junction 10, broken down by origin and destination.
2. The existing and potential provision of car and public transport services

Assumptions

- A.1.2 Traffic flows have been extracted from the base year (2015) M3/M4 SATURN model for the AM peak hour (0700 – 0800). Specifically, demand information from identified Origin-Destinations (O-D) pairs have been analysed to determine the travel pattern of the road users using junction 10 (as a means of interchange).
- A.1.3 The analysis excluded HGV vehicles, in order to better capture the potential of a public transport alternative.
- A.1.4 Geographical sectoring of the model zoning system was undertaken to reduce the total number of O-D pairs to aid presentation of the results.
- A.1.5 Distant external zones (e.g. Scotland) were excluded from the analysis.

Origin-Destination analysis

- A.1.6 All turning movements at junction 10 account for approximately 6,100 trips (PCUs/hour) for the modelled time period. The O-D pairs with the highest demand (over 60 one way trips) are shown in Figure A.1 and account for the 50% of the overall demand.
- A.1.7 The analysis suggests a large number of discrete movements with Aldershot/Farnborough and Guildford as the largest trip generators. Whilst both of these locations are relatively well served by public transport it is evident when plotted against rail lines (Figure A.2) that the existing car-based trips being made cannot easily be accommodated through rail, even for trips between centres.

Figure A.1: O-D demand pairs (with demand > 60 PCU/hour)

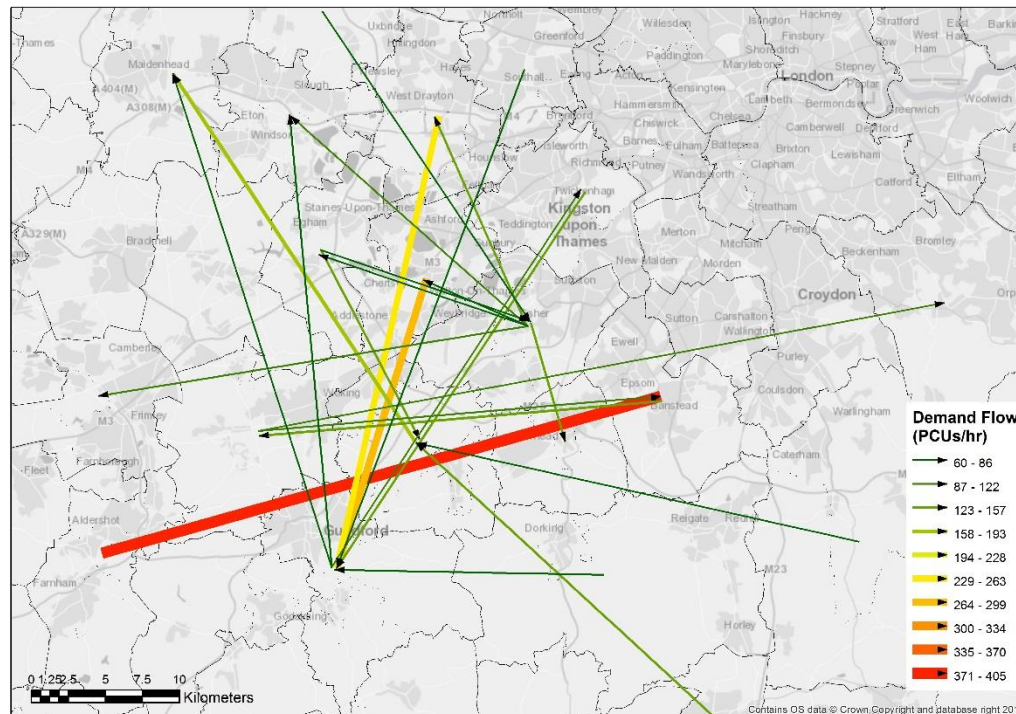
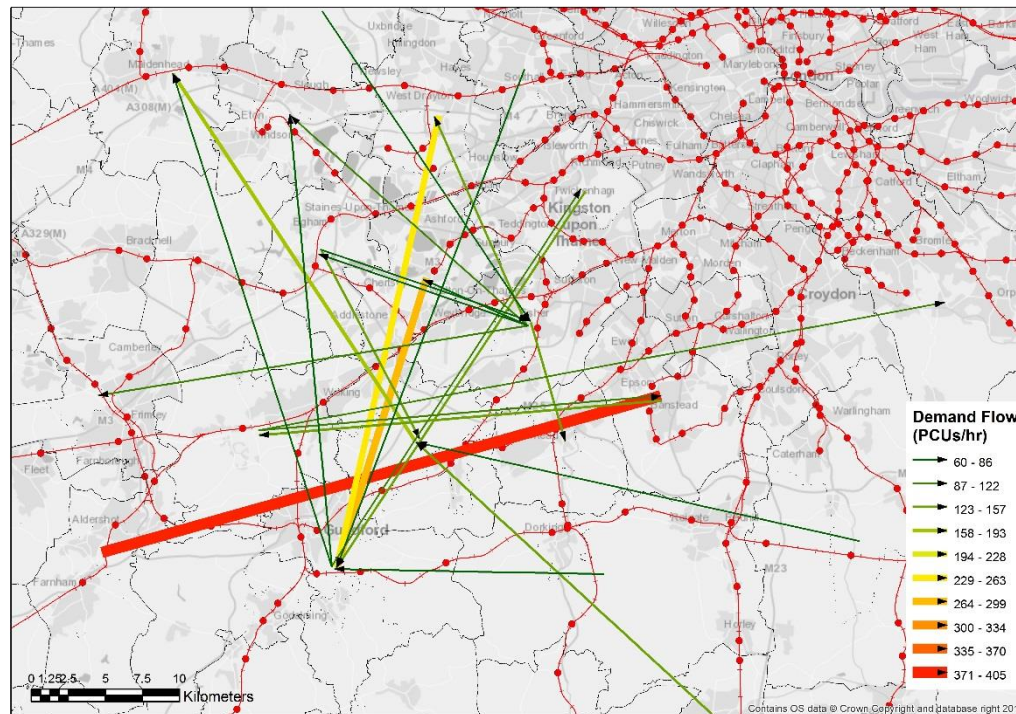


Figure A.2: O-D demand pairs and the rail network



- A.1.8 Further analysis of the O-D pairs with highest-demand has been undertaken by investigating current car and public transport journey times through a journey planner (Google Maps API). It has been assumed that the trip ends coincide with railway stations and therefore they do not account for onward journeys which may further increase journey times.
- A.1.9 Examination of the comparison between car and public transport journey times for the trips represented in Table A.1. The analysis shows that 19% of the trips could be completed quicker by public transport (and only if trips begin and end in close proximity to stations) which 74% of trips would take at least 1.5 times longer by public transport. Furthermore (as shown in Table A.2, 95% of all trips if made by public transport would require at least one transfer.
- A.1.10 Considering the relatively low density of the trip-end zones, travelling with public transport would be even more difficult to be accommodated, if access/egress journey to the railway stations was to be included.

Table A.1: Journey time comparison between public transport and car

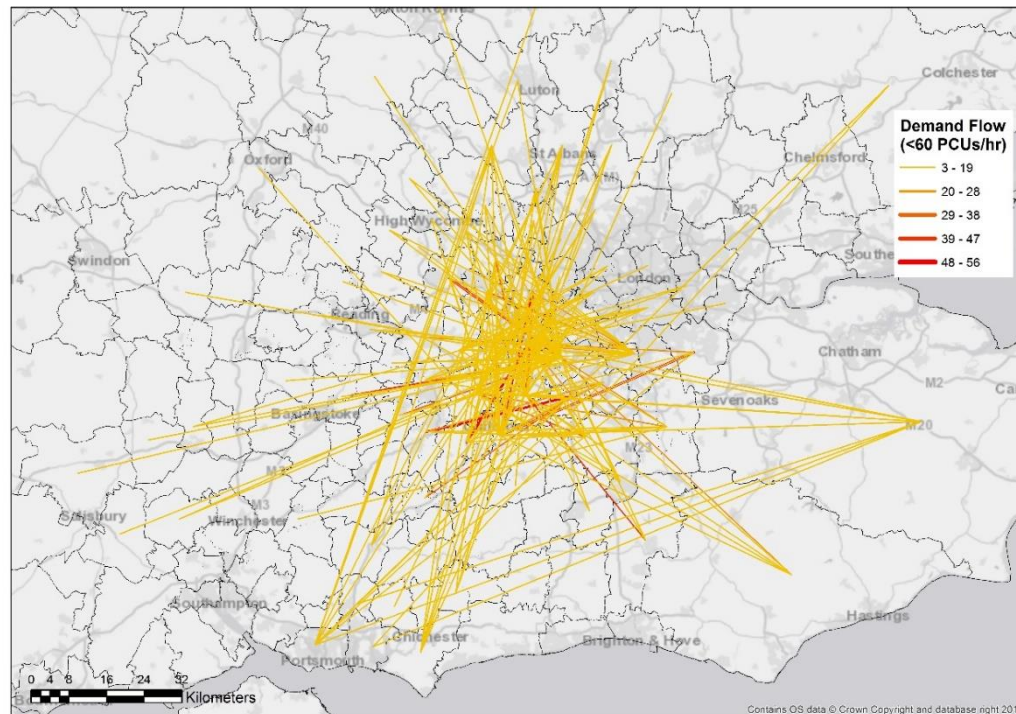
Public Transport to Car journey time ratio	% of demand
0 to 1	19%
1 to 1.5	6%
1.5 to 2	32%
2 to 3	42%

Table A.2: Number of transfer required during PT trips

Number of transfers	Demand	% of demand
0	142	5%
1	1450	46%
2	1452	46%
3	84	3%

A.1.11 Figure A.3 presents the remaining 50% of M25 junction 10 turning demand. These trips are highly dispersed, and are therefore considerably more difficult to accommodate with improvements to public transport.

Figure A.3: O-D demand pairs and the road network (with demand flow < 60 PCUs/hr)



Conclusions

- A.1.12 The analysis provided above suggests that M25 junction 10 interchange serves a vast number of origin and destinations throughout the south east of England. There are very few OD pairs which each account for more than 1% of the total turning flows through the junction during the AM peak.
- A.1.13 The existing public transport network does not offer comparable alternatives to car travel for most of these movements. Given the distances that most trips through junction 10 are travelling, transfer to improved bus services are not feasible. Providing significant improvements to the rail network for such discrete movements would require significant cost and interruptions to the existing network. Therefore, it is concluded that substantial mode shift towards rail is likely to be difficult to achieve. Therefore, a public transport approach would not provide a feasible alternative solution.

Appendix B. Analysis of scheme component options

B.1 Side roads and PMAs

- B.1.1 There are only two ways from the A3 and across the SPA for vehicles – on the north side a private means of access (PMA) runs to from the A3 northbound off-slip to Hut Hill Cottage, Pond Farm and Birchmere scout camp site – on the south side Old Lane runs through the SPA, as well as connecting to Elm Lane that runs through the SPA to Elm Corner. Wisley Lane forms the southwestern edge of the SPA. SWT have access to other tracks within the SPA that they use for its maintenance.
- B.1.2 The chosen scheme works with this existing pattern of vehicle access across and around the SPA as much as possible, with Old Lane and Wisley Lane being retained in use and connected to the widened A3, Elm Lane byway being resurfaced and a connection made from Old Lane to the existing track leading to Hut Hill Cottage, Pond Farm and Birchmere scout camp site.
- B.1.3 The main options considered but not used were:
1. A new PMA from Wisley Lane following existing tracks through Wisley village and then passing through the common land and the north-western part of the SPA to join the existing track at Pond Farm; this would have been in addition to the provision of an accommodation bridge at Cockcrow to provide maintenance access between the two parts of the SPA as well as an NMU crossing, so this was rejected due to additional SPA impacts, additional impacts in Wisley village and additional cost.
 2. Other PMA routes to Pond Farm were considered but also rejected due to additional impacts on the SPA and additional cost.
 3. Closure of the connection of the A3 to Old Lane, which would enable the A3 southbound on-slip merge to be considerably shorter and the extended tapers for the Old Lane junction to be omitted and, therefore, require less land from the SPA. However, this would lead to higher traffic flows using Ockham Park junction, such that the current design would have to be replaced with a larger gyratory with, potentially, additional slip roads, so this was rejected on cost grounds.
 4. The RHS alternative of continuing the left-out access from Wisley Lane onto the widened northbound A3 carriageway was rejected on safety grounds due to the additional quantity of weaving movements this would introduce to the approach to junction 10, as well as the need for additional land take from the SPA to provide suitable road geometry and sight lines.

B.2 NMU Routes

- B.2.1 The A3 currently has a shared-use footway along the south side of the southbound carriageway and associated slip roads, with connections provided across the junction by the traffic signals at the off-slip stop lines and a shared-use footway around the inside of the gyratory. There is also a Pegasus crossing of the A3 northbound on-slip about 125m up from the junction, which allows users of Bridleway 12 to cross via the junction and mounting blocks are provided at the crossings. However, these non-motorised user (NMU) facilities are not attractive to users and crossing at Junction 10 is a slow process.
- B.2.2 Various options were developed and appraised during the design development, in combination with the options for the local roads and private accesses, to find a solution at reasonable cost and with limited additional land take within the SPA. The main options considered but not used were:
1. Re-provision of the at-grade crossings at the enlarged junction 10, as this would have entailed the addition of signal-controlled NMU crossings to the free-flow left turn lanes, which was rejected due to adverse effects on safety and capacity arising from the traffic speeds and flows, as well as crossings of this type being unpleasant and slow for users and hence remaining little-used, which would not achieve the aims of the scheme for enhancement of the NMU provision.
 2. Re-provision of the shared surface alongside the A3 carriageway, which was rejected due to the unattractive conditions for users alongside an eight-lane road and the cost of the substantial additional retaining structures that would be required
 3. A segregated route alongside the southbound carriageway across the edge of Bolder Mere, as this would need the new retaining wall to be positioned further into the lake and in deeper water, as well as affecting more of the existing earth dam to the lake. When combined with the need to provide a diversion for the medium-pressure gas main that currently runs in the A3 southbound verge, the construction work through the earth dam may have led to the need to replace the dam entirely, which would have substantially increased both cost and impacts within the SPA, so this option was rejected.
 4. Diversion of NMUs along Old Lane and Elm Lane; however, Old Lane has no verges and therefore a new NMU shared surface would have been needed alongside or close to the road, within the SPA and it was not considered to be a suitable route for the gas main diversion to be constructed past the houses at Elm Corner. Also, this would have entailed an increase in NMU journey and gas main length and would have required a signal-controlled crossing to be added to Old Lane.
- B.2.3 The chosen scheme, therefore, aligned a segregated NMU facility and the gas main diversion along the same route to the north side of the A3 between Wisley Lane diversion and Cockcrow bridge, with the gas main connecting to its existing alignment near Cockcrow bridge and the NMU route using Cockcrow bridge to cross the A3 and connect to a new NMU bridge (Sandpit Hill bridge) across the M25 to the east of the enlarged junction 10. This has several associated advantages:

1. Segregation of the route from the A3 carriageways enables user to benefit from a more pleasant route, with some sections also benefiting from the proposed noise barrier fences, that also provides direct access into the adjacent open spaces.
2. The segregated route would be suitable for equestrian use, unlike the roadside shared surface.
3. Lengths of existing tracks can be used northeast of Wisley Lane and northeast of Cockcrow bridge, so reducing the habitat loss within the SPA.
4. The Wisley Lane to Cockcrow bridge section can also be used as a maintenance access by Southern Gas Networks, HE and SWT, so reducing the habitat loss within the SPA.
5. The Cockcrow bridge to Sandpit Hill bridge section can also be used as a maintenance access by HE, so reducing the habitat loss within the SPA.

B.2.4 The construction sequence includes closure of the existing NMU facility alongside the A3 carriageway and the NMU crossings at junction 10 at an early stage in the programme, so that NMUs do not need to be catered for whilst the A3 carriageways are being widened and the temporary slip roads are in use at junction 10. NMUs would instead be directed towards the existing bridges at Clearmount, Cockcrow and Hatchford Park for routes along the A3 corridor and around junction 10, including access to and from the SPA.

B.2.5 The new Sandpit Hill NMU bridge would not be provided until late on the construction programme, so that this does not need to span the temporary slip roads, can be constructed largely within the footprint of the temporary slip roads and re-use some of their fill material, all of which reduces the land required from the SPA in this location.

B.3 Bridges

B.3.1 There are two existing bridges that are within the SPA – Clearmount bridge over the M25 and Cockcrow bridge over the A3. The chosen scheme replaces these bridges with structures suitable to span the widened M25 and A3, slightly to one side of the existing structures, so that these can remain in use whilst construction of the new bridges is underway. The scheme also includes an additional bridge in the SPA – Sandpit Hill NMU bridge over the M25.

B.3.2 The main options considered but not used were:

1. Not providing the new NMU bridge over the M25, but this was rejected as the free-flow left turn lanes at the enlarged junction 10 raised safety concerns about at-grade NMU crossings at the junction and deter users, as discussed above.

2. Using redundant north and/or south interchange bridges to provide NMU links across the M25, but this would have entailed including additional structures to pass under the new gyratory to reach these bridges, creating a tortuous route with extra level changes that would have increased cost and so was rejected.
3. Providing the replacement bridges in the same locations as the existing bridges, but this would have entailed provision of temporary bridges to ensure that accommodation access and NMU connections could be maintained during construction. Installation of temporary bridges would have entailed similar construction footprints within the SPA to the chosen scheme, would have required additional lane closures on the M25 and A3 to install and remove the temporary bridge decks and would have cost more, so was rejected.
4. Slightly different locations were looked at for both replacement bridges, including one to the east of the existing bridge at Clearmount, but were rejected because they required more extensive new earthworks for the approach routes overall and within the SPA.

B.4 Construction compounds and temporary works

- B.4.1 The general approach has aimed to minimise the extent of temporary works and compounds within the SPA and supporting SSSI, whilst still be able to construct the project within the intended programme.
- B.4.2 Access into potential compound areas would not be available from the M25 carriageways without construction of new slip roads. Access could be obtained from the A3 carriageways in a few locations, none of which would be suitable for more than initial use, and from the junctions at Ockham Park and Painshill. Therefore, potential locations for the main construction compound were sought around these two junctions; the two feasible options were in the fields just north of Ockham Park junction and on the area of existing hardstanding remaining from the former Wisley Airfield to the west of Elm Corner. The fields by the junction are proposed for the main compound in the chosen scheme and the airfield site is proposed for topsoil storage and for a compound to manage the construction of Wisley Lane overbridge. Both sites lie outside the SPA and enable the extent of additional compounds required within the SPA and SSSI to be minimised, although it will mean that some construction materials need to be transported further.
- B.4.3 A large satellite compound area will use a field that has previously been used for the deposition of waste material from the construction of the M25, just north of the motorway and beside Buxton Wood. Access to this will be provided by haul roads within the site and across the existing Clearmount overbridge, so that it can be used for the temporary storage of topsoils and other material extracted from parts of the site, avoiding the need for other topsoil storage areas within the SPA and SSSI.

- B.4.4 Given the complexity of the construction operations that will be required to construct the new bridges and carriageways for the enlarged junction 10 roundabout, whilst the junction remains in constant use, it is not considered feasible to undertake this work without two satellite compounds close to and on opposite sides of the junction, meaning that one will lie within the SPA. The option chosen has one in the northeast quadrant and one in the southwest quadrant, of which the latter will be within the SPA; this arrangement was chosen as there is already an access into the proposed northwest compound area from the A3 off-slip, which will facilitate initial access and compound setting-out, and because the northeast compound will be outside the SSSI.
- B.4.5 Earlier versions of the design had a larger satellite compound in the southwest quadrant, but the part of this compound that will be used to manage the construction of the replacement Cockcrow overbridge was relocated into the western half of the existing hardstanding used by SWT for log storage as part of their tree felling operations, which enabled the satellite compound area to be reduced. This hardstanding was formerly a car park and does not form part of the designated extent of the SPA. The eastern half of the hardstanding will be used for temporary storage of logs arising from the site clearance and, later in the programme, from the tree-felling included in the SPA enhancement works.
- B.4.6 The use of land within the SPA for other temporary construction purposes has been kept to a reasonable minimum by:
1. Limiting the extent of land use for construction activity to 5m beyond the edge of proposed earthworks (including earthworks for the temporary slip roads), or 6m if a haul route is required.
 2. The decision to locate the NMU link and the gas main diversion to the north of the A3, as described above, reduced the temporary works space needed along the edge of Bolder Mere and around the earth dam, which in turn reduced the extent of works needed within the SPA to compensate for the loss of marginal aquatic habitats.
 3. Aligning the medium-pressure gas main diversion with the proposed non-motorised user (NMU) link between Wisley Lane and Cockcrow overbridge, so that additional loss of habitat is not caused by constructing along different alignments and so that the NMU route can also provide the maintenance access for the Southern Gas Networks and for HE without requiring additional land.
 4. Maximising the use of filter drains for earthworks runoff within the SPA, as these require less space to construct than open surface ditches.
 5. The choice of a through-girder design for the Sandpit Hill restricted byway overbridge, which enables the bridge deck surface to be about 2m lower than other designs for this span length, which in turn reduces the height and footprint of the approach embankments. These embankments are also largely aligned over the space required for the temporary slip roads, so the extent of habitat loss from the SPA and SSSI can be minimised.

6. Planning to undertake the surfacing works along Byway 525 Elm Lane early in the construction programme, so that this can be closed to traffic during the work, without any temporary access arrangements being needed as access will still be available from the A3, and so that the surfacing can proceed along the track from Old Lane using the minimum width of land.

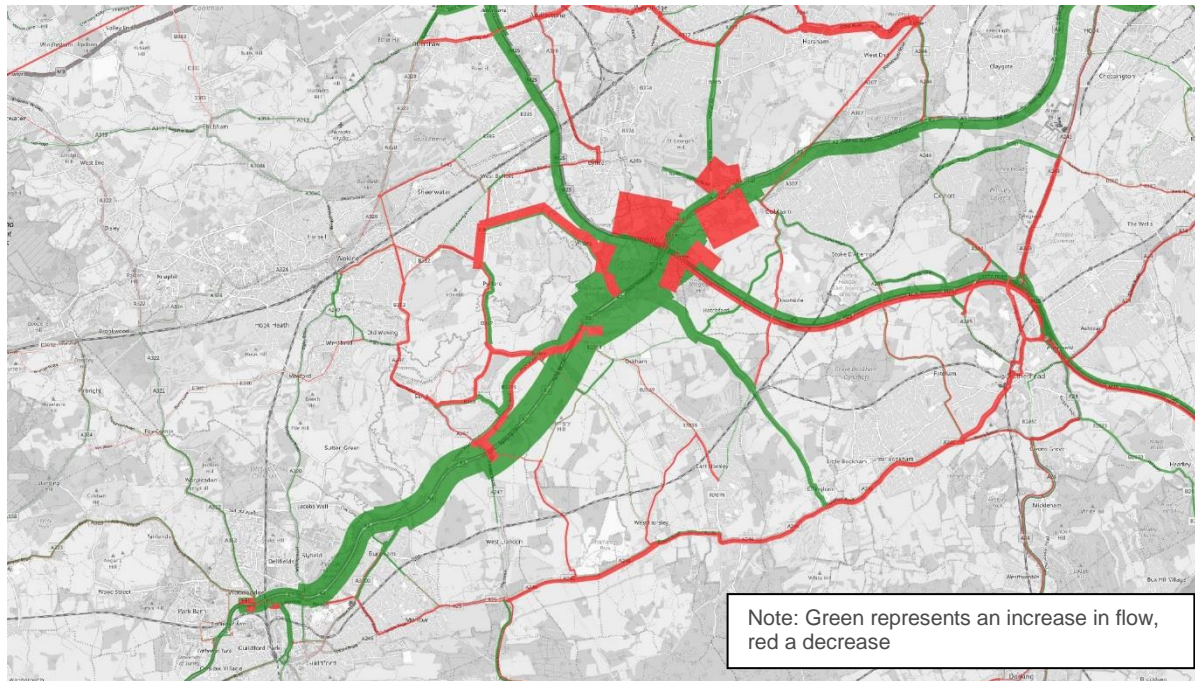
Appendix C. Traffic Analysis

- C.1.1 The impact of the scheme on traffic has been assessed with the use of the M25 junction 10 strategic highway model. The model built in SATURN has been derived from the Highways England Regional Traffic Model (SERTM) and has a base year of 2015. Using a series of traffic surveys and counts (Data Collection Package report) the model has been validated (Traffic Model Package Report) to reflect current conditions over the local highway network.
- C.1.2 Assessment in the M25 junction 10 model enables a comparison of traffic flows and conditions between a scenario without the scheme (Do Minimum) and a scenario with the scheme (Do Something).

Traffic flows

- C.1.3 An aim of the scheme is to provide additional capacity on the Strategic Road Network (SRN) so that once implemented, highway users will choose the strategic routes (the M25 and A3) over local roads for a longer proportion of their journey.
- C.1.4 Figure C.1: Traffic flow comparison of do minimum and do something 2037 AM peak provides a comparison of traffic flow between the Do Minimum and Do Something scenarios for the 2037 AM peak model. The figure illustrates how the larger increases in traffic are located on the SRN whilst many local roads experience decreases in traffic.

Figure C.1: Traffic flow comparison of do minimum and do something 2037 AM peak



C.1.5 Table C.1 provides a breakdown of the changes in kilometres travelled by vehicles (PCUkms) on the SRN and non-SRN network for each peak period and for the two forecast years. The distance travelled on the SRN increases in all periods and in both forecast years, whilst there are reductions on the local road network.

Table C.1: Distance travelled on Strategic Road Network and local road network

	Time Period	PCUkms	
		%Diff (DS-DM)	
		2022	2037
Non-SRN network	AM peak	-0.7%	-0.7%
	Inter peak	-0.3%	-0.6%
	PM peak	-0.4%	-0.2%
	Off peak	0.0%	0.2%
SRN network	AM peak	6.7%	8.7%
	Inter peak	4.7%	5.8%
	PM peak	4.5%	4.9%
	Off peak	1.1%	0.6%

- C.1.6 At M25 junction 10 the scheme is anticipated to allow for increased throughput at the junction compared to a Do Minimum scenario (Table 3.2). The largest increase is in the AM peak of the 2037 forecast year with approximately 2,200 additional trips (28% increase) able to travel through the junction.

Table C.2: Trip throughput comparison at M25 J10

Scenario	Core	% change vs DM
AM	Throughput (PCUs)	
DM-2022	7436	
DS-2022	9012	21%
DM-2037	7511	
DS-2037	9628	28%
IP	Throughput (PCUs)	
DM-2022	6788	
DS-2022	7493	10%
DM-2037	7533	
DS-2037	8401	12%
PM	Throughput (PCUs)	
DM-2022	7374	
DS-2022	8342	13%
DM-2037	7981	
DS-2037	8860	11%

Delays

- C.1.7 Table C.3 provides a comparison of average delay per vehicle on links within M25 junction 10 between the with and without scheme comparisons. Reductions in average delay at the junction resulting from the implementation of the scheme range from 34% to 65%.

Table C.3: Average delay comparison on links at M25 junction 10

Scenario	Core	% change vs DM
AM	Av Delay (secs)	
DM-2022	128	
DS-2022	45	-65%
DM-2037	159	
DS-2037	105	-34%
IP	Av Delay (secs)	
DM-2022	84	
DS-2022	36	-57%
DM-2037	98	
DS-2037	48	-51%
PM	Av Delay (secs)	
DM-2022	92	
DS-2022	36	-61%
DM-2037	116	
DS-2037	45	-61%

C.1.8 Table C.4 details longer routes (i.e. including links on approach) for specific turning movements through M25 junction 10. Savings range from 6% to 75% in the average AM peak hour and from 8% to 61% in the average PM peak hour. These represents savings from 0.5 minutes to 6 minutes for vehicles travelling through the junction.

Table C.4:

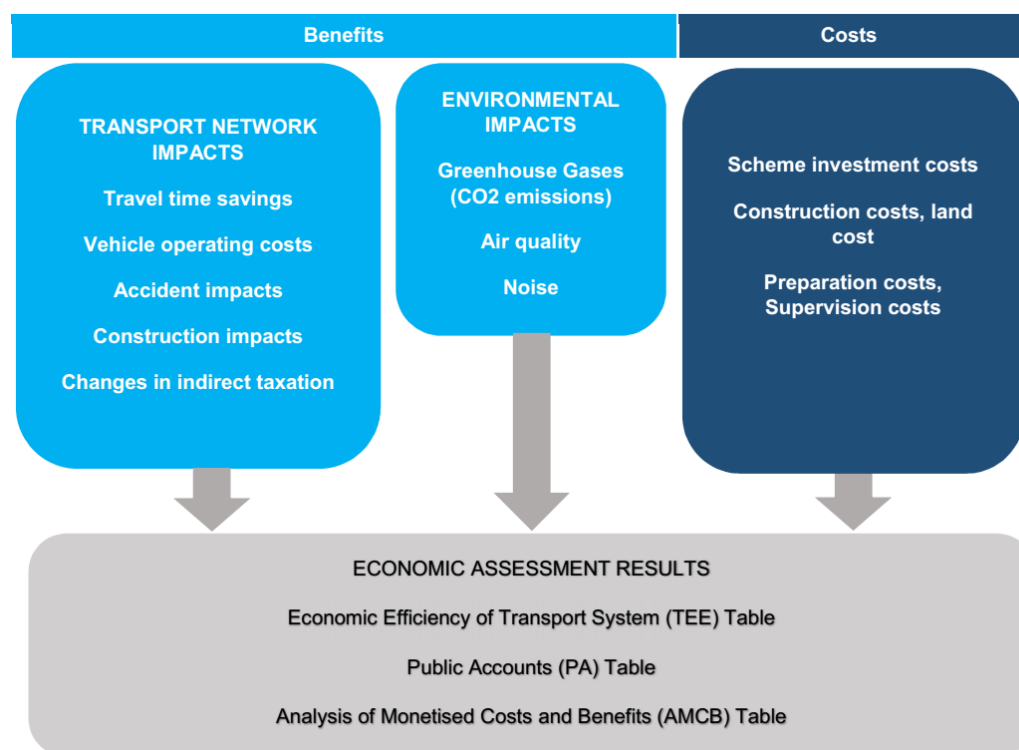
Time Period	Core Scenario		DS vs DM%	Core Scenario		DS vs DM%
	DM 2022	DS2022		DM 2037	DS 2037	
	AM journey times seconds					
Left turn for A3SB to M25	398	114	-71%	460	117	-75%
Right turn from A3SB to M25	502	211	-58%	607	357	-41%
Left turn from M25CW to A3SB	395	131	-67%	458	162	-65%
Right turn from M25CW to A3NB	301	178	-41%	294	276	-6%
Left turn from A3NB to M25	268	157	-42%	440	329	-25%
Right turn from A3NB to M25	267	231	-13%	402	362	-10%
Left turn from M25ACW to A3NB	122	94	-23%	143	98	-32%
Right turn from M25ACW to A3SB	313	211	-33%	398	277	-30%
	PM journey times seconds					
Left turn for A3SB to M25	324	124	-62%	212	136	-36%
Right turn from A3SB to M25	385	189	-51%	290	221	-24%
Left turn from M25CW to A3SB	318	134	-58%	417	164	-61%
Right turn from M25CW to A3NB	268	168	-37%	212	195	-8%
Left turn from A3NB to M25	197	133	-33%	275	155	-44%
Right turn from A3NB to M25	231	222	-4%	300	243	-19%
Left turn from M25ACW to A3NB	135	95	-30%	139	95	-32%

Time Period	Core Scenario		DS vs DM%	Core Scenario		DS vs DM%
	DM 2022	DS2022		DM 2037	DS 2037	
	AM journey times seconds					
Right turn from M25ACW to A3SB	276	199	-28%	440	237	-46%

Appendix D. Summary of Economic Analysis

D.1.1 The Economic Assessment has been carried out using standard procedures and economic parameters as defined by TAG Unit A1- Cost Benefit Analysis with efforts made to quantify and monetise costs and other impacts where appropriate. The key components that make up the assessment and feed into the TEE, PA and AMCB are shown in Figure D.1.

Figure D.1: Components of economic assessment



- D.1.2 The following elements of the economic assessment have been considered:
1. road user journey time impacts – due to changes in travel time and vehicle operating costs
 2. road user safety impacts – due to changes in the future number and/or severity of accidents
 3. incident delay impacts – due to changes in journey time related to incidents
 4. construction impacts– impacts on road user travel time and vehicle operating costs during Scheme construction
 5. indirect tax revenue – due to changes in the amount of fuel and other direct vehicle operating costs purchased and changes in expenditure on transport offsetting changes in expenditure elsewhere in the economy
 6. Greenhouse gas, noise and air quality impacts
- D.1.3 Table D.1 provides a summary of the scheme’s economic appraisal. Over the 60 year appraisal period the scheme will result in a £322.9 million (Present Value) benefit to transport users in the form of journey time savings and vehicle operating cost. This includes an adjustment for the additional delay created during the construction period).
- D.1.4 Environmental appraisal based on the outputs of the traffic model provides monetised benefits of £501,000 (PV) for Noise and £36,000 (PV) for greenhouse gases, however there will be a disbenefit of £227,000 (PV) resulting for the change in Air Quality.
- D.1.5 Accident savings of an average of 10 per year delivers a benefit of £45.4 million (PV) resulting from the implementation of the scheme. Indirect tax revenues will add £29.2 million (PV) to the scheme’s economic impact.
- D.1.6 Overall, the scheme’s economic impact has been appraised to be £397.8 million (PV).

Table D.1: Economic benefit summary table, £000s (PV)

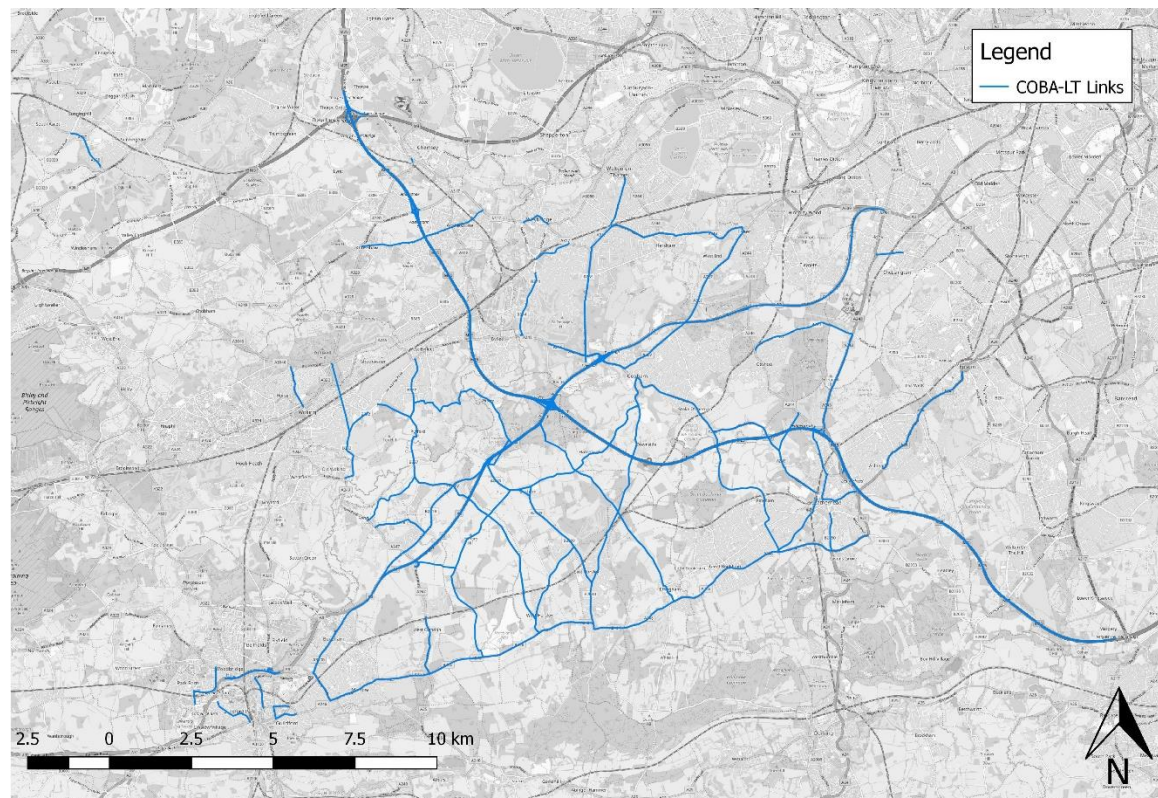
Category	Core Scenario
Greenhouse gases	36
Air quality	-227
Noise	501
Accidents	45,354
TEE: Commuting	65,947

TEE: Other	97,504
TEE: Business	159,452
Wider public finances	29,235

Appendix E. Safety Analysis

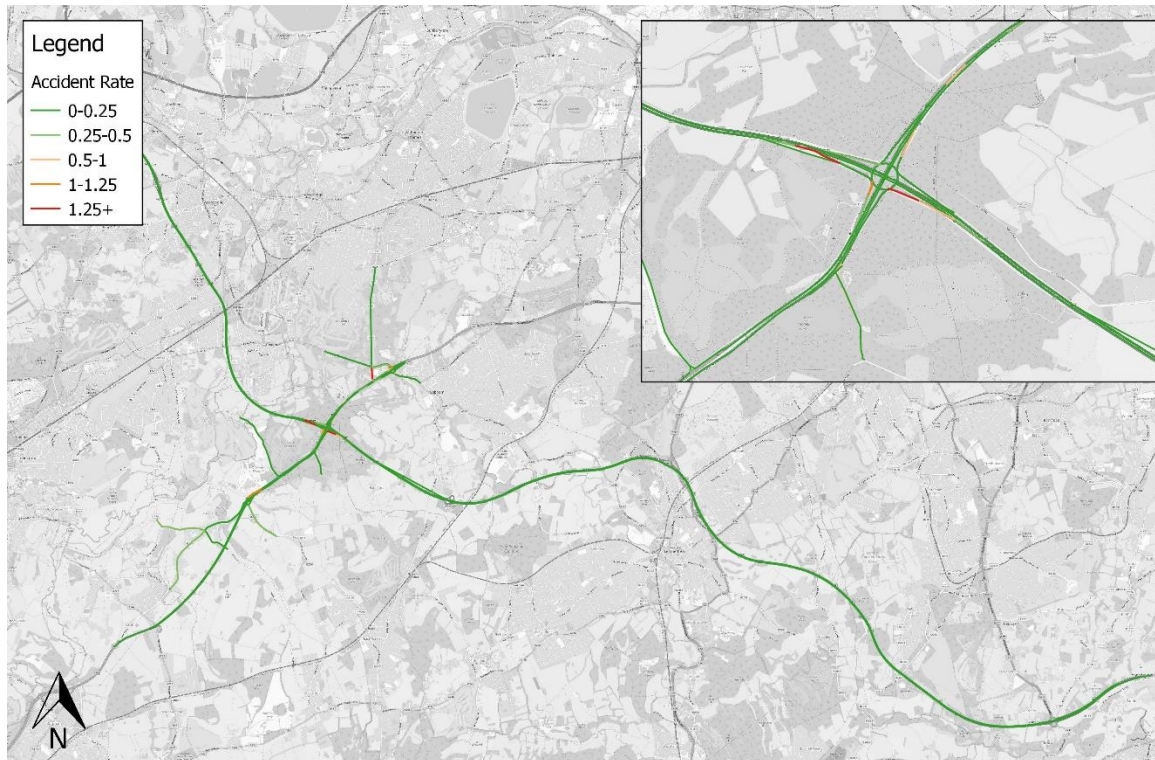
- E.1.1 The DfT's COBALT spreadsheet has been used to provide a simple assessment of the impact of the scheme on accident costs.
- E.1.2 Links within the affected road network (Figure E.1) which saw a traffic flow change of more than 5% as a result of the scheme interventions, were included for the calculation of accident benefits.

Figure E.1: Area of accident analysis



- E.1.3 For the area shown in Figure E.2 the available accident data for the last 5 years (2012-2016) on M25 and A3 within the vicinity of M25 junction 10 was used to determine local link and junction accident rates, and were coded into COBALT for the corresponding mainline links on M25 and A3, as well as corresponding junctions.

Figure E.2: Area of accident analysis with observed rates



- E.1.4 Accident rates for the remainder of the modelled network were based on default national average rates by road type defined within COBALT. Each link in the network (including the circulatory carriageway) was assigned to a default COBALT link type and parameters such as accident values (in monetary terms), changes in the rate of accidents through time and the severity split of casualties were based on default COBALT values for the relevant link type.

- E.1.5 The scheme results in a net reduction in accidents at junction 10. The removal of traffic from the roundabout by free-flow elements greatly reduces the amount of traffic at conflict points and therefore improves safety at the roundabout. Accidents are also reduced on the A3 mainline between Ockham and Painshill due to the widening to D4AL and the closure of side roads. The scheme results in an overall reduction in accidents and casualties compared to the Do-Minimum scenario.
- E.1.6 The COBA-LT analysis has shown benefits of £45.4 million PV when the scheme is implemented. In the area of detailed analysis the scheme is shown to result in a 7% reduction in accidents compared to the Do Minimum (Table E.3). Over the complete affected road network the scheme results in an average reduction of 10.1 accidents per year over the 60-year appraisal period.

Table E.3: COBA-LT scheme impact accident analysis for the local area

Section	Total Number of Accidents		Number of Accidents Saved
	Do-minimum	Do-Something	
M25 J10	431	244	187
A3NB mainline	706	490	216
A3SB mainline	390	346	44
M25EB mainline	3243	3219	24
M25WB mainline	2976	2851	125
Ockham interchange	117	126	-9
Painshill interchange	83	68	15
Seven Hills Rd junction/Byfleet Rd	207	206	1
Total	8153	7550	603
Reduction from Do-Minimum		7%	

Appendix F. Summary of policy documents relevant to the IROPI for the Project

F.1 Policy context

Highways England Strategic Business Plan 2015 – 2020

F.1.1 The Highways England's Strategic Business Plan (2015-2020) sets out the outcomes, Key Performance Indicators and associated targets for the RIS schemes. The Business Plan recognises that the Strategic Road Network acts a key enabler of economic growth and prosperity and contributes significantly to people's quality of life. Page 10 of the Business Plan states that 'tackling congestion and delay, and providing better connections are at the forefront of our plans to provide a modern network that supports a modern economy' which closely aligns with the problems being addressed by the Scheme.

1. Appendix II – Investment Mapping (pages 48 and 49) of the Business Plan lists schemes proposed for the South-East of England and project (7) is identified as improvements to M25 junction 10/A3 Wisley interchange, albeit omitting works at Ockham Park junction. Page 21 of the Business Plan advises that Route Strategies will be published containing the delivery plans for the next five years and giving a clear indication of the priorities.

Highways England Delivery Plan 2015 – 2020

F.1.2 The Highways England Delivery Plan builds on the Strategic Business Plan (SBP) which was published in response to the Government's RIS and sets out the how each of the strategic outcomes will be delivered. The strategic outcomes identified include:

2. Supporting economic growth – through a modernised and reliable network that reduces delay, creates jobs and helps business compete, and opens up new areas for development.
3. Safe and serviceable network – where no one should be harmed when working or travelling on the network.
4. More free flowing network – where routine delays are more infrequent, and where journeys are safer and more reliable.

5. Improved environment – where the impact of our activities is further reduced ensuring a long-term and sustainable benefit to the environment.

6. More accessible and integrated network – that gives people the freedom to choose their mode of transport and enable safe movement across and alongside the network.

F.1.3 To measure the success of these outcomes the Delivery Plan also identifies a series of KPIs and associated targets. Many of these complement the outcomes which are set out within the RIS and these have been key in the identification, development and assessment of the options for improving the M25 junction 10 A3 Wisley interchange improvements.

F.1.4 The Delivery Plan includes specific KPIs for delivering better environmental outcomes. This scheme has looked to address and/or contribute to achieving these KPIs and related outcomes wherever possible. Some of the key environmental indicators relate to:

1. Noise – 1,150 noise important areas mitigated by 31st March 2020.
2. Air quality - Undertake air quality testing and minimising the effects on the local environment and local residents.
3. Biodiversity - delivery of improved biodiversity, as set out in the Highways England's Biodiversity Action Plan.
4. Cyclists, walkers and other vulnerable road users - demonstrate consideration of vulnerable road users (VRUs) and incorporate measures within the scheme for them to be able to continue to use the network as they can currently.
5. Social and environmental objectives should form part of the design solution as required either through the Highways England licence agreement or other Government commitments.

Department for Transport Single Departmental Plan 2015 – 2020 (February 2016)

F.1.5 The Department for Transport published its single departmental plan in February 2016 (updated in May 2018) identifying the need to make journeys better, simpler, faster and more reliable and to support jobs, enable business growth, and bring the country closer together. The DfT has identified four objectives towards building better journeys:

1. Boosting economic growth and opportunity
2. Building a One Nation Britain
3. Improving journeys

4. Safe, secure and sustainable transport

Action for Roads A network for the 21st century (July 2013)

- F.1.6 Following on from IBF, this report was published in July 2013 by HM Treasury and sets out Government's plans to upgrade the UK's strategic road network (motorways and key A roads). In paragraph 1.5 it explains that the road network is the "life-blood of the economy" because:
- F.1.7 "Roads provide critical connections. They link major economic centres, and connect our major ports and airports. Many people use them to get to railway stations and to connect to other modes of transport.
- F.1.8 Roads support job creation and unlock new development. They provide access to labour markets and unlock new opportunities for factories and businesses. More than 1 million jobs are associated with road transport. Factories and other businesses regularly consider access to good roads and other transport connections in making decisions about where to locate."
- F.1.9 The Scheme will increase connectivity and support economic growth in the local area thereby complying with the national guidance outlined above.
- F.1.10 Investing in Britain's Future (June 2013)
- F.1.11 Investing in Britain's Future (IBF), published by HM Treasury in June 2013, sets out the Government's intention to build a strong UK economy by delivering infrastructure that competes with the best in the world.
- F.1.12 Section 2 of the document states that:
- "Government intends to invest £28 billion on enhancements and maintenance of national and local roads to... build all available Highways Agency road projects, tackling the most congested parts of the network... [and] ...identify and fund solutions to tackle some of the most notorious and longstanding road hot spots in the country...[and] ...upgrade the national non-motorway network managed by the Highways Agency with a large proportion moved to dual-lane and grade separated road standard to ensure free-flowing traffic nationwide".*

Enterprise M3 Strategic Economic Plan

- F.1.13 The Enterprise M3 area includes over 1.6m people with over 740,000 jobs. The Growth Deal will deliver to Government the accelerated provision of 11,500 new homes, 30,700 new jobs and £757m direct GVA and these are economic successes that impact across the country. Coast to Capital Local Enterprise Partnership Growth Deal will deliver 14,000 jobs, 4,600 new homes and 190,000 square meters of employment space.

- F.1.14 Guildford is identified as one of four 'Growth Towns' in the Enterprise M3 SEP, with a combined GVA forecast increase of 14% between 2014 and 2019, compared with 11% for the UK in the same period, and projects around congestion, housing and specific infrastructural investments have been identified as growth packages required to facilitate and unlock this forecast growth.

Local Plans

- F.1.15 The Guildford Core Strategy also has a number of policies on housing and jobs growth, infrastructure and sustainability that are relevant to the M25 junction 10 area. These are:
1. Policy 13 – economic development - support the provision of 11,000 to 15000 new jobs to 2031, Wisley Airfield identified as a development site;
 2. Policy 15 – Guildford town centre – promote Guildford as the key retail and service centre for Surrey county and beyond, facilitate the building of 2000 new homes and four major comparison retail developments at Ladymead (near A3) recently approved; and
 3. Policy 18 – sustainable transport – encourage walking and cycling by providing high quality, safe and direct routes.
- F.1.16 Developing the former Wisley Airfield can deliver 2100 homes with a population in excess of 4000. The development will have direct access to the A3. This increases demand on the A3 and interventions to address congestion in the area were considered as part of the site's planning application.
- F.1.17 The current Elmbridge Strategic Housing Land Availability Assessment (July 2010) indicates that there is sufficient housing potential within the urban area to deliver 3,710 net additional dwellings between 2011 and 2026. Additional housing at any of the preferred locations, most notably Cobham (575-625), would add additional pressure to the A3, Painshill interchange and M25 junction 10.
- F.1.18 Although the National Policy Statements are the primary planning policy documents for decision making on NSIP's, development plans are still relevant to the Scheme as they provide local land use designations and allocate land in terms of where future development is planned to occur. Local Planning Authorities have a statutory duty to prepare a development plan for their area.
- F.1.19 The Scheme and the mitigation measures proposed have been developed to conform with the policies set out in the National Policy Statement for National Networks (NPS NN) and with Development Plan designations and policies where they are relevant to the application.
- F.1.20 The Development Plan comprises the following documents:

1. South East Plan 2009 saved policy NRM6 (Thames Basin Heath SPA)
2. Surrey Air Quality Strategy 2016
3. Elmbridge Core Strategy 2011
4. Elmbridge Local Plan Development Management Plan 2015
5. Guildford Local Plan 2003
6. Guildford Submission Local Plan December 2017

- F.1.21 The South East Plan was adopted in 2009 and set out a vision for the South East regions to 2026. Following the Secretary of State for Communities and Local Government's Partial Revocation Order, which came into force on 25 March 2013, the majority of the South East Plan was revoked, with the exception of Policy NRM6: Thames Heath Basin SPA, which remains a material consideration in the determination of this DCO.
- F.1.22 Elmbridge Borough Council and Guildford Borough Council are currently reviewing their local plans. In Elmbridge Borough Council's most recent Local Development Scheme (November 2017), it is identified that there will be consultation on the preferred approach to the Spatial Strategy and Policies – including Site Allocations and Designations in July – September 2018, publication of the proposed Submission Plan in January – February 2019, followed by an Examination in August-September 2019. It is anticipated that adoption of the new Local Plan will be by December 2019.
- F.1.23 Guildford Borough Council published a Submission Local Plan in December 2017 and examination of the Submission Local Plan has commenced with hearings held between 5 June 2018 and 5 July 2018. In the latest Local Development Scheme, adoption of the Local Plan is anticipated in December 2018.
- F.1.24 In the Guildford Submission Local Plan 2017, emerging Policy ID2: 'Supporting the Department for Transport's "Road Investment Scheme" states 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 both capacity and safety, as mandated by the Department for Transport's "Road Investment Strategy". As such, promoters of sites close to the A3 and M25 and strategic sites need to take account of any emerging proposals by Highways England or any other licensed strategic highway authority appointed by the Secretary of State under the Infrastructure Act 2015.

London Plan

- F.1.25 The adopted London Plan has been prepared by the Greater London Authority and presents the long-term strategic plan for growth in London to 2036. Initially published in 2011, the Plan has been updated several times (most recently in March 2016) to include minor alterations. A major update, referred to as the New London Plan is currently in draft form, with recent changes made following consultation. The Plan identifies strategic growth locations and sets minimum annual housing growth targets for each of the London boroughs. Of note for the A3 corridor is that South Wimbledon, Clapham and Kingston have all been identified as opportunity areas for growth and intensification, related partly to the opportunities presented by the proposed Crossrail 2.

Surrey Transport Plan 2011 – 2026 (Surrey County Council)

- F.1.26 The vision of the Surrey Transport Plan 2011 – 2026 is to help people to meet their transport and travel needs effectively, reliably, safely and sustainably within Surrey; in order to promote economic vibrancy, protect and enhance the environment and improve the quality of life.
- F.1.27 The objectives of the Surrey Transport Plan are as follows:
1. Effective transport: To facilitate end-to-end journeys for residents, business and visitors by maintaining the road network, delivering public transport services and, where appropriate, providing enhancements.
 2. Reliable transport: To improve the journey time reliability of travel in Surrey.
 3. Safe transport: To improve road safety and the security of the travelling public in Surrey.
 4. Sustainable transport: To provide an integrated transport system that protects the environment, keeps people healthy and provides for lower carbon transport choices.
- F.1.28 This is the third update to the Surrey Transport Plan and the vision, aims and evidence base of Local Transport Plans are to be supported by and reflected in local policy.

Surrey Infrastructure Study 2017

- F.1.29 The study discusses infrastructure projects to support growth and sets out that strategic corridors within Surrey are subject to high levels of congestion and based on estimates of housing and population growth, Highways England are expecting future congestion on these strategic routes.

- F.1.30 M25 junction 10/A3 Wisley interchange is cited as being required, along with the A23/M23 Hooley interchange which is currently on hold and M25 junction 9 plus M25 junction 5 and 6.

F.2 RIS Statement

Road Investment Strategy 1

- F.2.1 The Government sets out its long-term investment plan in the road network, and particularly the Strategic Road Network, in the Road Investment Strategy 2015-2020 (RIS), which was published in December 2014 and was last updated in November 2016. The “Strategic Vision” within Part 1 of the RIS advises that it expects the Applicant (i.e. Highways England) to:
- F.2.2 “Make the network safer and improve user satisfaction, while smoothing traffic flow and encouraging economic growth. We want to see [the Applicant] delivering better environmental outcomes and helping cyclists, walkers, and other vulnerable users of the network at the same as time as achieving real efficiency and keeping the network in good condition.”
- F.2.3 In March 2015 RIS for the period 2015/16-2019/20 was presented to Parliament. The RIS 1 outlines a long-term programme for our motorways and major roads to be supported with a stable funding stream in order to plan for future conditions. All committed Schemes in the RIS are intended to enter construction during the plan period; i.e. before 31 March 2020.
- F.2.4 The RIS 1 comprises:
- a long-term vision for England’s motorways and major roads, outlining how we will create smooth, smart and sustainable roads
 - a multi-year investment plan that will be used to improve the network and create better roads for users
 - high-level objectives for the first roads period 2015 to 2020
- F.2.5 The government agreed to establish the RIS 1, worth £15 billion at the 2013 Spending Round alongside:
- turning the Highways Agency into a government-owned strategic highways company to be known as Highways England
 - introducing supporting legislation, including the Infrastructure Bill, which has now become the Infrastructure Act
- F.2.6 Targets of the RIS 1 included an aim to balance performance improvements to meet the needs of all road users by:
- Making the network safer, contributing to a 40% reduction in deaths and serious injuries by the end of 2020
 - Improving user satisfaction, with overall satisfaction scores rising to at least 90%
 - Supporting the smooth flow of traffic so that 85% of incidents are cleared in an hour, and 97% of the network remains open
 - Encouraging economic growth, supporting businesses, the construction sector, and the planning systems

- Delivering better environmental outcomes, cutting noise exposure at 1,150 sites and reducing net biodiversity loss
- Helping cyclists, walkers, and other vulnerable users of the network by increasing and improving crossings
- Achieving real efficiency with work delivered on time and on budget, and generating savings of over £1.2 billion
- Keeping the network in good condition, with at least 95% of the road surface not needing investigation for possible maintenance

F.2.7 The Strategic Vision (pages 12 to 16) recognises that the Strategic Road Network has a vital role to play in delivering the Government's goals for national networks as outlined in the four strategic goals of the NNNPS:

- "Providing capacity and connectivity to support national and local economic activity;
- Supporting and improving journey quality, reliability and safety;
- Joining our communities and linking effectively to each other; and
- Supporting delivery of environmental goals and the move to a low carbon economy."

F.2.8 The Strategic Vision states that the Strategic Road Network is vital to British businesses and local and national economies but that capacity problems leading to increased congestion have become a major issue. It recognises that the Strategic Road Network has a good safety record and provides the lifeline for the logistics of everyday life but that congestion is having a major effect on reliability.

F.2.9 The Strategic Vision acknowledges that the Strategic Road Network links people, places, and different transport modes but that busy roads can generate noise, and sever access in towns and villages, impeding cyclists and walkers. Finally, it explains that, moving forward, the Strategic Road Network needs to be designed and constructed to the highest environmental standards with low noise road surfacing to be used, where possible.

Part 2: Investment Plan of the RIS lists key investments on the Strategic Road Network. A total of £15.2 billion is committed by the Government to the enhancement and long-term maintenance of the network between 2015/16 and 2020/21 including 127 major enhancements. The Scheme is recognised in the RIS as being a key investment on the strategic road network that the Government has committed the full anticipated funding for provided the necessary statutory approvals are granted and the Scheme continues to demonstrate value for public money.

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