M42 Junction 6 Improvement
Scheme Number TR010027
Volume 6
6.4 Environmental Statement
Non-Technical Summary

Regulation 5(2)(a)

Planning Act 2008

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

January 2019

Infrastructure Planning

Planning Act 2008

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

M42 Junction 6 Improvement Development Consent Order 202[ ]

6.4 Non-Technical Summary

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1	January 2019	DCO Application

Table of contents

List of Figures

List of Tables

1 Introduction

1.1.1 This Non-Technical Summary has been prepared for the proposed M42 Junction 6 Improvement (hereafter referred to as the 'Scheme').

1.1.2 Highways England is the Strategic Highways Company charged with modernising and maintaining England's Strategic Road Network (SRN), as well as running the network and keeping traffic moving.

1.1.3 Highways England is the applicant under the Planning Act 2008, and proposes to improve traffic flows and capacity around the M42 Junction 6 by providing a dual two-lane carriageway from a newly constructed Junction 5A to the existing Clock Interchange, in addition to several improvements to the layout of Junction 6.

1.1.4 This Scheme is a Nationally Significant Infrastructure Project under the Planning Act 2008, which means that permission is required to build and operate the Scheme. The permission is called a Development Consent Order (DCO). The DCO application will be examined by the Planning Inspectorate which will report its findings and make a recommendation to the Secretary of State for Transport (SoS) to aid decision making.

1.1.5 An Environmental Statement (ES) has been prepared to accompany the DCO Application which sets out a description of the Scheme and the reasonable alternatives considered in the development of the design, the environmental setting, the likely significant effects of the Scheme on local communities and the environment, and the measures proposed to mitigate these effects. This document provides a summary of the ES in non-technical language.

2 Need for the Scheme

2.1.1 Junction 6 of the M42 sits on the eastern side of Birmingham. It is an important junction on the SRN and part of a collection of roads referred to as the Birmingham Box (M5 on the west side, M6 on the north side, M42 east and south side).

2.1.2 The junction lies at the heart of an area of dynamic growth and is surrounded by a unique mix of major assets that serve both the local and wider economy. It is located north of Solihull and provides the main access on to the SRN for Birmingham Airport, the National Exhibition Centre (NEC), Birmingham Business Park, the National Motorcycle Museum and National Conference Centre (NMM), Birmingham International Railway Station and in the future, the HS2 Birmingham Interchange Station.

2.1.3 In addition to these major assets, the area around Junction 6 of the M42 (immediately to the north-east) is earmarked for development to maximize the growth opportunity HS2 will bring. The junction has almost reached capacity causing severe congestion and delays across the network. Current congestion and journey reliability issues are a significant constraint to future investment and economic growth. Junction 6 does not have sufficient capacity to accommodate predicted traffic growth beyond 2019, even without the inclusion of HS2.

2.1.4 The Scheme would enable better movement of traffic; support improved access to the airport; and provide capacity on the road network for future traffic growth associated with the planned HS2 Birmingham Interchange Station.

3 Description of the Scheme

3.1 Scheme location

3.1.1 The existing M42 Junction 6 provides connections between the SRN and the Local Road Network (LRN), which provides strategic access to Birmingham to the west and Coventry to the east. The junction is located north of Solihull, approximately nine miles from Birmingham city centre, and is surrounded by a unique mix of major commercial assets that serve both the local and national economy.

3.2 Environmental context

3.2.1 The Scheme would be located within a semi-rural setting heavily influenced by linear road infrastructure and the NEC development.

3.2.2 Land use is marked by a contrast of urban development immediately north west of M42 Junction 6 set against the more open agricultural landscapes and settlements found to the south, east and north east of the junction.

3.2.3 Land to the north west of the junction is occupied by major commercial and transport developments including the NEC, Birmingham Business Park, Birmingham International Railway Station and Birmingham Airport. Further development comprising the NMM is accessed directly off M42 Junction 6.

3.2.4 Bickenhill and Catherine-de-Barnes, located south west of M42 Junction 6, and Hampton in Arden, located south east of the junction, are the main settlements in the area, all of which are set within rural farmland. Approximately 350m north east of the M42 Junction 6 lies Middle Bickenhill, a small dispersed community set with open agricultural land but located in close proximity to the motorway and major roads. Development that follows the LRN forms a notable pattern of settlement between M42 Junction 6 and Hampton in Arden.

3.3 Scheme description

3.3.1 The Scheme comprises the following key components:

a. a new junction on the M42 approximately 1.8km south of the existing Junction 6 (referred to as M42 Junction 5A);

b. a new 2.4km long dual carriageway link road between M42 Junction 5A and Clock Interchange, with a free flow slip road to the A45 Coventry Road Westbound;

c. capacity and junction improvements at Clock Interchange;

d. new free flow links between the A45 eastbound and M42 Northbound and from the M42 southbound to the A45 eastbound at Junction 6;

e. the realignment and modification of several local roads including; the B4438 Catherine-de-Barnes Lane (Catherine-de-Barnes Lane), Clock Lane and St Peters Lane west of the M42 motorway, and East Way and the Middle Bickenhill Loop east of M42 Junction 6;

f. modifications to the location and spacing of emergency refuge areas,

overhead gantries and message signing along the M42 motorway;

g. modifications and improvements to the local public rights of way (PRoW), footbridges and private accesses; and

h. the reconfiguring of the Warwickshire Gaelic Athletic Association (WGAA) sports facility at *Páirc na hÉireann*.

3.4 Scheme objectives

3.4.1 The Department for Transport identified in its Road Investment Strategy (RIS) for the 2015-2020 period that:

"*comprehensive upgrade of the M42 junction near Birmingham Airport, allowing better movement of traffic on and off the A45, supporting access to the airport and preparing capacity for the new HS2 station*."

3.4.2 The four specific objectives for the Scheme are:

a. **Making the network safer:** will improve the safety of the network by providing additional capacity, reducing driver stress and enabling safer access to and from the motorway.

b. **Supports the smooth flow of traffic:** will improve traffic flow by removing a significant amount of vehicles from the roundabout at junction 6. It will also provide improvements to Clock Interchange on the A45 to the west of junction 6 to increase its capacity and to ensure it can manage the increased traffic using it.

c. E**ncourages economic growth:** improve access to key businesses and support economic growth in the area from the new HS2 Birmingham interchange station and connectivity to Birmingham Airport.

d. **Helping cyclists, walkers and other vulnerable users of the Network:** It will improve the non-motorised user (NMU) routes in the area, providing improved access across the A45 to link with other NMU provision in the area.

3.4.3 In addition to the Scheme objectives listed above, the Scheme will also contribute to meeting the following secondary objectives:

a. **Delivers better environmental outcomes:** will mitigate and compensate its biodiversity impacts. The Scheme must not increase the numbers of air quality management areas and/or noise important areas and should seek opportunity to reduce the existing measured levels. Habitats identified and removed are to be replaced.

b. **Improves user satisfaction:** this would be achieved through improvements in journey time reliability, less peak-time congestion, driver experience enhancement and a reduction in accidents. Disruption through construction should also be reduced through completing the majority of construction works offline and applying suitable traffic management and communication.

c. **Achieving real efficiency:** To ensure an efficient cost solution is proposed, the scheme is to take account of the latest working practices and design efficiencies without reducing benefits against the specific scheme objectives.

d. **Keeping the network in good condition: Replace pavement associated with SRN connection points at Junction 6.** Any new on and off slip road connections and junction improvements will replace existing pavement to ensure a smooth transition between joints in the network and extend the life of the assets.

3.5 Measures to avoid, prevent or reduce significant effects

3.5.1 The Scheme includes a range of measures that have been developed to avoid, prevent, reduce or offset potential significant adverse environmental effects including (but not limited to) the following:

a. avoiding sensitive, valued or important environmental features and interests where reasonably practicable through iterative design .(i.e. reducing as far as practicable land take within the ancient woodland by means of amending slip road alignments);

b. minimising visual intrusion by putting the new mainline link road in cutting, together with the use of screening and planting to reduce local views of the road where possible;

c. minimising the amount of land required to construct and accommodate the Scheme, through construction of the new mainline link road in cutting with slopes generally at a gradient of 1:3 or steeper to reduce overall land take;

d. addressing (through mitigation) potential environmental effects using earthworks, planting, drainage and barriers and screening the Scheme where possible with appropriate planting;

e. the drainage has been designed incorporating below ground tanks and reed beds to minimise its attraction to migrating birds underneath Birmingham Airport's flightpath, and to improve the water quality and flow to local streams;

f. identifying environmental gains by maximising the use of redundant space within the Scheme boundaries, such as planting around Shadowbrook Lane; and

g. improving non-motorised user connectivity by providing new footpaths and cycleways and providing new footbridges over the A45 and the new mainline link road.

3.5.2 As part of the Scheme, a range of utilities would need to be diverted; these include electricity lines, water mains and gas mains.

3.6 Construction approach and programme

3.6.1 The Scheme's main construction works are planned to start in 2020 and the Scheme is due to open to traffic in 2024. The Scheme would be broadly built in two phases to minimise road user disruption, with the new mainline link road and connections would be built in advance the M42 Junction 6 works beginning.

3.6.2 The appointed Contractor (the Contractor) would employ standard best practice construction methods to minimise disruption during construction, with any scheme specific measures identified in the Construction Environmental Management Plan (CEMP).

3.6.3 Highways England will work closely with stakeholders during the construction works to maximise the efficiency of the construction and minimise disruption to the travelling public and other stakeholders living and working in the area.

3.6.4 The construction of the Scheme would require a main construction compound located to the immediate south of Clock Interchange and several smaller compounds along the new mainline link road alignment.

4 Scheme alternatives studied and consultation

4.1.1 Since the Scheme's inception in 2015, Highways England has developed, consulted upon and assessed a range of different options to improve Junction 6, to identify a solution that meets the Scheme objectives and minimises the impact on the environment in the area.

4.1.2 The process of options identification and preferred route selection followed a staged process and is described within Chapter 3 The project of the Environmental Statement. **Figure 4.1** summarises the early Scheme conceptual options.

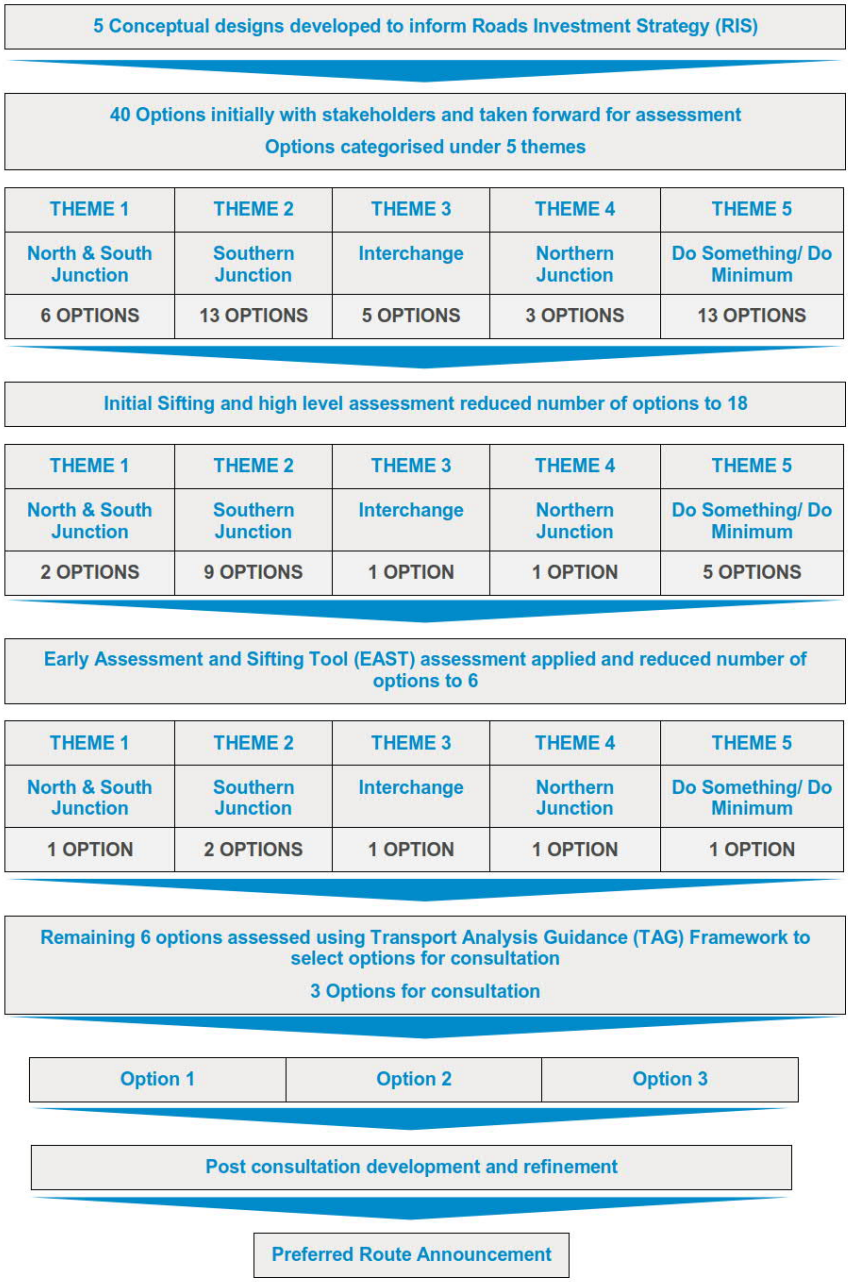

Figure 4.1: Summary of stages

4.1.3 Highways England originally identified 40 options – as conceptual designs, which were allocated to 6 themes. These options were assessed at high level to identify the best option to represent each of the themes.

4.1.4 Some design work was undertaken to the chosen options to enable them to be assessed in more detail, This demonstrated that:

a. **North and South Junction**: would result in safety issues between the new northern junction and M42 Junction 7; require considerable land-take both north and south of the junction, including the green belt; would have a direct impact on a SSSI and potentially ancient woodland; provided limited traffic benefits; was expensive and provided low value for money - Option Discounted.

b. **Southern Junction**: would provide good traffic benefits; supported by the businesses in the area and would be generally within budget. However, both options required land take from the greenbelt and dependent on the location of the southern junction impacted ancient woodland - Options Progressed.

c. **Interchange**: offered good journey time benefits but prevented a direct access to the NEC, would require the relocation of the NMM and have significant buildability impacts causing major disruption to road users during its construction; was expensive and provided low value for money - Option Discounted.

d. **Northern Junction**: would result in safety issues between the new northern junction and M42 Junction 7; would have a direct impact on a SSSI; would provide limited traffic benefits though was affordable and minimised the environmental impact of the Scheme - Option Discounted.

e. **Do Minimum**: provided limited traffic benefits; resulted in some disruption to Birmingham NEC and NMM during construction; though would be within budget; failed to address the requirements in the RIS brief - elements of this Option Progressed.

4.1.5 Consequently, the southern junction option with a mainline link to the A45 west of the M42 and with free flow links around M42 junction 6 was therefore the only viable option to proceed.

4.1.6 Three variants of this option were presented at the Public Consultation from December 2017 to January 2018; these were:

a. **Option 1**: consisting of a southern junction 2km south of Junction 6 with a link road to the west of Bickenhill village, connecting to the A45 at Clock Interchange;

b. **Option 2**: consisting of a southern junction 2km south of Junction 6 with a link road to the east of Bickenhill village, going under Church Lane before connecting to the A45 at Clock Interchange via an additional roundabout; and

c. **Option 3**: consisting of a southern junction 1km south of Junction 6 with northbound exit and southbound entry onto the M42 only, and a link road to the east of Bickenhill village, going under Church Lane before connecting to the A45 at Clock Interchange via an additional roundabout.

4.1.7 Highways England reviewed the information available from the preceding assessments, and considered the results of the consultation exercise, which identified that 64% of the local population were in favour of option 1; before identifying a slightly modified version, to accommodate local concerns as the preferred route on 7 August 2017.

4.1.8 Following the announcement of the preferred route, Highways England has continued to develop the Scheme and undertake the formal EIA as reported in the ES. This continued design work was informed by feedback from both the statutory consultation and further consultation held in 2018, to ensure that the thoughts and concerns of the local population and other stakeholders had been considered. The statutory consultation was held between January and February 2018, the feedback from which has been used to inform the development of the Scheme design.

4.1.9 Due to the number of minor changes to the Scheme, it was decided to hold further consultation with statutory bodies and stakeholders impacted by the Scheme to identify the changes made and receive further feedback to understand if any further changes were required.

4.1.10 The consultation process, and the responses received are reported in a Consultation Report [**TR010027/APP/5.1**].

4.1.11 In addition to formal consultation, extensive and regular engagement with prescribed consultees such as Natural England, in addition to affected landowners has been undertaken to inform the development and assessment of the design for the Scheme.

5 Assessment of likely significant effects

5.1.1 The EIA considers impacts and identifies the likely significant environmental effects during the construction and operation of the Scheme.

Methods used in the assessment

5.1.2 The approach to the EIA comprised the gathering of information to establish the environmental setting or baseline, considering the potential impacts of the Scheme, developing measures to avoid, prevent or reduce adverse impacts and then assessing the resultant likely significant effects of the Scheme on local communities and the environment. The EIA has followed industry standard methods, including for establishing significance, set out in Highways England's Design Manual for Roads and Bridges along with topic-specific guidance as appropriate. Each topic chapter in the ES provides further detail regarding the specific methodology applied.

5.1.3 The following sections provide a summary of the assessment of likely significant environmental effects as a result of the Scheme on an environmental topic basis.

6 Air quality

6.1.1 The air quality assessment calculated the changes in concentrations in annual mean nitrogen dioxide as a result of changes to traffic at sensitive human receptor locations such as, homes and sensitive ecological sites. The impact of dust from the construction phase was also assessed.

6.2 Baseline

6.2.1 There is an Air Quality Management Area (AQMA) in the vicinity of the Scheme, located approximately 2km to the west of the existing M42 corridor. This is a city wide AQMA declared by Birmingham City Council due to the exceedance of the European Union (EU) nitrogen dioxide annual mean limit value, and the exceedance of the 24 hour mean limit value. There are a number of sensitive receptors (including residential properties) within 200m from the Scheme. Air quality in the immediate area around the Scheme is considered good (i.e. below the EU nitrogen dioxide annual mean limit value.)

6.3 Construction

6.3.1 During the construction phase, the Scheme has the potential to introduce new emissions from dust generating activities such as excavations, earth moving, demolition and construction traffic and equipment/plant. Established and standard industry best practice controls will be implemented to suppress dust during construction. Following the implementation of best practice controls during the Scheme construction, no changes in air quality emissions considered significant are expected at identified sensitive receptors.

Summary of construction assessment:

a. with the implementation of standard control measures, no significant effects are likely.

6.4 Operation

6.4.1 During operation there is the potential for impacts on air quality as a result of changes in vehicle flows around Junction 6, and the introduction of traffic where there are currently lower levels of traffic, for example along St Peters Lane in Bickenhill and Catherine-de-Barnes Lane. However, as air quality is considered to be of a good quality in the vicinity of the Scheme, the introduction of new traffic along the route, concentrations at receptor locations are predicted to be below the air quality objectives and are not considered to give rise to significant adverse effects.

Summary of operational assessment:

a. no significant effects are likely.

7 Cultural heritage

7.1.1 The cultural heritage assessment identified the likely significant effects of the Scheme to built heritage assets, such as listed buildings by means of changes in setting or direct impacts, and direct impacts to buried archaeological remains (both known and unknown).

7.2 Baseline

7.2.1 There are numerous cultural heritage assets within the study area, including; three scheduled monuments, two conservation areas, two grade I listed, seven grade II* listed and 24 grade II listed buildings. In addition, there are 132 non-designated archaeological assets recorded from the Historic England and county council Historic Environment Records (HER).

7.3 Construction

7.3.1 Construction activities such as earth works could lead to temporary impacts on archaeological and built heritage assets as a result of visual intrusion and noise. Permanent impacts from construction activities on known and unrecorded archaeological deposits, as well as built heritage assets are also possible. Impacts on Bickenhill Conservation Area (CA) would occur due to the alignment changing the western edge of the CA. Mitigation measures included in the CEMP would minimise the temporary impacts during construction. An appropriate methodology for recording unknown archaeological assets would also be established.

Summary of construction assessment:

a. likely significant adverse effects on previously unrecorded archaeological remains due to the construction works. An archaeological mitigation strategy has been produced including a programme of archaeological works to investigate, report and record potential disturbance of assets; and

b. likely significant effect on Bickenhill CA.

7.4 Operation

7.4.1 During Scheme operation, 14 built heritage assets and Bickenhill and Hampton in Arden CA have the potential to be impacted due to light intrusion and changes in their setting. Mitigation measures to reduce potential impacts on heritage assets are included in the Scheme design, including the provision of sympathetic lighting and landscape design, particularly where the Scheme would pass through the western edge Bickenhill CA.

Summary of operational assessment:

a. no significant effects are likely.

8 Landscape

8.1.1 The landscape and visual impact assessment identified the likely significant effects of the Scheme on landscape both in terms of potential impacts to landscape character such as land cover, pattern, scale and appearance, and visual change.

8.2 Baseline

8.2.1 The Scheme would be located within an area heavily influenced by existing infrastructure corridors and commercial development, namely the M42, A45 and the Birmingham NEC to the north of the proposed works. Whilst to the south a combination of the gentle topography resulting in a rolling landform, broad network of lanes and strong vegetation framework are the defining landscape features.

8.3 Construction

8.3.1 Proposed construction activities could have temporary adverse impacts on the local landscape, views for users of recreational facilities, the PRoW network, local roads and residential properties in the vicinity of the Scheme. Measures to mitigate the temporary landscape and visual impacts of construction activities include the sensitive design of compounds, as well as sympathetic lighting to minimise disturbance to nearby receptors.

Summary of construction assessment:

a. construction activities would have likely significant temporary adverse effects due to the introduction of uncharacteristic features such as a new mainline link road, new roundabouts and realigned local roads in the surrounding farmland landscape; and

b. construction activities would have likely significant temporary adverse visual effects on residents, recreational receptors, and local road users.

8.4 Operation

8.4.1 Due to the nature of the Scheme within the wider landscape, operation activities could have permanent adverse impacts on the local landscape and views. Measures to mitigate the landscape and visual impacts include the reinstatement of planting, as well as the careful design and siting of new lighting and signage to minimise visual intrusion and light spill into the surrounding area.

Summary of operational assessment:

a. likely significant adverse effects on the surrounding farmland landscape, including for effects to character and tranquillity;

b. during the opening year, the Scheme would have likely significant adverse effects on 14 receptors, four of which are residential (in the areas of Bickenhill Village, St Peters Lane, Four Winds and Solihull Road). There are eight recreational (rights of way and WGAA grounds) and three local road users (such as, Catherine-de-Barnes Lane and Solihull Road); and

c. By year 15 once planting has established, the Scheme would have likely significant adverse effects on 11 receptors, of which six are residential (in the area of Bickenhill village and St Peters Lane, Four Winds, four are recreational (rights of way and WGAA grounds) and one local road user (Catherine-de-Barnes Lane).

9 Biodiversity

9.1.1 The ecological receptors within the study area were surveyed over two years (2017 and 2018) to allow for a comprehensive baseline for the assessment. The methodology for surveys followed appropriate guidance specific to each receptor and in consultation and agreement with Natural England. An assessment was then undertaken which considered the potential impacts to each identified ecological receptor, following the implementation of embedded and standard mitigation measures. Where the assessment identified, additional mitigation measures have been implemented to reduce the potential impacts. These additional mitigation measures have been discussed in detail and agreed with the applicable statutory and non-statutory environmental bodies. Where applicable with the Scheme, compensation for the loss of ancient woodland and areas for potential biodiversity enhancement has been identified.

9.2 Baseline

9.2.1 Within the overall study area there are four international statutory nature conservation designations, three statutory national nature conservation designations, no statutory and 28 non-statutory nature conservation designations.

9.2.2 The habitat study area is mainly rural, comprising mostly arable fields, with a scatter of improved grass fields and a few semi-improved or unimproved neutral grasslands interwoven with relatively intact hedgerows and mature trees some of which are designated ancient woodland.

9.2.3 Protected and notable species within the applicable study areas include badger, bats, birds, otter, watervole, polecat, great crested newts (GCN), invertebrates, fungi and lichen.

9.3 Construction

9.3.1 During construction the Scheme has the potential to impact on a range of ecological assets and features, namely protected species, such as breeding and wintering birds, GCN, bats, badgers and fungi and lichen, in addition to impacting upon of a range of designated and non-designated site, most notably, Bickenhill Meadows SSSI (indirectly) and Aspbury's Copse ancient woodland (direct loss of 0.46ha).

9.3.2 Ecological mitigation for the Scheme involves standard best practice measures across all construction activities, and a number of embedded mitigation measures that include the creation, replacement and translocation of habitat and a bespoke solution to maintain water connectivity to the south east unit of Bickenhill Meadows Site of Special Scientific Interest (SSSI). In addition, the installation of mammal tunnels, bat boxes and creation of habitat would allow for impacts on protected species to be reduced as far as practicable.

Summary of construction assessment:

a. likely significant effects on Aspbury's Copse ancient woodland.

9.4 Operation

9.4.1 Mitigation for the Scheme has been developed to provide a conservation-led approach to the introduction and management of habitat(s) to mitigate the effects of the Scheme throughout the operational phase. These include; measures to provide replacement habitat for affected protected species, the translocation of soil as part of the ancient woodland compensation area and the translocation of grasslands communities.

Summary of operation assessment:

a. no significant effects are likely.

10 Soils, Geology and Groundwater

10.1.1 An assessment of geology and soils has been undertaken, taking into account geology and geomorphology, (including geological designated sites, land stability and mineral resources), soils and contamination of land.

10.2 Baseline

10.2.1 There are no designated sites relating to geological features beneath or in the vicinity of the Scheme. There is the potential for the Scheme to encroach upon areas of land which would potentially expose historical sources of contamination.

10.2.2 Where surveyed, the Agricultural Land Classification (ALC) (the soil quality) indicated that the Scheme would be situated on land comprising a mixture of ALC Grade 3a (21.4ha) considered to be best and most versatile (BMV) agricultural land and Grade 3b (82ha).

10.2.3 Superficial deposits are absent across the majority of the Scheme. Localised outcrops of alluvium deposits (clay, silt, sand and gravel) associated with the Shadow Brook and Low Brook intersect the Scheme on the M42 and the A45. Glaciofluvial deposits are present in patches across the central part of the Scheme north of Shadowbrook Lane and to the north of the M42 Junction 6. The southern part of the study area variably comprises of alluvium, river terrace deposits and glaciofluvial deposits.

10.2.4 The underlying geology across the Scheme is Mercia Mudstone Group.

10.3 Construction

10.3.1 During construction there is the potential for related activities to generate contaminants and enter groundwater or surface water, should they be disturbed through either in-situ contamination or construction related activities. Other potential impacts may include harm to human receptors and/or physical changes on the geology and soils such as the compaction of soil, or direct loss of BMV soils.

Summary of construction assessment:

a. the risk of contamination is low and not considered a risk of significant harm to human or geological and soil receptors and the wider environment.

10.4 Operation

10.4.1 The Scheme operation would not include any activities that are likely to generate contaminants that could pose significant risk to controlled waters. However, there would be potential for environmental risks as associated with spillages due to road accidents or faulty vehicles which would be mitigated through the implementation of the Scheme drainage design.

Summary of operation assessment:

a. no significant effects are likely.

11 Materials

11.1.1 The construction of the Scheme would require the use of material resources and the generation and management of waste. The assessment has considered the types/ quantities of materials and waste associated to construct the Scheme; the temporary storage of materials during construction; the movement of materials during construction; and the management of waste streams.

11.2 Baseline

11.2.1 A wide range of material resources would be required to construct the Scheme. This includes concrete, cement, timber, plywood, reinforcing fabrics and geotextiles and packaging materials. In addition, construction activities would inevitably generate waste. Given the nature of the Scheme, large quantities of excavated material is likely.

11.2.2 With regard to re-use of materials, the baseline target for recycling of construction and demolition waste is 70%, as set out in the EU Waste Framework Directive and the Waste Plan for England.

11.3 Construction

11.3.1 The main type of material generated during construction would be the underlying Mercia Mudstone. The Scheme would minimise as far as practicable the amount of material that would need to be taken to offsite disposal sites, but given the nature of the proposed works there is anticipated to be a surplus of excavated materials and topsoil.

11.3.2 All waste produced by the Scheme would be managed in accordance with legal compliance and the principles of the waste hierarchy (i.e. prevention, re-use, recycling, recovery, disposal). As such, the Scheme would explore opportunities to reuse materials on site, whilst where feasible sustainable construction materials and methods would be implemented. For waste that cannot be re-used, recycled or recovered, the assessment concludes there is adequate regional capacity for disposal.

11.3.3 As part of the management of materials for the Scheme, Highway England is committed to a 95% recycling target for aggregate materials generated by the Scheme and a target of 27% (in accordance with the regional targets) for the use of recycled aggregate materials in the Scheme where feasible. Throughout construction a Materials Management Plan will be implemented as part of a CEMP to ensure that materials and waste is appropriately managed.

Summary of construction assessment:

a. no significant effects are likely.

11.4 Operation

11.4.1 Material use and waste generation is expected to be very small during operation of the Scheme, with no significant effects expected. Operational waste and materials have consequently been scoped out of the assessment.

12 Noise and vibration

12.1.1 A noise and vibration assessment has been undertaken to establish significant temporary and permanent effects associated with the construction and operation of the Scheme.

12.2 Baseline

12.2.1 The area is predominantly urban in nature, and is subject to noise from a mix of road, aircraft and localised commercial and industrial sources. There are four designated 'Noise Important Areas' (identified by the government as areas being most exposed to noise) within 1km of the Scheme, as well as a range of sensitive residential receptors. A baseline noise survey was undertaken to assist in understanding the general noise environment in the area, and identify any other local noise sources.

12.3 Construction

12.3.1 Temporary noise and vibration impacts related to Scheme construction activities as well as construction traffic have been assessed.

12.3.2 The nearest residential properties to the Scheme construction activities would be those located along the Catherine-de-Barnes Lane, St Peters Lane, Clock Lane and B4102 Solihull Road near M42. There is the potential that receptors in these locations would experience temporary, short term impacts during noisier construction activities.

12.3.3 An Outline Environmental Management Plan has been prepared and includes measures to reduce these impacts as far as practicable, including mechanisms to communicate with local residents to highlight potential periods of disruption.

Summary of construction assessment:

a. potential temporary significant effects are likely at a number of receptors immediately adjacent to the construction works.

12.4 Operation

12.4.1 Noise reduction measures have been included within the Scheme design, such as, the use of low noise road surfacing and the new mainline link road being constructed in cutting would minimise operational noise effects.

12.4.2 The Scheme has the potential to result in both beneficial and adverse traffic noise impacts at nearby noise sensitive receptors as the Scheme moves the road closer to some receptors, and further away from others.

12.4.3 Most of the new mainline link road has been constructed in cutting, which reduces noise emissions from vehicle movements at receptors adjacent to the roadside. As such, residents along Catherine-de-Barnes Lane would benefit from reduced noise levels.

12.4.4 Where the new mainline link road would pass in close proximity to Bickenhill village and St Peters Lane, a negligible change in noise levels is predicted.

Summary of operation assessment:

a. no significant effects are likely.

13 Population and Health

13.1.1 The population and health assessment identified the likely significant effects of the Scheme on occupiers of agricultural, community and development land, owners and users of private and commercial property, users of community facilities, people making journeys on the SRN and LRN; and NMUs travelling on the local road network and PRoW.

13.2 Baseline

13.2.1 Land use in the vicinity of the Scheme is marked by a contrast of urban development set against more open agricultural landscapes and settlements found to the south, east and north east of the junction. Small settlements are scattered around the Scheme, the main settlements being Bickenhill and Catherine-de-Barnes to the south west of the Scheme, and Hampton in Arden which is located south east of the junction.

13.2.2 The WGAA sports facility at *Páirc na hÉireann* in close proximity to the Scheme. Equestrian activities also form a key part of the recreational offer of the local area, with opportunities for recreational walking and cycling also provided through the extensive network of roads and PRoW including the "Green Man Trail". The existing M42 experiences long delays and frequent congestion which causes slow moving traffic leading to driver stress.

13.2.3 The health of residents within Bickenhill are considered broadly similar to the average for England of long-term illness or disability and obesity among adults above the national average, and the proportion of the population aged over 65 is notably higher than the national average.

13.3 Construction

13.3.1 During construction of the Scheme, potential impacts on agriculture primarily relate to the loss of agricultural land and soils. There are also possible impacts on users of PRoW including temporary closure or diversion during construction.

13.3.2 The design of the Scheme has been developed to minimise agricultural land take as far as reasonably practicable. Mitigation measures during construction would include temporary diversions and signage to limit the impacts of any temporary rights of way closures. During the construction the traffic management required to construct the Scheme, including the construction of a temporary road and the presence of construction traffic could lead to additional delays that would increase driver stress. Traffic management and construction activity could also lead to changes in views from the road.

13.3.3 Potential impacts on human health during construction include changes in noise and air pollution, water quality and climate change as a result of construction activities and traffic.

Summary of construction assessment

a. construction of the Scheme would result in likely significant adverse effects on agricultural land due to the loss of good quality agricultural land.

b. construction of the Scheme would result in a likely significant temporary effect on one agricultural holding.

c. the effect of construction on human health is assessed to be neutral.

13.4 Operation

13.4.1 Due to the nature of the Scheme, the severance of land would occur as the new mainline link road passes northwards and to the west of Bickenhill Village. The Scheme would include new routes to maintain and improve the connectivity of the local PRoW network, such as the inclusion of a pedestrian underpass to allow the continued movement of users from the new footbridge on the A45 towards Bickenhill. The Scheme would improve traffic flows and reduce driver stress throughout the LRN and on the M42.

Summary of operation assessment:

a. operation of the Scheme would result in permanent adverse effects for three agricultural holdings;

b. operation of the Scheme would have likely significant beneficial effects of reduced stress for drivers on the SRN and LRN; and

c. the introduction of new and improved NMU facilities would result in a beneficial effect on health due to improved access to healthcare services, overall accessibility and open spaces and nature, with the overall effect of construction on human health assessed as neutral.

14 Road drainage and water environment

14.1.1 The water environment consists of the existing water features on the surface (stream and ponds) and below ground (aquifers and groundwater). Key assessment components have informed the wider water assessment such as, the completion of a Water Risk Assessment Tool, preliminary Water Framework Directive assessment, Flood Risk Assessment and Scheme Drainage Strategy.

14.2 Baseline

14.2.1 Within the study area there are a number of watercourses and standing water features including, Hollywell Brook, Shadow Brook, the River Blythe and Low Brook. In addition, Bickenhill Meadows SSSI, a nationally designated ecological site which holds rare wetland habitat is present within the study area. Most of the Scheme is located in Flood Zone 1 and is, therefore, considered to have a low risk of flooding. However, a flood risk assessment has been completed to understand and address the flood risks associated with localised areas of Scheme within Flood Zone 3 associated with Hollywell Brook.

14.3 Construction

14.3.1 Without mitigation, the potential impacts of the construction activities could include spillages or sediment run-off causing pollution and risk of contamination to surface water and groundwater and worsening flood risk. The CEMP would include measures to mitigate potential adverse impacts on the water environment during construction. These would include pollution control measures such as emergency spill procedures/kit and the approach to managing storage areas and stock piles. Works within the floodplain would be kept to a minimum as far as reasonably practicable. The Scheme would include a bespoke pumping solution to maintain water connectivity to Bickenhill Meadows SSSI.

Summary of construction assessment:

a. with the implementation of mitigation, no significant effects are likely.

14.4 Operation

14.4.1 The road has been designed to minimise the risk of it flooding or causing flooding elsewhere by incorporating current design standards and future climate change allowances to improve its resilience, and through the use of measures to control and manage run-off.

14.4.2 The Scheme would incorporate a drainage system (Sustainable Drainage System where applicable (SuDS)) with additional storage/ treatment (tanks, reedbeds and swales). Collectively these systems would manage the potential operational impacts (both controlling outfall rates and water quality levels) upon the surrounding local water resources.

Summary of operation assessment:

a. no significant effects are likely at Bickenhill Meadows SSSI; and

b. there would be an overall beneficial effect as a result of improved prevention and treatment of pollution from road runoff and sediment transport to Hollywell Brook and Shadow Brook.

15 Climate

15.1.1 The monitoring and analysis of weather patterns and the understanding of contributing factors is concluding that rising concentrations of greenhouse gases (GHGs) and carbon dioxide (CO_2) in the atmosphere is resulting in climate change. These changes have the potential to impact infrastructure at the design stage through to operational resilience. As such, an assessment has been undertaken of the effects on climate from the emission of greenhouse gas emissions associated with the Scheme. Consideration has also been given to the resilience of the Scheme to climate change in addition to the impacts from climate change combined with the Scheme on surrounding environment and receptors.

15.2 Baseline

15.2.1 Data from the Met Office show's that the Midlands is already experiencing climate change impacts including flooding and heat waves. UK climate projections predict an increase in annual temperatures and rainfall, with wetter winters and drier summers. Increases in the frequency of heatwaves, prolonged periods with no rainfall and days when precipitation is greater than 25mm are also predicted.

15.3 Construction

15.3.1 The construction of the Scheme would contribute to UK CO_2 emissions and has been assessed against the relevant UK carbon budgets. Mitigation measures would be implemented to reduce emissions during the construction of the Scheme and will be set out in the CEMP.

15.3.2 Potential impacts of severe weather events during the construction phase include reduction of working hours, increased health and safety risks and damage to construction materials. The Scheme is designed to be more resilient to impacts arising from predicted future more severe weather events and climatic conditions and designed in accordance with current planning, design and engineering practice and codes.

Summary of construction assessment:

a. no significant effects with regards to climate resilience and greenhouse gas emissions during the construction phase are anticipated.

15.4 Operation

15.4.1 During operation of the Scheme CO_2 emissions would be generated from road users. Emissions have been assessed within the context of the relevant national carbon budgets. It is predicted that emissions arising as a result of the construction and operation of the Scheme would represent less than 0.006% of the total UK emissions target in any five year carbon budget during which they arise.

Summary of operation assessment:

a. no significant effects with regards to greenhouse gas emissions, climate change and the Scheme in-combination with climate change is anticipated.

16 Assessment of cumulative effects

16.1.1 An assessment has been undertaken of potential cumulative effects for all the above environmental topics arising from the following:

a. proposed developments in the vicinity of the Scheme that are under construction, have been consented or are identified on development plans, combined with the effects of the Scheme; and

b. the combined effects from the Scheme on a single receptor from a number of individual environmental impacts, for example noise, dust and traffic.

16.2 Cumulative effects with other developments

16.2.1 A review of the planning applications and allocations within the area around the Scheme was undertaken to identify any other developments which may result in a cumulative effect together with the Scheme, which is a greater, new or different significant effect than would result from the Scheme on its own. The search area for these other developments was the largest combined area based on the likely distances from which developments could influence each environmental topic. The developments identified that have the potential to generate significant cumulative effects with the Scheme, are the proposed Motorway Service Area (MSA) adjacent to the new Junction 5A, and works associated with mineral extraction to the north of the M42 Junction 6 in land defined for the construction of HS2.

Summary of cumulative effects assessment:

a. likely significant cumulative effect on Aspbury's Copse and the landscape character of the area when considered with the MSA.

16.3 Combined effects on a single receptor

16.3.1 The combination of significant effects which could affect people's enjoyment of a PRoW, community facility or residential property or the viability of a business was considered within the Population and health assessment and the outcome is included below. In other cases, the combination of otherwise non-significant effects such as visual, noise and dust could lead to a new significant effect or increase the magnitude of previously identified significant effects.

Summary of construction assessment:

a. likely temporary significant effects on sensitive receptors in close proximity to the main construction works due to changes in noise levels and landscape.

Summary of operation assessment:

a. likely significant effects expected when considering the combined effects due the introduction of the Scheme on identified receptors.

17 Summary of effect

17.1.1 **Table 17.1** presents a summary of the environmental effects of the Scheme.

Table 17.1: Summary of effects

Topic	Assessment of significant environmental effects	
	Construction stage	Operational stage
Air quality	▪ No significant effects	▪ No significant effects
Cultural heritage	▪ Permanent **adverse** effects on previously unrecorded archaeological remains ▪ Likely significant effect on Bickenhill Conservation Area	▪ No significant effects
Landscape	▪ Temporary **adverse** effects of construction activities on the surrounding farmland landscape ▪ Temporary **adverse** effects on residents, recreational receptors, and local road users.	▪ The Scheme would have likely significant **adverse** effects on the surrounding farmland landscape. ▪ During the opening year, the Scheme would have likely significant **adverse** effects on 14 receptors including residents, recreational users and local road users. ▪ By year 15 once planting has established, the Scheme would have likely significant **adverse** effects on 11 receptors, including residents, recreational users and local road users.
Biodiversity	▪ Likely significant effects to Aspbury's Copse ancient woodland.	▪ No significant effects

Topic	Assessment of significant environmental effects	
	Construction stage	Operational stage
Soils, geology and groundwater	▪ No significant effects	▪ No significant effects
Materials	▪ No significant effects	▪ N/A
Noise and vibration	▪ Temporary short term **adverse** significant effects on residential receptors in close proximity to construction activities.	▪ No significant effects
Topic	**Assessment of significant environmental effects**	
	Construction stage	Operational stage
Population and Health	▪ Significant **adverse** effect due to loss of BMV agricultural land. ▪ Temporary effect to one agricultural holding.	▪ Significant **adverse** effect on three agricultural holdings. ▪ Permanent **beneficial** effects of reduced stress for drivers on the M42 and local road network. ▪ Beneficial effects on human health.
Road drainage and the water environment	▪ No significant effects	▪ Permanent **beneficial** effect as a result of improved prevention and treatment of pollution from road run-off and sediment transport to Hollywell Brook.
Climate	▪ No significant effects	▪ No significant effects
Assessment of cumulative effects	▪ Cumulative and combined significant effects considered likely.	▪ Cumulative and combined significant effects considered likely.

18 Next steps

18.1.1 Following submission of the application for Development Consent, the Planning Inspectorate will consider, on behalf of the Secretary of State for Transport, whether the application should be accepted for examination. If accepted, the documents accompanying the application will be publicly available on the Planning Inspectorate's website.

18.1.2 Interested parties will be able to make relevant representations about the Scheme and its potential impacts. Representations received by the Planning Inspectorate will be considered as part of the examination into the application