

A38 Derby Junctions
TR010022
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

April 2019

Infrastructure Planning

Planning Act 2008

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

A38 Derby Junctions
Development Consent Order 202[]

Non-Technical Summary

Regulation Number	Regulation 5(2)(a)
Planning Inspectorate Scheme Reference	TR010022
Application Document Reference	6.4
Author	A38 Derby Junctions Project Team, Highways England

Version	Date	Status of Version
1	April 2019	DCO Application

Table of contents

Chapter	Pages
1 Introduction	1
2 Need for the Scheme	2
3 Scheme objectives	4
4 The applicant	5
5 Scheme description	6
5.1 Environmental context.....	6
5.2 The Scheme.....	6
5.3 Measures to avoid, prevent or reduce significant effects	12
5.4 Construction approach and programme	12
6 Alternatives studies and consultation	14
7 Assessment of likely significant effects	16
8 Air quality	17
8.1 Baseline	17
8.2 Construction.....	17
8.3 Operation	18
9 Cultural heritage	19
9.1 Baseline	19
9.2 Construction.....	19
9.3 Operation	20
10 Landscape and visual effects	21
10.2 Baseline	21
10.3 Construction.....	21
10.4 Operation	21
11 Biodiversity	23
11.1 Baseline	23
11.2 Construction.....	23
11.3 Operation	24
12 Noise and vibration	25
12.1 Baseline	25
12.2 Construction.....	25
12.3 Operation	25
13 Geology and soils	27
13.1 Baseline	27
13.2 Construction.....	27
13.3 Operation	27
14 Material assets and waste	28
14.1 Baseline	28
14.2 Construction.....	28

14.3	Operation	29
15	People and communities	30
15.2	Baseline	30
15.3	Construction.....	30
15.4	Operation	31
16	Road drainage and the water environment.....	32
16.2	Baseline	32
16.3	Construction.....	32
16.4	Operation	32
17	Climate	34
17.1	Baseline	34
17.2	Construction.....	34
17.3	Operation	34
18	Assessment of cumulative effects	36
18.2	Cumulative effects with other developments	36
18.3	Combined effects on a single receptor.....	36
19	Summary of significant effects	38
20	Next steps.....	41

List of Figures

Figure 2.1: A38 Derby junctions - Scheme location plan	2
Figure 5.1: Proposed Kingsway junction.....	8
Figure 5.2: Proposed Markeaton junction	9
Figure 5.3: Proposed Little Eaton junction	10
Figure 5.4: Signage works within existing highway verge to the north of Little Eaton junction	11

List of Tables

Table 19.1: Summary of likely significant effects associated with Scheme construction and operation.....	38
--	----

1 Introduction

- 1.1.1 This Non-Technical Summary has been prepared for the proposed A38 Derby Junctions scheme (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 propose improving the 3 junctions along the A38 through Derby to separate local traffic from through traffic; namely the junctions at Kingsway, Markeaton and Little Eaton. These junctions span an approximate distance of 5.5km along the A38 to the west and north of Derby
- 1.1.4 The 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 who will then make a decision on the application.
- 1.1.5 An Environmental Statement (ES) has been prepared, to accompany the DCO Application, which provides:
- A description of the Scheme and the reasonable alternatives considered in the development of the design.
 - The environmental setting of the Scheme.
 - The likely significant effects of the Scheme on local communities and the environment.
 - The measures included in the Scheme design to mitigate identified environmental effects, as well as measures to be taken during Scheme construction to minimise environmental effects and nuisance.
- 1.1.6 This document provides a summary of the ES in non-technical language.

2 Need for the Scheme

2.1.1 The A38 is the strategic route from Birmingham, through Derby, to the M1 at junction 28 which carries significant volumes of north-south long-distance traffic. Where the A38 passes through the western and northern parts of Derby, local urban trips cross the A38 on roads into the city or use the A38 to travel around Derby. The interaction between strategic and local trips results in delays at the 3 at-grade roundabout junctions on the A38, namely (see Figure 2.1):

- A38/A5111 Kingsway junction.
- A38/A52 Markeaton junction.
- A38/A61 Little Eaton junction.



Figure 2.1: A38 Derby junctions - Scheme location plan

2.1.2 Derby and its immediate surrounding area are expected to undergo significant housing and employment growth. As a result, the traffic demands on the A38 through Derby are forecast to grow quicker than the national average. Consequently, existing delays at Kingsway, Markeaton and Little Eaton junctions are anticipated to worsen due to increasing levels of traffic.

2.1.3 In order to address the existing and predicted future traffic issues along this stretch of the A38, the Scheme comprises the grade separation of Kingsway junction, Markeaton junction and Little Eaton junction which are the three remaining at-grade junctions on the A38 between the A38/A5148 junction (near Lichfield) and the M1. Grade separation would be achieved by the A38 passing through Kingsway and Markeaton junctions via underpasses, and on an embankment flyover at Little Eaton junction.

2.1.4 By grade separating these junction, the Scheme would provide the following benefits:

- Reduced conflicts between through-traffic and local traffic, pedestrians and cyclists, resulting in a reduction in road accident casualties.
- Improved road safety, by attracting vehicles away from less suitable roads.
- Benefits to users of public transport by reducing delays.
- Assist future economic growth and development in Derby and the wider county.

3 Scheme objectives

3.1.1 Highways England's objectives for the Scheme include improving Derby's economic competitiveness, the environment and quality of life for local residents by reducing congestion on the A38 and in the surrounding urban areas. The Scheme would also increase the capacity of the strategic road network and assist housing and employment growth within Derby. The overarching objective is to deliver a Scheme that ensures increased capacity to realise the associated economic and social benefits that the Scheme would bring, whilst also being affordable and delivering high value for money.

3.1.2 The specific Scheme objectives defined by Highways England are as follows:

- Support economic growth:
 - Reduce delays and increase reliability of journeys.
 - Assist development and regeneration opportunities in the area surrounding the Scheme.
 - Minimise traffic disruption during Scheme construction.
 - To design the Scheme such that future maintenance costs are reduced.
- Environment:
 - To minimise impacts on the environment.
 - To mitigate air quality and noise impacts.
 - To protect watercourses from pollutant spillages on the highway.
 - To use environmentally friendly operations and products.
- Society:
 - To improve the safety for all road users.
 - To maintain a safe environment for road workers.
 - To improve safety for residents that live near the junctions.
 - To integrate the Scheme with other methods of transport where applicable.
 - To provide a consistent high standard of road signing.
 - To provide appropriate facilities for pedestrians and cyclists.
- Public accounts:
 - To be affordable and represent high value for money.

4 The applicant

- 4.1.1 Highways England is the Strategic Highways Company as defined in the Infrastructure Act 2015, and is charged with modernising and maintaining England's strategic road network, as well as running the network and keeping traffic moving. Highways England is the applicant for the Scheme under the Planning Act 2008.

5 Scheme description

5.1 Environmental context

- 5.1.1 Kingsway and Markeaton junctions are located in a predominantly urban environment, with a mixture of residential housing, commercial, retail, health care and educational establishments. There are a number of public open spaces in the vicinity of the junctions, namely Mackworth Park, open space next to Greenwich Drive South, Markeaton Park and Mill pond.
- 5.1.2 Little Eaton junction is set in a semi-rural environment, with the Ford Farm Mobile Home Park, the property Fourways, and commercial and retail facilities located to the north of the existing junction. The Derby Garden Centre occupies the land between the A38 and the B6179 to the north of the junction (accessed off the B6179). The eastern edge of Breadsall village is located approximately 400m to the south-east of the existing junction, whilst the southern edge of Little Eaton village is located approximately 900m to the north of the junction. The A38 to the west of the existing junction crosses over the River Derwent and the Midland Mainline railway line that connects Derby with Sheffield.

5.2 The Scheme

- 5.2.1 The Scheme comprises the following key components (refer to the Scheme plans shown in Figures 5.1, 5.2, 5.3 and 5.4):
- Kingsway junction (refer to Figure 5.1):
 - A38 lowered to pass underneath the existing roundabout in a new underpass (low point of the mainline A38 would be approximately 6.5m below the level of the existing roundabout) with two new roundabouts and a new bridge at existing ground level to carry traffic over the lowered A38.
 - A38 widened to three lanes in each direction between Kingsway and Markeaton junctions, with the speed limit increased from 40mph to 50mph.
 - Local access provided by a road link to Kingsway Park Close.
 - Closure of existing accesses from the A38 onto Brackensdale Avenue and Raleigh Street.
 - Markeaton junction (refer to Figure 5.2):
 - A38 lowered to pass underneath the existing roundabout (maximum depth approximately 7.6m below existing ground level), in a new underpass with two new bridges to carry the A52 and signalised roundabout traffic across the lowered A38.
 - The A38 widened to three lanes in each direction between Markeaton and Kedleston Road junctions, with the speed limit increased from 40mph to 50mph.

- The existing entrance to Markeaton Park from the roundabout would be closed. An improved entrance and exit to the park would be provided from the A52 Ashbourne Road.
- Closure of the existing A38 access (ingress only) to the Esso petrol station and McDonald's site, with a new modified access via the A52 Ashbourne Road.
- The existing pedestrian footbridge over the A38 (north of Markeaton roundabout) would be replaced with a new bridge that fully complies with current cyclist and wheelchair user requirements.
- Little Eaton junction (refer to Figure 5.3):
 - The A38 would be realigned to the south and east of the existing roundabout and built on an embankment. The existing roundabout would be extended to the south with new slip roads providing access onto and off the new A38, whilst the roundabout would enable continued access to Ford Lane (and the Ford Farm Mobile Home Park), the A61 and the B6179. Two new bridges would be built to carry the A38 traffic over the roundabout on a 'fly-over', this would separate the A38 through traffic from local traffic crossing, leaving and joining the A38. The new embankment would be around 9m above the existing roundabout carriageway level, reaching a maximum of about 11m above existing ground level at its highest point before dropping down to join the existing A38 alignment immediately south of the Water Treatment Works Accommodation Bridge to the north of Little Eaton junction.
 - The existing bridge over the railway would be widened to carry the southbound A38 carriageway. The existing part of the railway bridge would be kept for the northbound A38 carriageway.
 - The existing access to and from the A38 at Ford Lane (west of the Midland Mainline railway bridge) would be closed for safety reasons.
 - The existing national speed limit on the A38 would be kept, although an advisory 50mph limit would be displayed on the bend through the new junction.
 - All existing footways and cycleways would be retained and diverted around the roundabout.

5.2.2 As illustrated in Figures 5.1 to 5.4, the Scheme includes signage works and associated road restraint systems within existing highway verges to the south of Kingsway junction, to the north of Kedleston Road junction, to the south of Little Eaton junction and at 2 locations to the north of Little Eaton junction.

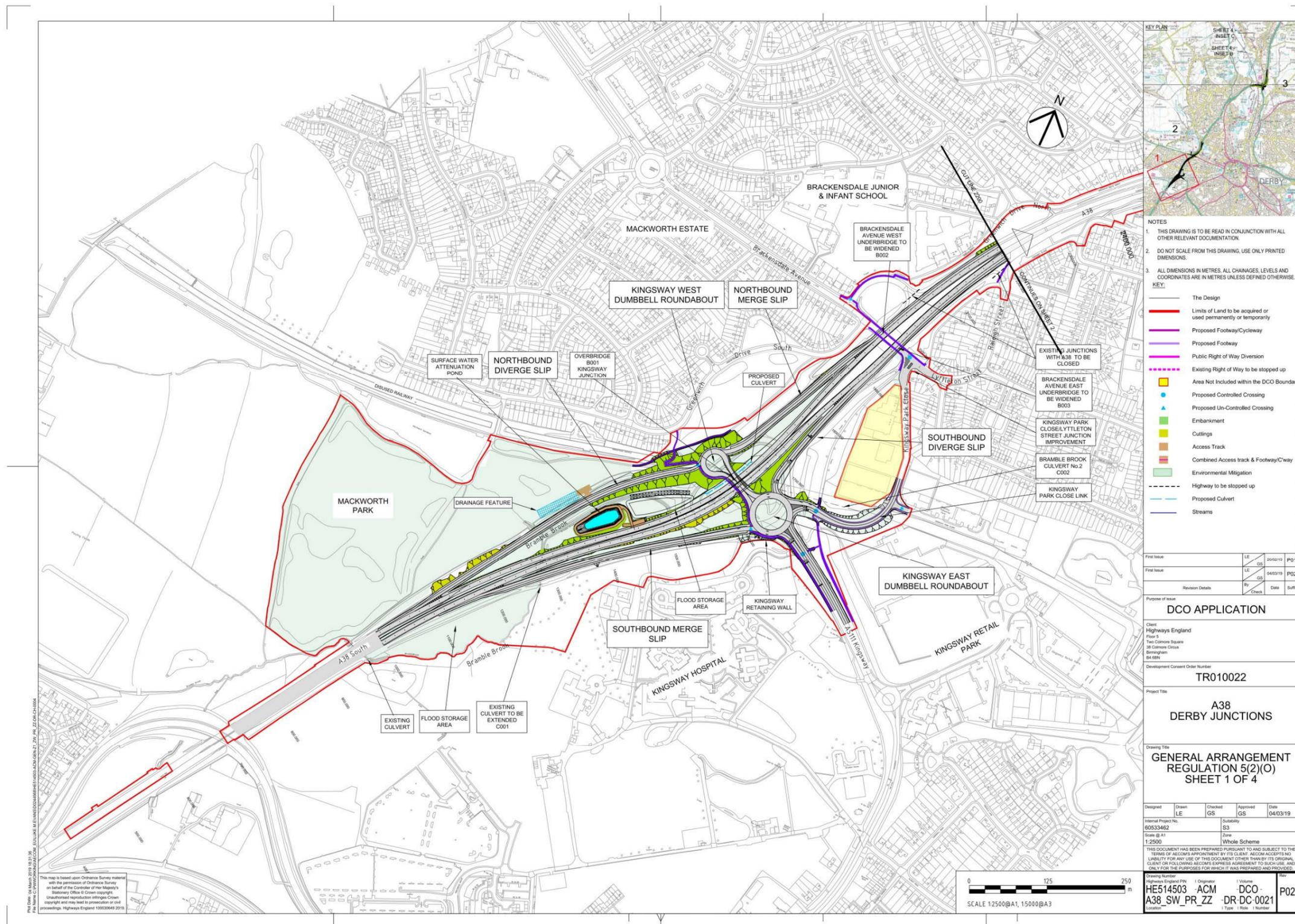


Figure 5.1: Proposed Kingsway junction

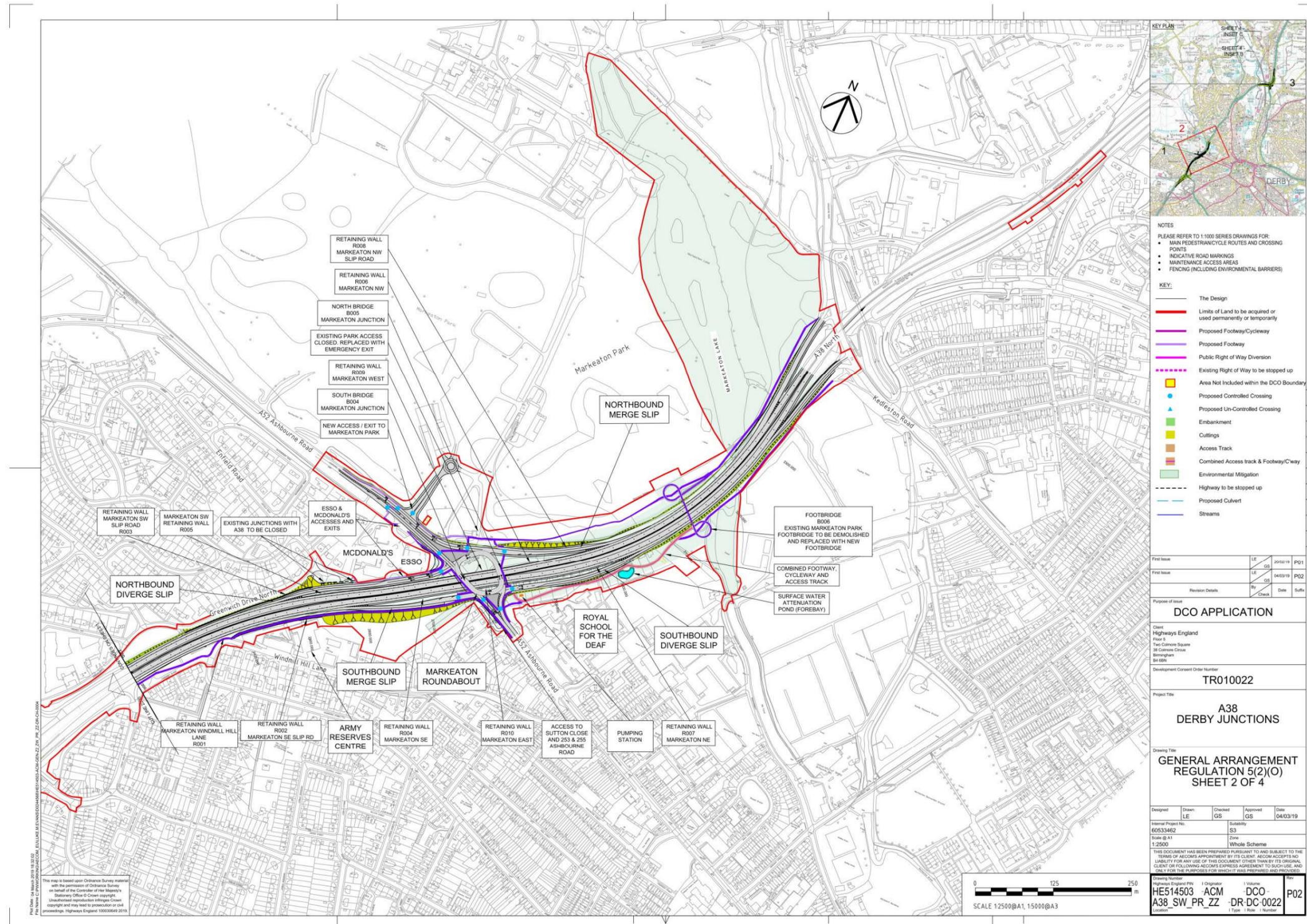


Figure 5.2: Proposed Markeaton junction

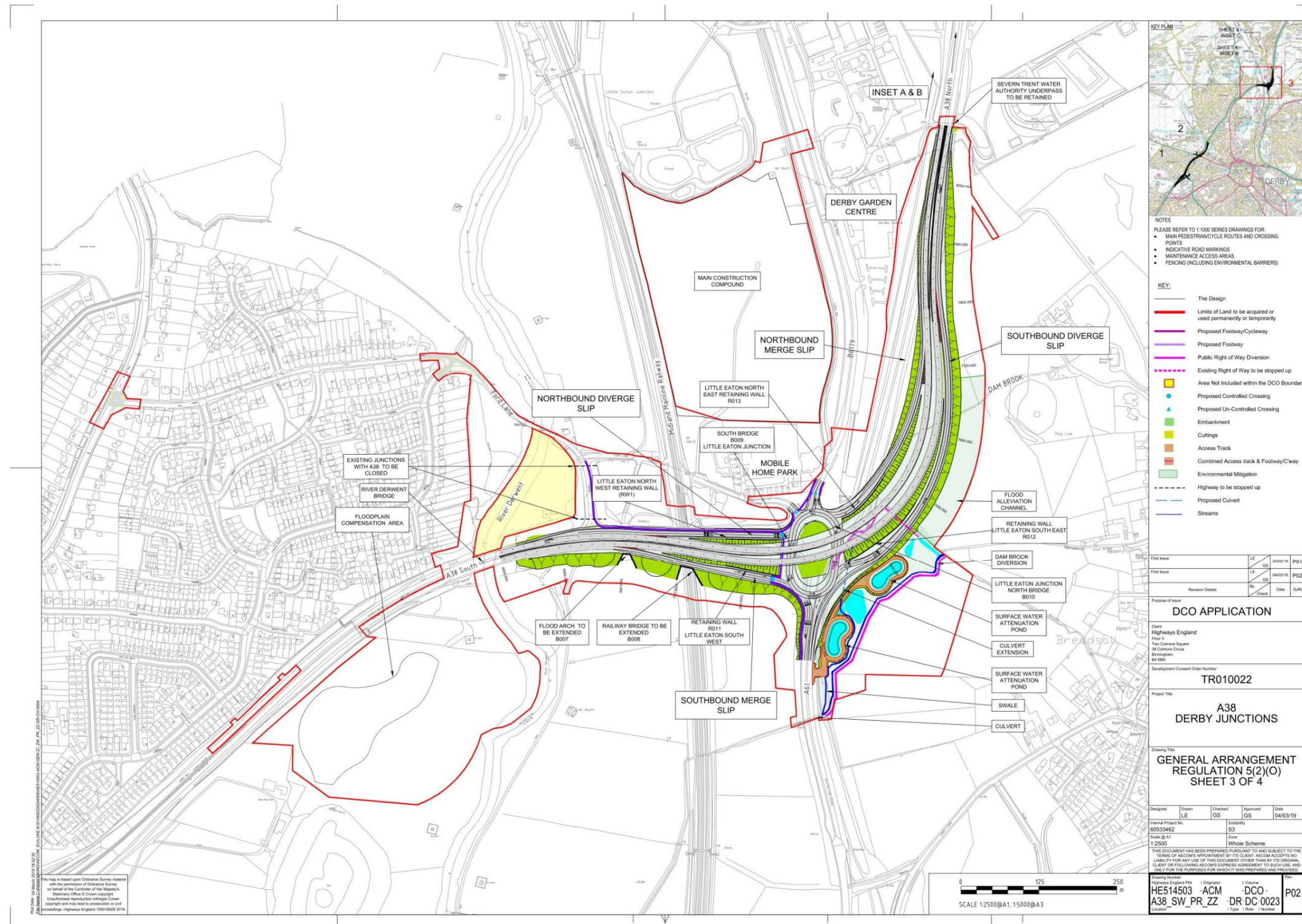


Figure 5.3: Proposed Little Eaton junction



Figure 5.4: Signage works within existing highway verge to the north of Little Eaton junction

5.3 Measures to avoid, prevent or reduce significant effects

5.3.1 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:

- Development of a design that aims to avoid sensitive sites wherever reasonably practicable.
- Placement of the A38 in underpasses through Kingsway and Markeaton junctions to minimise noise and visual impacts.
- Use of noise barriers and screens to reduce noise and visual impacts for those living close to the Scheme.
- Providing a landscape design that aims to retain existing trees, provides planting that reduces local views of the road where possible, as well as habitats for local ecology.
- Provision of flood prevention measures and a highway drainage design that protects local watercourses.
- Effective use of redundant spaces within the Scheme boundary. This includes replacing public open space losses due to the Scheme, as well as planting redundant sections of carriageway.
- Providing new and replacement footpaths and cycleways, and a new replacement footbridge over the A38 to the north of Markeaton junction.
- New and improved access to Markeaton Park.
- Ecological mitigation works, including fencing, bat and bird boxes, and creation of new species-rich grassland.

5.3.2 The control measures mentioned above, and actions to be taken during the Scheme construction phase to mitigate environmental effects, are contained within the Outline Environmental Management Plan (OEMP) which is included in the DCO Application. The OEMP would be further developed into a Construction Environmental Management Plan (CEMP), which would be prepared and implemented by the construction contractor. This would include the approach to monitoring of construction activities and the performance of mitigation measures as appropriate.

5.4 Construction approach and programme

5.4.1 Subject to securing a DCO, early construction works are planned to start in late 2020 – such works include supplementary geotechnical investigations, archaeological clearance works, surveys to confirm the location of utility apparatus, utilities diversions, site clearance works, construction of flood mitigation measures, and diversion of Dam Brook and Bramble Brook.

- 5.4.2 The main construction works would follow in early 2021, with the Scheme due to fully open to vehicles in 2024. Construction works would occur at all three junctions simultaneously. Currently Kingsway junction is scheduled to be completed and opened first, followed by Little Eaton junction, with Markeaton junction being the last to open.
- 5.4.3 A main construction compound would be located to the north of Little Eaton junction on a vacant plot of land that was previously used for landfill. A number of smaller compounds would be located along the Scheme for construction worker facilities and materials storage.
- 5.4.4 Traffic management measures would be put in place for the duration of the construction phase. Such measures aim to minimise impacts on traffic and delays.
- 5.4.5 Construction of the Scheme would require the diversion, relocation and protection of existing utility assets including water, wastewater, electricity, gas and telecommunications.

6 Alternatives studies and consultation

- 6.1.1 The Scheme has a long history and over the last 20 years a wide range of alternatives have been developed, considered and assessed. Public consultation events were held in 2002 and 2003 for the then proposed options as follows:
- Kingsway junction:
 - Placement of the A38 on embankment over the junction (Option 1).
 - Placement of the A38 in an underpass (Option 2). This was defined as the preferred option.
 - Markeaton junction:
 - Placement of the A38 in an underpass, with a single bridge over the A38 to carry the A52 Ashbourne Road (Option 1).
 - Placement of the A38 in an underpass, with land take from Markeaton Park (Option 2).
 - Placement of the A38 on an embankment over the junction (Option 3).
 - Placement of the A38 in an underpass, with land take from buildings on Queensway (Option 4). This was defined as the preferred option.
 - Little Eaton junction:
 - Configurations that would place the A38 on a flyover to the north of the existing junction (Options 1 and 2).
 - Placement of the A38 on a flyover to the south and east of the existing A38 (Option 3). This was defined as the preferred option.
- 6.1.2 Following these events, the Scheme was effectively put on hold until 2013 when it was announced as part of the Government's spending review. In addition, in 2015 the Scheme was included in the Government's first 'Road Investment Strategy' (RIS).
- 6.1.3 Following recommencement of the Scheme development, further option assessment work was undertaken, informed by a public consultation exercise that was held in February and March 2015.
- 6.1.4 At Kingsway junction the option assessments confirmed Option 2 remained the preferred option, although the local access provisions were amended to include a link road to Kingsway Park Close rather than Greenwich Drive South.
- 6.1.5 At Markeaton junction, Option 4 was confirmed as the preferred option, with various options being investigated regarding access into the Esso petrol station and the McDonald's restaurant site, as well as the access arrangements for Markeaton Park.

- 6.1.6 At Little Eaton junction, Option 3 was confirmed as the preferred option following the re-evaluation of:
- Options which placed the A38 mainline to the north of the junction.
 - Options that retained the A38 mainline to the south and east of the existing A38, but further from Breadsall village.
 - Options that placed the A38 at existing ground level, but with either an underpass or flyover link road between the A61 and the B6179.
- 6.1.7 Following confirmation of the preferred options, the Preferred Route for the Scheme was announced by the Secretary of State for Transport in January 2018.
- 6.1.8 Following this announcement, Highways England continued to develop the Scheme design, informed by feedback from statutory consultation held in September and October 2018. Feedback from consultation has been used to inform the further development of the Scheme design, and to ensure that the thoughts and concerns of the local population and other stakeholders have been considered.
- 6.1.9 Details of the September and October 2018 statutory consultation can be found in the Consultation Booklet at: <https://highwaysengland.citizenspace.com/he/a38-derby-junctions-statutory-consultation/>
- 6.1.10 The feedback to the 2018 consultation exercises, and Highways England response to it, is presented in the Consultation Report included in the DCO Application.
- 6.1.11 In addition to formal consultation, extensive and regular engagement has been undertaken with relevant stakeholders to inform the development and assessment of the Scheme design. These stakeholders include Derby City Council, Derbyshire County Council, Erewash Borough Council, Natural England, Historic England, the Environment Agency, Network Rail, local parish councils as well as affected local landowners.

7 Assessment of likely significant effects

- 7.1.1 Under the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the EIA Regulations), the Scheme is defined as the type and scale of development that automatically requires an Environmental Impact Assessment (EIA). Accordingly, an EIA has been undertaken to meet the requirements of the relevant planning policy and legislation, and identify the potential for the Scheme to have significant effects upon the environment. The results of the EIA are reported in the Environmental Statement which is submitted with the DCO Application.
- 7.1.2 The EIA considers impacts during both the construction and operation of the Scheme. The construction phase assessment addresses the temporary activities involved in building the Scheme, and the subsequent permanent presence of the Scheme once constructed. Where relevant, these temporary and permanent effects are described separately below. The operational assessment considers the situation when the Scheme is being used by traffic.

Methods used in the assessment

- 7.1.3 The approach to the EIA required gathering 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 effect significance, set out in Highways England's Design Manual for Roads and Bridges (DMRB), along with topic-specific guidance as appropriate. Each topic chapter in the Environmental Statement provides further details regarding the specific assessment methodology applied.
- 7.1.4 This assessment has been undertaken against both the current baseline setting of the Scheme, and potential changes to the Scheme's baseline setting at the times of both construction and operation of the Scheme (the future baseline). Future changes to the baseline, without the Scheme, could result from both natural events such as the movement of protected ecological species, or from human activities, such as the development of homes and businesses in the area.
- 7.1.5 In accordance with the EIA Regulations, an assessment has been undertaken of the vulnerability of the Scheme to major accidents or disasters (major events). The assessment considered a wide range of events including naturally occurring events such as: lightning strikes, floods and heatwaves; human accidents such as road, aircraft and military accidents; infrastructure failure such as bridge, utilities or dam failure; and bomb, vehicle and cyber-attacks. The assessment concluded that with the mitigation measures included in the Scheme design, no significant adverse effects from major events would be expected.
- 7.1.6 The following sections provide a summary of the Scheme's environmental effects on an environmental topic basis as reported within the Environmental Statement.

8 Air quality

8.1 Baseline

8.1.1 Air quality in the area around the Scheme is currently affected by traffic using the A38 and the local road network. There is an Air Quality Management Area (AQMA) set for the pollutant nitrogen dioxide, close to the Scheme, namely the 'Derby nitrogen dioxide AQMA No.1: Ring Roads' which covers the inner and outer ring-roads in the city, as well as some sections of radial roads and the entire length of Osmaston Road. AQMAs are areas which the local authority has identified as requiring management to improve air quality and achieve national standards set to protect human health. The national standards for other air pollutants, such as fine particulate matter, are achieved in Derby.

8.1.2 Air quality is expected to improve in the future as vehicles are renewed with less polluting models, but it will take many years for the emission reductions required to achieve the national nitrogen dioxide standard to occur. In response to the UK plan for tackling roadside nitrogen dioxide concentrations, Derby City Council has been investigating additional methods to improve air quality within the city. Investigations undertaken by Derby City Council have identified one location where nitrogen dioxide concentrations are likely to still be exceeding the mandatory standard in 2020 if no action is taken, namely Stafford Street near to its junction with Friar Gate. As a result, Derby City Council is planning to introduce a series of traffic management measures to manage the flow of traffic in and around Stafford Street. These measures are planned to be in place in mid-2019, thus well in advance of Scheme construction. This assessment has, therefore, considered the impact of the Scheme on locations near roads that will be affected by the traffic management measures that will be put in place in mid-2019 and in particular, properties within the AQMA and on Stafford Street.

8.2 Construction

8.2.1 Without mitigation, construction of the Scheme could temporarily impact air quality as a result of dust from construction activities, such as earth moving, demolition and excavations, and emissions from construction traffic and equipment. Mitigation measures in the CEMP would include those for dust suppression, the controlled use of equipment and construction traffic management. These would minimise the temporary dust impacts during Scheme construction activities.

8.2.2 Air quality modelling has been undertaken to investigate the effect of construction traffic management activities on local air quality. Such modelling indicates that there would be a slight deterioration in local air quality, but this deterioration would be temporary and would not lead to any exceedance of air quality objectives and limit values. In addition, modelling indicates that Scheme construction traffic management would not have an adverse effect on air quality on Stafford Street.

Summary of construction assessment:

- With appropriate best practice construction measures (such as using water to suppress dust generation, plus the use of wheel washes to prevent the deposition of materials on local roads from construction vehicles), no significant adverse effects are likely with regard to construction dust.
- No significant adverse air quality effects are likely due to Scheme construction traffic management.

8.3 Operation

8.3.1 During Scheme operation there could be impacts on air quality as a result of changes in vehicle flows along the Scheme and the wider road network once the Scheme is open. Air quality impacts have been assessed at sensitive properties near roads that are expected to be affected by the Scheme and near the Scheme itself.

8.3.2 Modelling undertaken indicates that all air quality objectives and limit values are predicted to be achieved in the Scheme opening year of 2024 (both with and without the Scheme) except along Stafford Street – however, the Highways England modelling methods used are conservative, and if other forecasting methods are used, predicted concentrations in Stafford Street are lower and below the objective and limit values both with and without the Scheme. The modelling also indicates that the Scheme would result in a small improvement with regard to nitrogen dioxide concentrations in Stafford Street. Whilst there would be locations with minor changes in air quality as a result of the Scheme (both positive and negative), overall there would be a slight improvement in air quality at local properties as the Scheme would repositioning traffic emissions further from some properties.

Summary of operational assessment:

- Scheme operation would have an impact on air quality as a result of changes in vehicle flows, however, no significant adverse air quality effects are likely (noting that the Scheme would improve air quality along Stafford Street).

9 Cultural heritage

9.1 Baseline

- 9.1.1 Cultural heritage includes archaeology, historic buildings, structures and historic landscapes including parks and gardens. The Scheme would cross an area with records of pre-historic, Roman and medieval features, as well as features associated with more modern times.
- 9.1.2 The study area for the cultural heritage assessment includes some 62 listed or locally listed buildings, seven conservation areas, one scheduled monument (Darley Abbey Old Abbey Building (remains of) located to the south-west of Little Eaton junction), as well as ten broad historic landscape character areas. Kedleston Hall, Kedleston Registered Park and Garden, Breadsall Priory, and Allestree Park have also been included within the assessment. Of most importance to the heritage assessment is that the Scheme at Little Eaton junction lies partly within the boundary of the Derwent Valley Mills World Heritage Site (Derwent Valley Mills WHS).

9.2 Construction

- 9.2.1 Construction of the Scheme has the potential to have adverse impacts on cultural heritage. This includes the partial or total removal of archaeological remains within the Scheme footprint, as well as compaction of potential archaeological deposits by construction traffic. Potential impacts upon historic buildings include direct physical impacts upon buildings, and temporary impacts from construction activities such as traffic movements, lighting and noise. Scheme construction activities also have the potential to impact upon the historic landscape surrounding the Scheme.
- 9.2.2 In addition to adopting best practice construction methods (as included within the CEMP), a staged programme of archaeological mitigation would be undertaken which would comprise measures to protect archaeological remains *in-situ* and to record archaeological remains prior to Scheme construction.

Summary of construction assessment:

- Taking into account the mitigation measures included within the Scheme design (such as the appropriate design of the floodplain compensation area to the west of the River Derwent) and mitigation to be applied during Scheme construction, the effect of the Scheme on the Derwent Valley Mills WHS is assessed as slight adverse (not significant) (i.e. no more than a negligible impact upon a heritage asset of very high value).
- There would be neutral or slight adverse (not significant) effects on fifteen archaeology assets that are all non-designated.

- There would be neutral or slight adverse effects (not significant) on six historic building assets, including four that are designated, namely: Breadsall Manor, Breadsall Conservation Area, Church of All Saints and Allestree Hall.
- There would be neutral or slight adverse effects (not significant) on nine historic landscape character types that are all non-designated, and a beneficial effect on one that is also non-designated.

9.3 Operation

9.3.1 During Scheme operation, cultural heritage impacts are restricted to those associated with the setting of heritage assets, principally due to changes in lighting and traffic noise levels. Such setting impacts could also impact upon historic landscapes as well as the Derwent Valley Mills WHS.

Summary of operational assessment:

- Changes in lighting and noise levels during Scheme operation would not result in any cultural heritage impacts additional to those as identified above for the construction phase.

10 Landscape and visual effects

10.1.1 The landscape and visual impact assessment considers the potential for the Scheme to impact upon the surrounding landscape character, as well as impact upon local views.

10.2 Baseline

10.2.1 The Scheme at Kingsway and Markeaton junctions would be situated within areas with a mixture of existing highways, residential housing, public open space, retail and industrial estates, and educational facilities. At Little Eaton junction the surrounding environment is more rural with a mixture of existing highways, farmland, limited residential housing and commercial and retail premises.

10.3 Construction

10.3.1 Construction activities have the potential to temporarily impact on local landscapes and on the views of users on public rights of way and local roads, and views from residential properties close to the Scheme. Measures to mitigate potential impacts of construction activities include the sensitive siting of construction compounds, minimisation of construction lighting and minimising the loss of vegetation that screen views of the existing A38.

10.3.2 In addition, the CEMP would include a range of measures to minimise landscape and visual effects, such as keeping well-managed and tidy construction working areas, protection of trees to be retained, and keeping lighting to a minimum luminosity where necessary.

Summary of construction assessment:

- Scheme construction activities would have likely significant temporary adverse landscape effects at each junction due to construction activities and the introduction of new road infrastructure.
- Scheme construction activities would have likely significant temporary adverse visual effects on local residents, recreational receptors, and local road users.

10.4 Operation

10.4.1 The Scheme would be provided with an appropriate landscape design which would incorporate tree, shrub, scrub and grassland species, whilst also retaining existing vegetation cover where possible. In addition, the Scheme design includes noise barriers and screens to reduce noise and visual impacts for those living close to the Scheme. This includes barriers between Kingsway junction and Markeaton junction, adjacent to the Royal School for the Deaf at Markeaton junction, and along sections of the Scheme at Little Eaton junction. To further reduce potential visual effects at Little Eaton junction, lighting columns would not be provided along the new A38 mainline.

Summary of operational assessment:

- During the first year of Scheme operation, the Scheme would have likely significant adverse effects on the landscape in the vicinity of the Scheme, principally at Markeaton junction and Little Eaton junction. Effects upon local residents and recreational receptors at each junction are also likely to be significant upon Scheme opening.
- By year 15 of Scheme operation, and thus following the establishment of the Scheme landscape planting, no significant adverse effects are predicted on the prevailing landscape or upon views for local residents and recreational receptors at each junction.

11 Biodiversity

11.1 Baseline

- 11.1.1 Ecological baseline information has been gathered between 2015 and through 2018 and has informed the Scheme design and the impact assessment process. The scope of the ecology surveys needed to enable baseline conditions to be defined has been discussed with statutory and non-statutory stakeholders. In addition to vegetation and habitat surveys, surveys of protected ecological species have been undertaken including for birds, great crested newts, reptiles, badger, terrestrial and aquatic invertebrates, water vole, otter, white-clawed crayfish and bats.
- 11.1.2 Key ecological features in the vicinity of the Scheme include the A38 Roundabout Local Wildlife Site (LWS) which is located within Kingsway junction, Bramble Brook and Margins LWS, Markeaton Park LWS, Markeaton Brook System LWS and Mickleover Railway Cutting LWS. There are two LWSs located within or directly adjacent to the Scheme at Little Eaton junction, namely the Alfreton Road Rough Grassland LWS and the River Derwent LWS.

11.2 Construction

- 11.2.1 The construction phase would be the most disruptive period for ecology and nature conservation. Vegetation clearance would remove habitats in the short term before the maturation of new landscape planting, and the exclusion of protected species from the construction works areas would be required. This would cause significant disruption to local habitats and local animal populations in the short term. Construction works would also cause temporary disruption and disturbance at watercourses, with the requirement for in-channel works and increased risk of pollution incidents.
- 11.2.2 Given the potential for construction impacts upon local habitats and local animal populations, as well as the risk associated with water pollution, ecological mitigation for the Scheme would involve the use of best practice measures across all construction activities as detailed within the CEMP. In addition, the Scheme design includes the creation and replacement of habitats lost due to the Scheme, and the translocation of species-rich grassland habitats from Kingsway junction to within Markeaton Park. Works to divert Bramble Brook and Dam Brook would also be undertaken in a manner that would enable them to develop into ecological habitats. The provision of replacement bat roosts and bat boxes, ecology ponds, retention of selected felled trees, bird boxes and wildlife fencing would aim to minimise impacts on protected species as far as practicable.

Summary of construction assessment:

- The A38 Roundabout LWS would be permanently lost, resulting in a significant adverse effect.
- Significant adverse effect upon semi-natural broadleaved woodland in the short to medium term.

- The Scheme has the potential to have a significant beneficial effect on biodiversity in the medium to long term; particularly on standing water (ponds), running water, foraging and commuting bats, otter, terrestrial invertebrates, aquatic invertebrates and fish. This would be achieved through the implementation of mitigation measures and by identifying opportunities for biodiversity gains, including the retention, protection and creation of ecological habitats together with associated features for protected and notable species.

11.3 Operation

11.3.1 During Scheme operation, local ecological habitats could be impacted due to altered surface water run-off patterns, whilst some species may be vulnerable to accidental collisions with traffic and disturbance due to vehicles using the new carriageway. As such, a range of mitigation measures have been included within the Scheme design – this includes provision of a suitable highway runoff drainage system and suitable fencing to prevent species such as badgers accessing the road. In addition, the habitats planted during the construction phase would mature and develop into habitats of value to protected species.

Summary of operational assessment:

- No significant adverse effects on biodiversity during Scheme operation. In the long term the Scheme has the potential to have a slight beneficial effect on biodiversity, particularly on badgers through the use of permanent badger fencing.

12 Noise and vibration

12.1 Baseline

12.1.1 As would be expected, the noise levels near to the Scheme are dominated by road traffic noise from the existing A38. The vast majority of potentially sensitive receptors are residential properties with a total of over 12,000 residential properties identified within 1km of the Scheme. Non-residential receptors in the vicinity of the Scheme include educational buildings, medical buildings, community facilities (such as places of worship), public footpaths and the Derwent Valley Mills WHS.

12.2 Construction

12.2.1 The main construction activities that would take place during the Scheme construction phase include site clearance, earthworks, retaining wall construction, bridge construction and road construction (pavement) works. These activities have the potential to result in temporary noise impacts at sensitive receptors closest to the works. In addition, temporary noise and vibration impacts may also occur due to construction traffic, and local traffic management proposals.

12.2.2 In order to mitigate potential noise effects, the CEMP would require a range of best practice noise mitigation measures to be used during all works where there is a potential for adverse effects on sensitive receptors. This includes the selection of quiet and low vibration equipment; positioning of construction equipment to minimise noise disturbance; the use of acoustic enclosures for noisy equipment; and the use of noise screens and perimeter hoarding.

Summary of construction assessment:

- Significant adverse construction noise and vibration annoyance effects are anticipated at the closest receptors to the Scheme between Kingsway junction and Kedleston Road junction, at the Ford Farm Mobile Home Park, the northern edge of Breadsall and adjacent to the works at the floodplain compensation area to the west of Little Eaton junction.
- Building damage vibration effects are not anticipated.
- Significant adverse construction traffic effects are anticipated in a small number of locations during some traffic management phases – namely at the Royal School for the Deaf, the western end of A52 Ashbourne Road and traffic re-routing on minor roads within Mackworth and New Zealand.

12.3 Operation

12.3.1 Noise reduction measures have been included within the Scheme design, namely the use of low noise road surfacing and the provision of noise barriers – noise barriers would be provided along Kingsway Park Close (approximately 1.5m high); along both sides of A38 between the Brackensdale Avenue bridges and Markeaton junction (approximately 1.5m high); on the western boundary of the Royal School for the Deaf (approximately 4m high); along the southbound diverge

slip road to the A61, as well as barriers on the southbound A38 mainline at Little Eaton junction and the northbound A38 mainline in the vicinity of the Ford Farm Mobile Home Park (all approximately 2.5m high).

- 12.3.2 As Scheme operation would resolve the existing congestion issues at the A38 junctions, traffic would be attracted to the area. As a result, the overall trend is for a slight increase in operational traffic flows, and therefore traffic noise. However, only one receptor (two isolated buildings within the Royal School for the Deaf complex) is anticipated to experience a significant increase in traffic noise (following implementation of defined mitigation measures) – this effect would be restricted to the worst affected side of Lydia House which is used by boarding pupils during the week, and at the Karten building which consists of offices and meeting rooms. All other buildings within the school complex would experience changes in traffic noise levels that are not significant.
- 12.3.3 Reductions in operational traffic noise would occur where existing accesses onto the A38 would be closed – this includes properties on Raleigh Street, Enfield Road and Ford Lane. Noise levels would also be reduced where the A38 would be realigned further away from receptors – this includes properties on Greenwich Drive South, within Markeaton Park and at the Ford Farm Mobile Home Park. Traffic re-routing within Markeaton and New Zealand would occur due to the closure of local accesses onto the A38, resulting in noise effects that are negligible or minor (adverse and beneficial) (not significant).

Summary of operational assessment:

- Even with the mitigation provided (4m high noise barrier), there would remain a significant adverse effect at two buildings within the Royal School for the Deaf.
- A significant beneficial effect on three residential buildings in vicinity of Raleigh Street, New Zealand due to reductions in traffic flows.

13 Geology and soils

13.1 Baseline

13.1.1 The underlying geology across the Scheme comprises mudstone, siltstone and sandstone. Overlying deposits include alluviums, clay, silts, sands and gravels. Limited areas of historic fill material have been identified in areas of previous and existing development and along existing highways. A number of possible sources of contamination have been identified, including a former tip and disused railway at Kingsway junction; the petrol station at Markeaton junction; a licenced waste management facility, a former tip and the alignment of the former Derby Canal at Little Eaton junction. Agricultural soils are present in areas surrounding Little Eaton junction.

13.2 Construction

13.2.1 Without mitigation and the implementation of adequate control measures, there is the potential for contaminants from identified contamination sources to enter groundwater, should they be disturbed during Scheme construction. The CEMP would include measures for the identification, treatment, re-use and management of excavated materials generated during the construction works. Measures would also be taken during the construction phase to limit the potential for dispersal and accidental release of potential contaminants, dust from stored soil, and the uncontrolled release of surface water run-off. The CEMP would also establish procedures for dealing with unexpected soil or groundwater contamination that may be encountered.

13.2.2 Scheme construction would require temporary and permanent land take from seven farm holdings adjacent to Little Eaton junction. Land taken on a temporary basis would be suitably restored and returned to the land owner, although permanent land losses have the potential to impact upon existing land use practices.

Summary of construction assessment:

- With the defined mitigation measures in place, no significant adverse effects are likely during Scheme construction.
- Temporary significant adverse effect upon one agricultural land holding, and permanent significant adverse effects upon three agricultural land holdings.

13.3 Operation

13.3.1 Operation of the Scheme would not include any activities that are likely to have an impact on geology and soils, or local farm holdings.

Summary of operational assessment:

- No significant effects are likely.

14 Material assets and waste

14.1 Baseline

- 14.1.1 A wide range of material resources would be required to construct the Scheme including concrete, steel, cement, timber, plywood, geotextiles, asphalt and bituminous material and imported fill. In addition, construction activities would inevitably generate waste. Given the nature of the Scheme, large quantities of excavated material would be generated, with some being re-used on site.
- 14.1.2 Construction of the Scheme would generate a number of waste materials including construction and demolition waste, whilst some material excavated from areas of former landfilling at Kingsway and Markeaton junctions may not be re-usable and which would need to be landfilled. The CEMP would include a target recovery rate of 70% by weight for non-hazardous construction and demolition waste, in line with the EU Waste Framework Directive and the Waste Plan for England.

14.2 Construction

- 14.2.1 The quantities of materials needed for Scheme construction are very small when compared to the overall UK demand for construction materials, and thus the Scheme would not result in any material shortages. In addition, there are a wealth of mineral sources within the Derbyshire region, such that materials required for the Scheme could be sourced locally in order to minimise material transportation distances.
- 14.2.2 It is the intention that as much of the reusable cut material would be reused on site as feasible. However, should any excavated materials not be re-used on site, the construction contractor would seek to re-use material elsewhere, although some materials may require off-site disposal. Given the relatively large landfill capacity in the East Midlands and the potential for the reuse of excavated material (either on site or off site), it is considered unlikely that the Scheme would result in a significant reduction in available landfill capacity.
- 14.2.3 The construction of the Scheme would be subject to measures and procedures defined within the CEMP. This would set out requirements regarding how 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). Thus the CEMP would require contractors to adopt good practice in construction waste management which would reduce the quantity of waste generated.
- 14.2.4 By applying good industry practice to the management of the waste materials generated by the Scheme, it is anticipated that an overall recovery rate of 93% can be achieved. This exceeds the Government's 70% by weight target for recovery of non-hazardous construction waste.

Summary of construction assessment:

- No significant effects with regard to materials and waste are expected.

14.3 Operation

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

15 People and communities

15.1.1 The people and communities assessment considers potential Scheme effects upon pedestrians and cyclists, motorists, community and private property (including public open space), development land, community severance and human health.

15.2 Baseline

15.2.1 The three junctions are located around the main settlement of Derby which provides the main centre for services and community facilities in the area. There is a comprehensive network of public rights of way, cycleways and footways in the vicinity of the Scheme connecting the suburbs and wards of Derby as well as connecting with national routes. There are a number of community facilities close to the Scheme, including Mackworth Park, Markeaton Park, Mill ponds, plus local educational and public health facilities. The existing A38 divides local communities, whilst for drivers, regular traffic delays and related journey uncertainties lead to driver stress.

15.3 Construction

15.3.1 Construction of the Scheme would impact upon a number of public rights of way and footpaths, whilst a number of private properties and businesses would be directly impacted. This would include the demolition of 15 detached properties on Queensway and 2 semi-detached properties on the A52 Ashbourne Road. Highways England has consulted with affected residents.

15.3.2 Planning of the Scheme construction works would be undertaken in order to minimise the need to close and divert footpaths and cycleway facilities, and minimise closures and diversion durations.

15.3.3 A Traffic Management Plan would be implemented which would define measures to be used by the construction contractor to reduce the impacts from construction traffic, including measures to reduce worker vehicle movements and to reduce heavy goods vehicles (HGV) movements, particularly at peak periods. All HGV deliveries would access the Scheme construction sites via the A38 north, A61 south, A6 north, A52 west, A5111 Kingsway, and the A38 south.

15.3.4 Appropriate methods to communicate with local residents would be set up to highlight potential periods of disruption (e.g. digital, verbal and written channels). A Highways England webpage for the Scheme would be set up to provide up-to-date construction and community liaison information. It is envisaged that this would include progress updates, areas affected by construction, and mitigation measures in place to reduce adverse effects. These communication approaches would help drivers and local residents to plan their journeys and take account of potential disruption due to Scheme construction, as well as provide local residents with details of construction phase activities.

Summary of construction assessment:

- Temporary significant adverse effect on pedestrians and cyclists using the shared footway and cycleway east of Kingsway junction due to disruption and diversions.
- Temporary significant adverse effect on pedestrians and cyclists using Markeaton footbridge due to temporary loss of the footbridge.
- Temporary significant adverse effect on pedestrians and cyclists using the River Derwent bridge on Ford Lane due to temporary bridge closure (worst-case three months).
- Significant adverse effect on residents affected by the demolition of 15 detached properties on Queensway and two semi-detached properties on Ashbourne Road.

15.4 Operation

- 15.4.1 The Scheme design includes a number of mitigation measures that aim to avoid and minimise effects upon people and communities during Scheme operation. Footpath and cycleway proposals are based on the fundamental premise that the Scheme design include at least the level of provision that exists at present with enhanced provision where deemed appropriate and reasonable.
- 15.4.2 As the Scheme would result in the loss of public open space at Kingsway and Markeaton junctions, there is a requirement to provide replacement public open space that is equal to or greater than the area of that lost to the Scheme. Such replacement public open space would be provided using the area vacated by the buildings to be demolished on Queensway, areas of the existing A38 at Markeaton junction that would be removed and landscaped, and the former Brackensdale Avenue access onto the A38.

Summary of operational assessment:

- Permanent significant beneficial effect for walkers and cyclists due to a new shared footpath and cycleway across Kingsway junction.
- Permanent significant beneficial effect for users of the Regional Cycle Route (RR) 66 between Brackensdale Avenue and Kedleston Road due to improved amenity and safety for pedestrians and cyclists.
- Permanent significant beneficial effect on motorised users using the A38 due to reduction in journey time, congestion and improved safety.

16 Road drainage and the water environment

16.1.1 The water environment consists of the existing water features on the surface (rivers, stream and ponds) and below ground (aquifers and groundwater). Key assessment components that have informed the water assessment include Water Framework Directive assessments, Flood Risk Assessments and the Scheme Drainage Strategy.

16.2 Baseline

16.2.1 The main surface water features close to the Scheme are Bramble Brook, Markeaton Brook, Mackworth Brook, Markeaton Lake, Mill Pond, the River Derwent, Dam Brook and Boosemoor Brook. The Scheme would require the realignment of sections of Bramble Brook at Kingsway junction and Dam Brook at Little Eaton junction, and would cross parts of the River Derwent floodplain. The majority of the Scheme would be built in areas with no or very low probability of flooding, although flood risks have been identified at Kingsway junction (associated with Bramble Brook) and at Little Eaton junction (associated with the River Derwent and Dam Brook). Groundwater resources are located at all 3 junctions.

16.3 Construction

16.3.1 Without mitigation, proposed construction activities could impact upon surface water quality and flows, as well as impact upon groundwater quality and flows. Impacts upon surface water and groundwater could result from accidental spillages or sediment containing run-off causing pollution and risk of contamination to surface water and groundwater, localised disruption to groundwater levels and worsening flood risk. Thus the CEMP would include measures to mitigate potential adverse effects on surface watercourses during construction. This would include measures to tackle emergency spillages, and appropriate procedures for managing storage areas and material stockpiles. Potential effects on groundwater would also be mitigated through adherence to the CEMP, whilst the Scheme has been designed to minimise impacts on groundwater flows.

Summary of construction assessment:

- With the implementation of appropriate mitigation, no significant effects are likely.

16.4 Operation

16.4.1 During Scheme operation, road run-off during rain events could result in flooding and cause pollution impacts on surface water and groundwater. As such, a road drainage system would be provided which would collect highway runoff, with water being discharged into ponds and tanks located at each junction which would treat the run-off before allowing water to flow into local watercourses. The drainage design for Markeaton junction includes a pump station which would

pump water from the mainline carriageway during heavy rainfall and prevent flooding.

- 16.4.2 Other measures that would be put in place to ensure that flood risks are appropriately managed includes the provision of four flood storage areas at Kingsway junction, and the provision of a floodplain compensation area to the west of the River Derwent.
- 16.4.3 Both the road drainage system and the other flood mitigation measures make appropriate allowances for climate change to improve the Scheme's future resilience.

Summary of operational assessment:

- With the implementation of appropriate mitigation, no significant adverse effects are likely.

17 Climate

17.1 Baseline

- 17.1.1 An assessment has been undertaken of the effects on climate of the greenhouse gas emissions associated with the Scheme. Consideration has also been given to the resilience of the Scheme to climate change.
- 17.1.2 Data from the Met Office show 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. The Scheme design thus needs to take into account predicted future climate changes.

17.2 Construction

- 17.2.1 The construction of the Scheme would contribute to UK carbon emissions, with the majority of emissions being embodied within construction materials.
- 17.2.2 Mitigation measures would be implemented to reduce carbon emissions during the construction of the Scheme. For example, the construction contractor would develop and implement a plan to reduce energy consumption and associated carbon emissions. This could include the consideration of renewable and/or low or zero carbon energy sources and record percentage of savings implemented. These measures would be set out in the CEMP.
- 17.2.3 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 has been designed to be resilient to impacts arising from predicted severe weather events and climatic conditions, and designed in accordance with current planning, design and engineering practice and codes.

Summary of construction assessment:

- No significant adverse effects with regard to greenhouse gas emissions.
- No significant adverse effects with regard to the vulnerability of the Scheme to climate change.

17.3 Operation

- 17.3.1 During operation of the Scheme, greenhouse gas emissions would be generated from road users along with emissions arising from powering road lighting, traffic lights, signalised pedestrian crossings and the pump station at Markeaton junction. The Scheme has been designed to limit operational greenhouse gas emissions where possible, including minimising the use of lighting and the use of energy efficient lighting.

- 17.3.2 Emissions have been assessed within the context of the relevant national carbon budgets. It is predicted that the emissions arising as a result of the Scheme represent less than 0.01% of total emissions in any five year carbon budget during which they arise.
- 17.3.3 Potential impacts of climate change during the Scheme operational phase would include increased flooding, health and safety risks associated with extreme weather events and storm damage to structures. Mitigation measures included within the Scheme design comprise the use of appropriate construction materials, and the provision of a highway drainage system and flood mitigation measures that take account of predicted increased rainfall.

Summary of operational assessment:

- No significant adverse effects with regard to greenhouse gas emissions.
- No significant adverse effects with regard to the vulnerability of the Scheme to climate change.

18 Assessment of cumulative effects

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

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

18.2 Cumulative effects with other developments

18.2.1 A review of the planning applications and development proposals within the area around the Scheme was undertaken to identify any other developments which have the potential to result in a cumulative effect together with the Scheme.

18.2.2 The predicted traffic flows associated with area developments were accounted for in the traffic data used for the noise, air quality, water and people and communities assessments. As such, these assessments are inherently cumulative.

Summary of cumulative effects assessment:

- No significant adverse cumulative effects with other developments would be likely.

18.3 Combined effects on a single receptor

18.3.1 A number of properties have the potential to experience combined impacts associated with visual intrusion, noise, air quality, dust and severance during the Scheme construction phase. Such combined impacts are predicted where Scheme construction activities would be taking place in close proximity to such receptors.

18.3.2 The CEMP would include a range of best practice construction measures that aim to minimise the potential for construction phase environmental impacts (e.g. impacts associated with visual intrusion, noise, dust, severance etc.). Implementation of the measures as detailed in the CEMP would aim to minimise the occurrence of combined effects.

Summary of construction assessment:

- Likely temporary significant adverse effects on sensitive receptors in close proximity to the main construction works due to changes in noise levels, air quality (including dust), visual effects and severance.
- Likely temporary significant adverse combined effects on recreational users of Greenwich Drive South public open space, local cycleways, Markeaton Park and the Derwent Valley Heritage Way.

Summary of operational assessment:

- Likely temporary significant combined adverse effects on Greenwich Drive South and Greenwich Drive North, reducing to non-significant levels following growth of the Scheme landscape planting.
- Likely permanent significant combined adverse effects at two buildings within the Royal School for the Deaf (namely Lydia House and the Karten building).
- Likely temporary significant combined adverse effects on recreational users of the Derwent Valley Heritage Way, reducing to non-significant levels following growth of the Scheme landscape planting.

19 Summary of significant effects

19.1.1 Table 19.1 provides a summary of the EIA findings with regard to significant environmental effects associated with Scheme construction and operation. Full details of these and non-significant environmental effects can be found within the Environmental Statement.

Table 19.1: Summary of likely significant effects associated with Scheme construction and operation

Topic	Assessment of significant environmental effects	
	Construction stage	Operational stage
Air quality	<ul style="list-style-type: none"> No significant effects. 	<ul style="list-style-type: none"> No significant effects.
Cultural heritage	<ul style="list-style-type: none"> No significant effects. 	<ul style="list-style-type: none"> No significant effects.
Landscape and visual	<ul style="list-style-type: none"> Temporary adverse landscape effects at each junction. Temporary adverse visual effects on local residents, recreational receptors, and local road users at each junction. 	<ul style="list-style-type: none"> Adverse landscape effects in the vicinity of the Scheme, principally at Markeaton junction and Little Eaton junction, in the Scheme opening year. Adverse visual effects upon local residents and recreational receptors at each junction upon Scheme opening.
Biodiversity	<ul style="list-style-type: none"> Permanent adverse effect on the A38 Roundabout Local Wildlife Site (located within Kingsway junction). Temporary adverse effect upon semi-natural broadleaved woodland. Permanent beneficial effect on biodiversity in the medium to long term; particularly on standing water (ponds), running water, foraging and commuting bats, otter, terrestrial invertebrates, aquatic invertebrates and fish. 	<ul style="list-style-type: none"> No significant effects.

Topic	Assessment of significant environmental effects	
	Construction stage	Operational stage
Noise and vibration	<ul style="list-style-type: none"> • Temporary adverse noise effects at receptors closest to Scheme construction works. • Temporary adverse noise effects due to construction phase traffic management at the Royal School for the Deaf, the west end of the A52 Ashbourne Road and on minor roads within Mackworth and New Zealand. 	<ul style="list-style-type: none"> • Permanent adverse noise effects on two buildings within the Royal School for the Deaf (Lydia House and the Karten building). • Permanent beneficial noise effect on three residential buildings in the vicinity of Raleigh Street, New Zealand.
Soils, geology and groundwater	<ul style="list-style-type: none"> • Temporary adverse effect upon one agricultural land holding and permanent adverse effects upon three agricultural land holdings. 	<ul style="list-style-type: none"> • No significant effects.
Materials	<ul style="list-style-type: none"> • No significant effects. 	<ul style="list-style-type: none"> • No significant effects.
People and communities	<ul style="list-style-type: none"> • Temporary adverse effects on pedestrians and cyclists using a shared footway and cycleway east of Kingsway junction. • Temporary adverse effect on pedestrians and cyclists using Markeaton footbridge due to temporary loss of the footbridge. • Temporary adverse effect on pedestrians and cyclists using the River Derwent bridge on Ford Lane due to potential temporary bridge closure. • Permanent adverse effect due to the loss of 17 residential properties at Markeaton junction. 	<ul style="list-style-type: none"> • Permanent beneficial effect for walkers and cyclists due to a new shared footpath and cycleway across Kingsway junction. • Permanent beneficial effect for users of the Regional Cycle Route (RR) 66 between Brackensdale Avenue and Kedleston Road due to improved amenity and safety for pedestrians and cyclists. • Permanent beneficial effect on motorised users using the A38 due to reduction in journey length, congestion and improved safety.
Road drainage and the water environment	<ul style="list-style-type: none"> • No significant effects. 	<ul style="list-style-type: none"> • No significant effects.
Climate	<ul style="list-style-type: none"> • No significant effects. 	<ul style="list-style-type: none"> • No significant effects.

Topic	Assessment of significant environmental effects	
	Construction stage	Operational stage
Assessment of cumulative effects	<ul style="list-style-type: none"> • Temporary adverse effects on sensitive receptors in close proximity to the main construction works due to changes in noise levels, air quality (including dust), visual effects and severance. • Temporary adverse combined effects on recreational users of Greenwich Drive South public open space, local cycleways, Markeaton Park and the Derwent Valley Heritage Way. 	<ul style="list-style-type: none"> • Temporary adverse combined effects on Greenwich Drive South and Greenwich Drive North upon Scheme opening, reducing to non-significant levels following development of the Scheme landscape planting. • Permanent adverse combined effects at two buildings with the Royal School for the Deaf (Lydia House and the Karten building). • Temporary adverse combined effects upon Scheme opening on recreational users of the Derwent Valley Heritage Way, reducing to non-significant levels following development of the Scheme landscape planting.

20 Next steps

- 20.1.1 Following submission of the DCO Application to the Planning Inspectorate, the Planning Inspectorate will consider, on behalf of the Secretary of State for Transport, whether the DCO Application should be accepted for examination. If accepted, the documents accompanying the DCO Application will be publicly available on the Planning Inspectorate's website.
- 20.1.2 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 DCO Application.