

**A38 Derby Junctions**

**TR010022**

**Volume 6**

**6.3 Environmental Statement  
Appendices**

**Appendix 3.4: Options 2C Assessment**

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[ ]

---

**6.3 Environmental Statement Appendices  
Appendix 3.4: Options 2C Assessment**

---

<b>Regulation Number</b>	Regulation 5(2)(a)
<b>Planning Inspectorate Scheme Reference</b>	TR010022
<b>Application Document Reference</b>	6.3
<b>Author</b>	A38 Derby Junctions Project Team, Highways England

<b>Version</b>	<b>Date</b>	<b>Status of Version</b>
1	April 2019	DCO Application

# **A38 Derby Junctions**

**Option 2C Assessment**

**Report Number: HE514503-ACM-HGN-Z3\_JN\_J3\_ZZ-RP-CH-0001 P01.1 S0**  
**February 2017**

6.12	Flood Risk .....	42
6.13	Comparison .....	43
<b>7</b>	<b>Stakeholders and Land.....</b>	<b>45</b>
7.1	Overview .....	45
7.2	Former Landfill Area .....	45
7.3	Ford Farm Mobile Home Park and van hire business .....	45
7.4	Freeberne’s recycling facility and Fourways .....	46
7.5	Starbucks and Subway .....	46
7.6	Derby Garden Centre.....	47
7.7	Talbot Turf .....	47
7.8	Alan Camp.....	48
7.9	Summary.....	48
Table 7/1 Summary of Stakeholders.....		48
<b>8</b>	<b>Programme .....</b>	<b>49</b>
<b>9</b>	<b>Summary and Conclusions.....</b>	<b>50</b>
9.1	Engineering Assessment .....	50
9.2	Traffic and Economic Assessments.....	50
9.3	Environmental Assessment.....	50
9.4	Stakeholders.....	51
9.5	Conclusions.....	51

## Appendices

<b>Appendix A</b>	<b>Layout of the Presented Option</b>
<b>Appendix B</b>	<b>Layout of Option 2A</b>
<b>Appendix C</b>	<b>Layout of Option 2C</b>
<b>Appendix D</b>	<b>Land Ownership</b>
<b>Appendix E</b>	<b>Layout of Option 2</b>
<b>Appendix F</b>	<b>NMU Routes and Extents of Lighting</b>
<b>Appendix G</b>	<b>Environmental Plans</b>
<b>Appendix H</b>	<b>Comparison of the Assigned Traffic Flows</b>

---

# 1 EXECUTIVE SUMMARY

## 1.1 General

1.1.1 The current proposals (the Presented Option) for the Little Eaton junction improvement provides full grade separation (two level) of the junction, with the A38 realigned to the south of the existing roundabout. This option avoids any impact on “Fourways”, the mobile home park, Starbucks and the garden centre. However, the resulting alignment means that it lies to the south and east of the current dual carriageway and as a consequence is closer to the village of Breadsall to the east but further from Allestree to the west.

1.1.2 A meeting took place on 19<sup>th</sup> January 2017 with the Minister, John Hayes MP.

1.1.3 The meeting concluded that the Presented Option has an adverse impact on the residents of Breadsall village – this further assessment considers options that would reduce this impact.

1.1.4 Option 2C has now been developed removing the mobile home park and other buildings as a design constraint and has been assessed against the Presented Option in this report. The assessment is summarised as follows.

## 1.2 Engineering Assessment

1.2.1 The assessment indicates that both the Presented Option and Option 2C are feasible options in engineering terms. The various engineering aspects compare as follows:

- Horizontal alignment – Option 2C would perform better as it would be designed to full 120kph design speed with no Departures from Standard on the main line – it would operate at the national Speed Limit. The Presented Option would be designed to 100kph and be subject to a 50mph advisory speed limit to mitigate the Departures from Standards.
- Slip roads – both options would require sub-standard slip road merge and diverge tapers due to the need to avoid any impact on the River Derwent bridge and to minimise impacts on the Severn Trent Water underpass. The sub-standard elements would result in shorter merge/diverge tapers and nose lengths.
- Compared to the Presented Option, Option 2C would require significantly greater works to Statutory Undertaker’s equipment. This has been recognised in the cost estimate for the option.
- In comparison to the Presented Option, Option 2C would simplify the junction construction. It is anticipated that the construction programme for the junction would shorten by several months and traffic disruption would be slightly reduced as retaining the existing roundabout would simplify traffic management where the A38 meets the A61. The construction sequence would also enable replacement car parking to be provided for the Derby Garden Centre and Starbucks prior to taking the existing land.

### 1.3 Traffic Assessment

- 1.3.1 The traffic forecasts for Option 2C were prepared using the same trip demands that were assigned to the Presented Option. The initial junction design was reviewed against the forecasts. This led to the B6179 link road between the dumbbell roundabouts being increased to a dual carriageway to accommodate the forecast traffic flows.
- 1.3.2 In the wider sense, the traffic forecasts and resulting traffic performance were similar to those for the Presented Option – i.e. Option 2C performed as effectively as the Presented Option.
- 1.3.3 The traffic forecasts informed the economic assessment and the calculation of the scheme benefits described below.

### 1.4 Estimated Cost

- 1.4.1 The capital baseline for the overall project including the Presented Option is £201.6m.
- 1.4.2 The corresponding range estimate is £183.1m to £284.5m with a most likely out-turn of £223.5m (£208m plus £15.5m programme risk).
- 1.4.3 The estimated increase if Option 2C was taken forward is £18.7m to £32.4m with a most likely increase of £24.5m. Further details are shown in the table below.

Option	Minimum estimated out turn cost	Most Likely estimated out turn cost	Maximum estimated out turn cost
Whole scheme incl. Presented Option	£183.1m	£223.5m	£284.6m
Whole scheme incl. Option 2C	£201.8m	£248.0m	£317.0m
Variance	£18.7m	£24.5m	£32.4m

- 1.4.4 The design layout only contributes a small proportion of this variance with the Option 2C being approximately £2.1m greater than the Presented Option. Significant contributors to the variance are Lands costs at +£12.3m, uncertainty around the impact of statutory undertakers plant on the new alignment at +£4.6m and Non-Recoverable VAT at +£3.8m.
- 1.4.5 The cost estimate was developed by the project team to provide an indication of the expected out-turn costs and to inform an initial economic assessment of the design option to demonstrate the likely value for money. A full commercial estimate would be required to ascertain the true increase in costs.

### 1.5 Economic Assessment

- 1.5.1 The economic assessment of Option 2C has been undertaken on the same basis and using the same parameters as for the Presented Option.
- 1.5.2 The initial assessment indicates that the overall scheme, including Option 2C, would achieve:
- Present Value of Benefits of £449 million;
  - Present Value of Costs of £189 million.

1.5.3 Compared to the Presented Option, this is an increase in the Present Value of Benefits of £30m, but also an increase in the Present Value of Costs of £18m.

1.5.4 On this basis, the overall scheme with Option 2C could achieve a BCR of 2.38, indicating very high value for money compared with 2.45 for the Presented Option.

## **1.6 Environmental Assessment**

1.6.1 A qualitative comparison of the potential environmental effects associated with the Presented Option and Option 2C has been undertaken as follows:

- Air Quality – both options have no significant impacts
- Cultural Heritage – Option 2C would introduce a risk of objection from statutory consultees
- Landscape – impacts of 2C slightly less than Presented Option
- Visual – Presented Option would have moderate adverse effects on Breadsall village (reducing to minor after 15 years). Option 2C would have minor effects from the outset.
- Nature Conservation – both options would have non-significant effects after mitigation
- Geology & Soils – mitigation of effects would be technically challenging for Option 2C
- Materials – Slightly worse effects for Option 2C due to need manage potentially contaminated material from the former landfill
- Noise & Vibration – both Options would have similar effects
- People & Communities – Option 2C would have a moderate to major adverse effect due to loss of properties and businesses although provision of a new location for the mobile home park and an alternative car park for the Derby Garden Centre would potentially reduce residual adverse effects upon these receptors to neutral in the long term.
- Water Quality & Drainage – both options would have a similar impact
- Flood Risk – Option 2C has a greater risk of objection from the Environment Agency; any flood risk mitigation strategy is likely to be technically more complex and expensive than that needed for the Presented Option

1.6.2 The environmental assessment indicates that overall, the environmental effects associated with Option 2C are worse than those as associated with the Presented Option. The key environmental issues relating to Option 2C are:

- increased flood risks and the technical complexity of determining a workable mitigation strategy
- effects upon the private property which would need to be purchased to provide land for the scheme and residents who would need to be relocated
- managing contaminated materials in the former landfill site
- effects on the Derwent Valley Mills World Heritage Site (WHS).

- 
- 1.6.3 Effects on private property would be partly mitigated through the provision of a new location for the mobile home park and an alternative car park for the Derby Garden Centre.
- 1.6.4 Option 2C would pass over land designated as green belt land. However much could be considered as 'brownfield' land due to the current uses. This compares with the Presented Option which would principally be constructed on designated green belt land which is principally agricultural land.

## **1.7 Stakeholders**

- 1.7.1 Below are the land and business owners who would be affected ONLY by Option 2C. Their initial opinions are also listed.

### Former landfill area to the north of the mobile home park (DY36046, DY67646)

- 1.7.2 The land agent representing the owners of the land to the north of the mobile home park has suggested they would be willing to sell their land by agreement to Highways England. This would remove the 'Critchell Down' problem raised by compulsory purchase and provide land for the replacement car parking for the garden centre.

### Mobile Home Park

- 1.7.3 The mobile home residents could be relocated to a new site but they should be considered extremely vulnerable and this process would have to be managed for them individually to minimise their distress and impact on their health. New homes would have to be purchased on their behalf and the ownership transferred to them where applicable. It may be possible for the mobile home park to be relocated to the former landfill area to the north, subject to local planning agreement. At this stage, costs are considered to be similar for relocating the mobile home park or buying the business entirely.
- 1.7.4 Eleven of the twenty full-time occupiers of the mobile homes were approached. One would be happy to be relocated two were unable to comprehend questions and the remaining mobile home residents do not wish to be moved and will strongly object to option 2C.

### Fourways and recycling business (DY39896, DY67167)

- 1.7.5 The Land owner of the residential property 'Fourways' and its adjoining business land (Mr Ron Freeberne) will object to compulsory purchase. The owner of the Plant Hire and Recycling business (Mr Julian Freeberne his son) would be happy to discuss an offer.

### Starbucks and Subway (DY124878, DY473796)

- 1.7.6 The agent to Eurogarages, who operate the Starbucks and Subway, has indicated previously that any reduction in parking or loss of business during construction would be unacceptable. Replacement land can be provided by acquisition of the mobile home park prior to construction of the new A38 alignment.

### Derby Garden Centre (DY80993)

- 1.7.7 The garden centre has also stated previously that they would object to any proposals which led to a reduction in car parking or impacted on business continuity during construction. Replacement car parking can be provided in advance of constructing the new A38 alignment by purchasing the land to the north of the mobile home park.



Agricultural land (DY54733)

1.7.8 Mr Camp, the owner of the land west of the new railway bridge, has not been approached as it is likely that impact on this land could be minimised or designed out by the construction of a retaining wall.

Little Eaton Parish Council

1.7.9 Little Eaton Parish Council has reacted negatively to the delay of the PRA and have expressed very serious concerns. It had previously been reported via the Little Eaton Reference Group (which includes the Breadsall Action Group) that the Presented option was demonstrably the best performing route and the option which Highways England will take forward.

1.7.10 As such, there has been minimal involvement from the Parish Council and residents of Little Eaton compared with Breadsall Parish Council. Should Option 2C be taken forward it is anticipated that there will be strong opposition from Little Eaton Parish Council, particularly supporting the mobile home park residents.

**1.8 Programme**

1.8.1 If Option 2C were to be taken forward, it is anticipated that the Preferred Route Announcement would be likely to take place in December 2017. This is based on commencing PCF Stage 2 assessment by the end of Feb 2017 and includes a further public consultation on the revised proposals. Key dates are:

Activity	Start	End
Instruction to commence PCF Stage 2 assessment of Option 2C	end Feb 2017	-
Options design (4w)	mid-March	mid-April 2017
Modelling, options assessment and reporting for PCF Stage 2 (20w)	mid-April 17	August 17
Public consultation	June 2017	July 2017
SGAR 2	mid-September 2017	-
Submission with DfT (8w)	October 2017	November 2017
Preferred Route Announcement	mid-December 2017	-
DCO Application	February 2018	-
DCO Examination	June 2019	January 2020
DCO Decision	April 2020	July 2020
Notice to Proceed	mid-September 2020	-
Start of Construction	January 2021	-
Open for Traffic	June 2024	-

1.8.2 Overall, this represents an increase of 12 months compared to the current programme for the Presented Option.

## 1.9 Constraints

1.9.1 The table below outlines the key constraints to the design of Option 2C.

Constraint	Impact of Option 2C	Potential mitigation
Derby Garden Centre	A38 main line and NB merge slip cross the car park on embankment	Provide retaining wall adjacent to merge slip to reduce footprint. Create new car park area on land between diverted and existing B6179 in advance of the main works.
Ford Farm Mobile Home Park	A38 main line footprint covers 80% of area of mobile home park	Fully managed relocation of the mobile homes and residents to a new site.
Fourways and Associated Recycling Business	A38 main line footprint cover the whole of the site	The property would be acquired either through negotiation or under the CPO process and the business may be extinguished. Appropriate compensation payments would be made.
Severn Trent Water Underpass	The verges of the revised A38 alignment fall outside the width of the existing structure.	The structure would require widening to accommodate the increased width of the road cross section. Refinements to the design should be explored (with additional Departures from Standards if required) where the new layout ties in to existing before the underpass.
Network Rail Infrastructure	A38 main line footprint crosses the Midland Mainline railway and a signalling equipment building	A new structure would be required of the railway – the span and headroom would need to be sufficient to be able to retain the building and accommodate future signalling and overhead line equipment.
Starbucks	A38 main line footprint covers all of the recent extension to the car park (approx. 30% of the available parking area)	Obtain land for replacement car parking on the west side of the Starbucks building (land currently occupied by part of the mobile home park expected to be available through negotiation).

## 1.10 Benefits and Impacts

1.10.1 The following table summarises the key benefits and impacts of the current Presented Option and Option 2C.

	Benefits	Impacts
Presented Option	<p>The design option removes congestion by grade-separating the A38 and A61.</p> <p>Avoids the property and business impacts associated with Option 2C.</p> <p>Lower impacts to existing statutory undertakers' equipment than other options.</p> <p>The overall scheme achieves high value for money.</p>	<p>Perceived impacts to Breadsall village are not supported by the formal assessments.</p> <p>The distance between the A38 and Breadsall village will be reduced by approximately 22%. For a typical property on the edge of the village this results in the A38 being approximately 320m away.</p> <p>There are short-term environmental impacts following construction which diminish over time, for example when the landscaping establishes.</p> <p>Complex traffic management is required for the construction of the new A38/A61 roundabout which will increase traffic disruption.</p> <p>Engineering difficulties associated with widening the existing embankments to avoid differential settlement.</p> <p>The A38 mainline requires lighting due to its constrained alignment. This increases the visual effects.</p>
Option 2C	<p>The design option removes congestion by grade-separating the A38 and A61.</p> <p>The route will be able to operate at 120kph without any Departures from Standard on the A38 mainline.</p> <p>Reduced construction duration and traffic disruption compared to the Presented Option.</p> <p>Reduced visual impacts as the route is further from sensitive receptors in Breadsall and the A38 would not require lighting.</p> <p>The overall scheme achieves high value for money.</p>	<p>There are major land impacts associated with acquiring the businesses, providing replacement car parks and relocating the mobile home park residents.</p> <p>Most likely estimated out turn cost increased by £24.5m with a 12 month delay to programme.</p> <p>Engineering difficulties associated with managing construction within the existing landfill area.</p> <p>Increased impacts on the World Heritage Site principally due to the new railway bridge.</p> <p>The route passes through designated greenbelt, although much of the land could be considered brownfield.</p> <p>Increased effects to statutory undertaker's equipment at Ford Lane and the B6179.</p> <p>Flood risk mitigation is likely to be technically more complex and expensive than that needed for the Presented Option</p>

## 1.11 Summary of Assessment

### 1.11.1 As a result of the initial feasibility assessment, Option 2C would:

- Be viable in engineering terms.
- Achieve a BCR of 2.38, representing a very high value for money scheme.
- Increase the environmental effects of the scheme.
- Increase most likely out-turn costs by approximately £24.5m. It is estimated that this increase could be up to £32.4m.

- Lead to a 12mth delay to the programme.

1.11.2 Not all land required for Option 2C could be obtained by CPO due to the Critchell Down rules. However, it is anticipated that the land could be largely obtained by agreement – albeit at a higher cost. HE, generally, will try not to acquire land by agreement due to the potential risks involved. Further legal investigation is required to determine what restrictions would be placed on the subsequent use or sale of any land obtained by agreement.

1.11.3 Any new location of the mobile home park would be subject to agreement with the planning authority and the moving process would need to be fully managed for many of the residents.

1.11.4 It is anticipated that the construction programme for Option 2C would be several months shorter than for the Presented Option. This would not alter the construction duration for the whole scheme as this is driven by the improvements at Markeaton junction.

1.11.5 Option 2C has advantages over the Presented Option in terms of engineering design and perceived impacts on Breadsall village (in terms of noise, air quality and visual intrusion). It also reduces the impact on agricultural land within the designated green belt.

1.11.6 The main disadvantages of Option 2C are the impacts on the property Fourways (and associated businesses) and the mobile home park; the societal impacts to the residents; and the increased scheme construction costs.

## 1.12 Next Steps

1.12.1 If Option 2C is to be considered further, development should include:

- Production of a 3d engineering model of design.
- Undertaking PCF Stage 2 Options Stage assessments to provide a comparative assessment of Option 2C on the same basis as the existing assessment of the Presented Option.
- Further exploration of the legal position in relation to the land required.
- Consideration to consulting key stakeholders and the public to minimise future risk at Development Consent Order stage.
- Explore a legal view on obtaining land by agreement and its restrictions for onward sale or use.

---

## 2 INTRODUCTION

### 2.1 General

- 2.1.1 The current proposals for the Little Eaton junction improvement provides full grade separation (two level) of the junction, with the A38 realigned to the south of the existing roundabout. This option avoids any impact on the property called “Fourways”, Ford Farm Mobile Home Park, Starbucks and the garden centre. However, the resulting alignment means that it lies to the south and east of the current dual carriageway and as a consequence is closer to the village of Breadsall to the east but further from Allestree to the west.
- 2.1.2 Extensive widening is required of both the central reserve and the northbound verge to provide the desirable minimum visibility for the stopping sight distance. A plan of this option is included in Appendix A.
- 2.1.3 A meeting took place on 19<sup>th</sup> January 2017 between the Transport Minister, the MP for Mid-Derbyshire (which includes Little Eaton and Breadsall), Highways England, Breadsall Parish Council and AECOM. The purpose of the meeting was to hear the concerns of the residents of Breadsall village in relation to the proposed improvements to the Little Eaton junction. The issue had been escalated to the Transport Minister by the local MP.
- 2.1.4 Following the meeting, it was decided to further assess an option that would result in the A38 being re-aligned to the north side of the existing roundabout so as to reduce the perceived impact on Breadsall village.
- 2.1.5 The project team have considered the best alternative options, previously discounted, and have determined Option 2C to be the best alternative option. As such a high level review of Option 2C has been made in relation to the current ‘Presented Option’.
- 2.1.6 Obtaining the necessary land has been a challenge for previous design options as land is required to mitigate losses to some businesses. For the purposes of this assessment it has been assumed that this challenge can be overcome and further details are given in Section 4.1 and Section 7.
- 2.1.7 The assessment of Option 2C is the subject of this report. A plan showing the layout of the option is included in Appendix C.

---

## 3 OVERVIEW OF THE PRESENTED OPTION

### 3.1 Description of the Option

- 3.1.1 The layout of this option is shown on drawing HA514503-URS-06-DR-GD-25.012 contained in Appendix A.
- 3.1.2 Following an initial review of grade-separated junction options in early 2003, this option was presented at a supplementary public consultation in October 2003. Work on the scheme was halted in 2005, recommenced in 2007 and put on hold again in 2008 before its revival in July 2014. In February 2015 the scheme was presented at public consultation to refresh and update public knowledge.
- 3.1.3 This solution would provide full grade separation (two level) of the junction, with the A38 realigned to the south of the existing roundabout. This option would avoid any impact on “Fourways”, the mobile home park, Starbucks and the garden centre. However, the resulting alignment means that it would lie to the south and east of the current dual carriageway and as a consequence would be closer to the village of Breadsall to the east but further from Allestree to the west.
- 3.1.4 Extensive widening would be required to both the central reserve and the northbound verge to provide the visibility for the stopping sight distance.
- 3.1.5 The existing bridges over the railway line and the flood relief subway to the west of the railway line would need to be extended. The River Derwent bridge at the southern end of the scheme and the water treatment works underpass at the northern end of the scheme would not be affected.
- 3.1.6 The existing roundabout would not be retained in its current layout, but some of the carriageway would be incorporated into a new roundabout. The existing A38 northbound carriageway would be retained for the northbound merge and diverge slip roads. Ford Lane east of the railway would be retained and would join the new roundabout between the northbound diverge slip and the B6179. Starbucks’ and the garden centre’s accesses off the B6179 would remain unaltered.
- 3.1.7 The A38 would cross the roundabout on two new bridges. Due to the alignment being close to the existing roundabout, lengths of retaining wall would be required where the A38 northbound merge and diverge and the southbound merge slip road connect to the new roundabout. The A61 and the A38 southbound slip roads would connect to the south side of the new roundabout.
- 3.1.8 The existing left in, left out junction immediately east of the river and west of the railway to Ford Lane (leading to and from Allestree) would be closed for safety reasons.

### 3.2 Key features

- 3.2.1 The Presented Option has a main carriageway length (from the River Derwent bridge to the water treatment works underpass) of 1280m. Although this will be subject to the National Speed Limit (70mph), it has a design speed of 100A kph (60mph) and as the horizontal alignment has a 255m radius curve it would be subject to an advisory speed limit of 50mph.
- 3.2.2 Departures from Standards will be required for several aspects of the scheme principally:

- Mainline alignment through the junction – mitigated by the advisory 50mph speed limit; and
- Slip road layouts to accommodate the scheme tie-ins at the River Derwent bridge and the Severn Trent underpass.

3.2.3 Discussions with PTS advisors indicate that the required Departures are likely to be granted as mitigation measures can be provided.



3.2.4 The A38 is raised by approximately 8m in height. Figure 3/1 shows a visualisation of the Option.

**Figure 3/1: Visualisation of the Presented Option**

### 3.3 Benefits and Impacts

3.3.1 The following summarises the key benefits and impacts of the Presented Option:

#### 3.3.2 Benefits

- The scheme removes the existing congestion by grade-separating the A38 and A61.
- Avoids the property and business impacts associated with a more direct alignment to the north of the roundabout.
- Lower cost solution than other assessed options and can be delivered within the current scheme programme.
- Minor long-term, post-mitigation environmental impacts to Breadsall village

- Negligible noise impacts to Breadsall village.
- Lower impacts to existing statutory undertakers' equipment than other options

### 3.3.3 Challenges and impacts

- Perceived impacts to Breadsall village are not supported by the formal assessments.
- There are short-term environmental impacts following construction which diminish over time, for example when the landscaping establishes.
- Complex traffic management is required for the construction of the new A38/A61 roundabout which will increase traffic disruption
- There are engineering difficulties associated with widening the existing embankments to avoid differential settlement.
- The A38 mainline requires lighting due to its constrained alignment. This increases the visual effects.
- The land to the east of the A38 which will be lost as a result of the Presented Option is agricultural and wooded green belt.
- The distance between the A38 and Breadsall village will be reduced by approximately 22%. For a typical property on the edge of the village this results in the A38 being approximately 320m away.



---

## 4 ENGINEERING ASSESSMENT OF OPTION 2C

### 4.1 Overview

4.1.1 Option 2C was developed with the assumption that the mobile home park and its residents could be relocated; and the property Fourways and its associated businesses could be acquired either through agreement or CPO.

4.1.2 In the event that agreement could not be reached an alternative legal mechanism would be required, otherwise the Critchell Down rule would apply. Under this rule, land purchased for the scheme but not required for the permanent highway works, must be first offered back to the original owner. This would apply to land required from the existing landfill site to provide replacement car park area for the Garden Centre.

4.1.3 Recent discussions with the landowners and residents affected by the layout indicate that it would be possible to obtain the majority of the land required for Option 2C through negotiation. Further details are provided in Section 7.

4.1.4 Option 2C was based on Option 2A and has the following modifications:

- As the existing roundabout would be retained to connect the southbound slip roads and the A61, it would be logical to provide a dumbbell arrangement with a single bridge under the A38. This would allow the northbound slip roads to be placed further from the A38 reducing the requirement for retaining walls.
- Relocation of the mobile home park allows the horizontal alignment of the A38 to be optimised, avoiding the sinuous alignment associated with Option 2A.
- The revised horizontal alignment would result in the loss of around 39% of the car park for Starbucks. During 2016 the car park was extended to the north of the original position. This extended section would lie under the embankment of the realigned A38. There would be the potential to provide additional parking on land to the west of the Starbucks building currently occupied by part of the Mobile Home Park.
- The optimised alignment has resulted in an alignment for the A38 that complies with current standards for a 120kph design speed thus allowing the National Speed Limit to be applied with no advisory reductions.
- To achieve the required stopping sight distance, the verge of the northbound carriageway and the central reserve have been widened (resulting in the central reserve being more than 13m wide).
- The existing southbound carriageway would be retained on its current alignment and would become the southbound slip roads. This would serve to reduce the amount of new construction so provide a more cost effective solution.
- Network Rail – Option 2C would require a new bridge over the Midland Railway for the A38 main line and northbound merge slip road. The southbound merge slip road would be on the line of the existing A38 and make use of the existing railway bridge. The new railway bridge would need a longer span than the existing bridge as it would need to span the

maintenance access route on the west side of the tracks and the signals equipment building on the east. It has been assumed that the signals equipment building would not require the headroom of the bridge to be increased so there is a risk that the bridge may require increasing in height which, in turn, could impact the vertical alignment of the A38 and the south facing slip roads.

4.1.5 Option 2C would pass over land that is designated green belt land but, in the main, could be considered as 'brownfield' land (a large part of it is occupied by the former landfill, mobile home park, Fourways and its associated businesses and the garden centre car park). This compares with the Presented Option which would involve construction on designated green belt land which is principally agricultural land.

## 4.2 Highway Design Assessment

4.2.1 Option 2C has a main carriageway length (from the River Derwent bridge to the water treatment works underpass) of 1250m. The horizontal alignment has a 720m radius curve and therefore would not be subject to an advisory speed limit (the National Speed Limit would apply).

4.2.2 Option 2C, however, would be less desirable for traffic leaving or joining the A38 northbound as it would have to negotiate an additional roundabout compared with the Presented Option – the effects on the traffic are assessed in Section 5 of this report.

### 4.2.3 Impacts on key constraints

4.2.4 Table 4/1 below outlines the key constraints to the design of Option 2C.

Constraint	Impact of Option 2C	Potential mitigation
Derby Garden Centre	A38 main line and NB merge slip cross the car park on embankment	Provide retaining wall adjacent to merge slip to reduce footprint. Create new car park area on land between diverted and existing B6179 in advance of the main works.
Ford Farm Mobile Home Park	A38 main line footprint covers 80% of area of mobile home park	Fully managed relocation of the mobile homes and residents to a new site.
Fourways and Associated Recycling Business	A38 main line footprint cover the whole of the site	The property would be acquired either through negotiation or under the CPO process and the business may be extinguished. Appropriate compensation payments would be made.
Severn Trent Water Underpass	The verges of the revised A38 alignment fall outside the width of the existing structure.	The structure would require widening to accommodate the increased width of the road cross section. Refinements to the design should be explored (with additional Departures from Standards if required) where the new layout ties in to existing before the underpass.
Network Rail Infrastructure	A38 main line footprint crosses the Midland Mainline railway and a signalling equipment building	A new structure would be required of the railway – the span and headroom would need to be sufficient to be able to retain the building and accommodate future signalling and overhead line equipment.
Starbucks	A38 main line footprint covers all of the recent extension to the car park (approx. 30% of the available parking area)	Obtain land for replacement car parking on the west side of the Starbucks building (land currently occupied by part of the mobile home park expected to be available through negotiation).

**Table 4/1: Key Constraints**

---

### 4.3 Operational Assessment

4.3.1 The A38 main line would operate as a rural dual two-lane carriageway with the National Speed Limit – there would be no Departures from Standard required for the main line geometry.

#### Departures from Standards

4.3.2 The forecast traffic flows for all design options for the Little Eaton junction, suggest that 3 lanes are required each side of the junction. This is considered to be outside the scope of the scheme, however, Departures from Standards would still be required for these aspects. This also applies to the Presented Option.

4.3.3 No Departures from Standard are required for the A38 mainline. For the slip road merge and diverge, there are several physical constraints that make it necessary to adopt a lower design standard than the 120kph main line design speed. The following Departures from Standards would be required:

- Southbound merge – to tie in the slip road taper before the River Derwent Bridge, urban standards for a 100kph design speed have been used for the nose and taper lengths. This constitutes a Departure from Standards but is justified as the A38 has an urban cross-section at this location. Furthermore, the traffic flows suggest a lane-gain or auxiliary lane merge should be provided both of which would extend beyond the river bridge. Should this sub-standard slip road merge not be permitted, it would necessary to replace the existing river bridge as, due to its condition and form of construction, widening is not feasible.
- Northbound merge – to tie this slip road into the main line before the Severn Trent Water underpass standards for a 100kph design speed have been used for the nose and taper lengths. This would be a Departure from Standards. Furthermore, the traffic flows suggest the merge type should have an auxiliary lane but if this was included there would be a need to further widen the Severn Trent Water underpass on its west side.
- Southbound diverge – this has been designed to 120kph design speed; as described in 5.3.2 the traffic flows suggest this should be a lane-drop diverge (but it is outside the scope of the scheme to increase the number of upstream traffic lanes). An auxiliary lane has been included to mitigate and this is considered to be a Departure from Standards. This which results in the STW underpass requiring widening on its east side.
- Northbound diverge – this slip road is compliant with a 120kph design speed.

#### NMU Impacts

4.3.4 As for the Presented Option, as a minimum, all of the existing pedestrian and cycle routes would be retained with local diversions as appropriate. This is anticipated to include the following:

- Signal controlled crossings of the southbound merge slip road and the northbound diverge slip road to provide continuity of the National Cycle Route NR54 along the west side of the A61/B6179

- Widening of the verge on the north side of the Flood Arch structure and the new Network rail structure to include a cycleway to connect the existing cycle route from Allestree (via Ford Lane) along the north side of the A38 to connect to National Cycle Route NR54 at the end of the northbound diverge slip road.

These NMU features are shown on the drawing in Appendix F.

#### Impact on Statutory Undertakers Apparatus

#### 4.3.5 Option 2C would require more diversion or protection of Statutory Undertakers apparatus than the Presented Option

- There are existing National Grid (gas), Severn Trent Water (mains), Severn Trent Water (sewers), Western Power Distribution (11kv x 3) and BT apparatus along the existing B6179. It is anticipated these would be diverted along the route of the diverted B6179 or protected in situ as a part of the scheme proposals, this is due to construction of the new embankment that would cross the existing B6179.
- In Ford Lane there are extensive services including National Grid (gas), Western Power Distribution (2 no. 11kv) and BT apparatus. It is anticipated these would need to be diverted by the scheme.
- The draft layout for option 2C shows that the Severn Trent underpass under the A38 at the north end of the scheme is to be widened to accommodate the slip road tapers. This underpass contains extensive water supply apparatus so there is a risk that these would need to be diverted when works are carried out on the underpass.

#### Lighting

#### 4.3.6 Based on the PAR assessment conducted for the Presented Option, it is anticipated that Option 2C would not require lighting on the main line (as it would operate at National Speed Limit with no Departures from Standards). This would have benefits when compared with the Presented Option in terms of visual impact. It would be likely that the slip roads, dumbbell roundabouts and dumbbell link would all be lit, this would be comparable to the existing roundabout junction. The anticipated lighting extents are shown on the drawing contained in Appendix G.

#### Potential Further Development.

#### 4.3.7 Should the decision be taken to further develop this option, the following points should be explored as potential refinements to the scheme:

- Stopping sight distance – the layout of Option 2C includes a widened central reserve to provide full stopping sight distance for 120kph design speed for the A38 main line (295m). If this requirement were to be relaxed such that a stopping sight distance of 210m is provided (i.e. a one-step relaxation) then a saving of around 7m could be made in the width of the central reserve with the benefits of potentially moving the retaining wall further from the garden centre buildings and it would also present a saving in the quantity of material required to construct the embankment and reduce the overall scheme footprint. It is likely that this relaxation would constitute a Departure from Standards as it would be deemed to be on the immediate approach to a junction.
- Refine the tie in of the A38 at the northern extent of the scheme to avoid widening work to the STW underpass. This could also remove the need for work to the water services that pass through the underpass. This could increase the number of Departures from Standards that would be required.

#### **4.4 Geotechnical and Structures Assessment**

##### Geotechnical

- 4.4.1 In general the ground conditions are anticipated to comprise potentially soft and compressible cohesive Alluvium, underlain by granular Alluvium, underlain by rock of the Millstone Grit Group. The proposed alignment to the north is indicated on mapping to be underlain by Glacio-Fluvial deposits and weathered bedrock of the Millstone Grit Group.
- 4.4.2 A section of the junction would be located within the recorded extent of a landfill site. The material likely to be encountered is soft, compressible and may contain large demolition debris. Part of the proposed alignment is underlain by the disused and infilled Little Eaton Branch of the Derby Canal.
- 4.4.3 The western part of the proposed alignment would be located in the River Derwent floodplain and high groundwater levels are anticipated, which would require management during construction.
- 4.4.4 Temporary excavations and support (e.g. anchored sheet piling) would be required to provide adequate working room for a piling rig and pile cap excavations, for the flood arch extension and the railway bridge.
- 4.4.5 Embankments would be constructed primarily from Class 1 or 2 General Fill material. Within the floodplain areas, flood protection measures would be required. Due to the presence of potentially soft and compressible Alluvium, landfill material and infill to the former Derby Canal, a granular starter layer, potentially with the incorporation of geogrid basal reinforcement, would be included to provide a suitable construction platform.
- 4.4.6 Settlement of the Alluvium and landfill material due to embankment construction would be likely to require the provision of surcharge, pause period and associated monitoring to reduce settlement occurring after carriageway construction. This post construction settlement could be further reduced if ground treatment is carried out, such as installation of vertical band drains or stone columns and basal geogrid reinforcement.

---

### Ford Lane Landfill

- 4.4.7 The proposed alignment and associated link roads would be located over the disused and infilled Derby Canal, through the Ford Lane former landfill site and then through the Mobile Home Park.
- 4.4.8 The Ford Lane landfill site is a historical landfill and is recorded by the Environment Agency to have received waste from factory or industrial processes, excluding waste from mines, quarries and agricultural wastes. Previous ground investigation recorded maximum depth to base of landfill material of 8.6m, which consists of silty, organic matter, soft brown and black clay with wood, metal, bricks, concrete, railway sleepers, rubber and crushed stone. No lining was identified at the base of the landfilled waste.
- 4.4.9 There would be potential for soil contamination in the area due to landfilling at the Ford Lane former landfill site and spillage/dumping of material and/or backfilling of the in-filled former Derby Canal. Materials from these two areas, if excavated, may not be acceptable for re-use within the scheme and may require treatment and/or offsite disposal. There would also be potential for landfill gas (methane and carbon dioxide) generation by the waste materials.
- 4.4.10 Excavation within the landfill area would be minimised for areas of embankment construction by placing the starter layer, potentially with the incorporation of geogrid basal reinforcement, directly on the existing surface.
- 4.4.11 For areas of at-grade carriageway construction, a depth of landfill material would be sub-excavated and replaced with capping, potentially with the incorporation of geogrid reinforcement, and General Fill material to provide a suitable foundation for the carriageway construction and incorporate necessary leachate and gas protection measures.
- 4.4.12 Gas protection may need to be installed within drainage runs to prevent collection of and/or lateral migration of ground gases. Such protection could include the use of gas proof membranes in the base and sides of drainage runs for the length where it crosses the Landfill. Long-term gas monitoring may be required.
- 4.4.13 Groundwater within the landfill may be polluted and works above the landfill may impact groundwater movement with the potential for migration of pollution to surface water and groundwater.
- 4.4.14 Piling within the landfill may be obstructed by the presence of large waste material and the piles may create a new pathway for migration of contaminant into the underlying Secondary Aquifer. A risk assessment would be recommended, to satisfy the Environment Agency, to determine the appropriate piling method and ground improvement techniques to be used, protective of receptors such as controlled waters (groundwater and the River Derwent) and human health

### Structures

#### *Flood Arch*

- 4.4.15 The existing flood arch would require 30m extension to the north to accommodate the proposed A38 carriageway and the northbound slip road to Little Eaton roundabout.

- 
- 4.4.16 The existing flood arch is single span that comprises of deep in-situ reinforced concrete coffered beams with curtain wall. The beams are simply supported between reinforced concrete retaining abutment structures, founded on mass concrete footings. The existing bridge square clear span of 9.15m between the abutment faces would be maintained for the 15.4m proposed extension to the south.
- 4.4.17 The extension construction would be a reinforced concrete portal with monolithic joint between the deck slab and the abutments. The foundations to the widened structure would be piled to reduce the settlement effects and new wing walls would also be constructed. The minimum existing headroom to the existing structure would be maintained to the widened section of the bridge.
- 4.4.18 Piled foundations would be required due to the foundations being underlain directly by potentially soft and compressible Alluvium and / or landfill material. Temporary excavations and support (e.g. anchored sheet piling) would be required to provide adequate working room for a piling rig and pile cap excavations.
- 4.4.19 Underpinning of the existing foundations may be required to accommodate increased stress due to adjacent embankment construction.

*Railway Bridge*

- 4.4.20 A new railway bridge would be constructed north of the existing bridge 11b to carry the proposed new alignment of the A38 carriageway over the Midland Mainline Railway. The minimum headroom of 5.36m (subject to Network Rail confirmation) would be provided to accommodate the proposed Overhead Line Equipment for the proposed Electrification of the line and should be adequate for the bridge to span the existing signalling building. The proposed railway bridge would have a skew span of 39.3m and a skew angle of 13.4 degrees. The proposed bridge span would allow for the construction of the abutments outside the red zone and eliminate the requirement to design for impact loading onto the abutments.
- 4.4.21 Piled foundations would be required due to the foundations being underlain directly by potentially soft and compressible Alluvium and / or landfill material. Temporary excavations and support (e.g. anchored sheet piling) would be required to provide adequate working room for a piling rig and pile cap excavations.
- 4.4.22 Underpinning of the existing foundations may be required to accommodate increased stress due to adjacent embankment construction.

*New A61 overbridge*

- 4.4.23 This option is for a single bridge carrying the main line over the A61. The bridge would span east to west, carrying the proposed A38 over the A61 section connecting the new roundabout north of the existing Little Eaton roundabout. The bridge would have a single clear square span of 34.0m.
- 4.4.24 Piled foundations would be required due to the foundations being underlain directly by potentially soft and compressible Alluvium, landfill material and infill to the former Derby Canal.

*Breadsall Underpass (Severn Trent Water Underpass)*

- 4.4.25 This structure, located at the northern extremity of the scheme, would only be affected by Option 2 which would require it to be extended on its east side in order to accommodate the proposed A38 southbound diverge slip road.

4.4.26 The existing underpass is a 450mm thick reinforced concrete box structure with clear height of 5.25m and clear width 7.11m. The bridge is skewed 10 degrees to the A38 horizontal alignment. The underpass is used as a bridleway and for STW access. The underpass would be widened 11.12m east and 8.0m west, maintaining the existing internal dimensions above and the reinforced concrete construction.

4.4.27 The structure is likely to be underlain by superficial deposits and weathered bedrock, therefore we anticipate that spread foundations would be feasible. Piled foundations may be required if the material is soft and compressible. Underpinning of the existing foundations may be required to accommodate increased stress due to adjacent embankment construction.

#### *Retaining Wall*

4.4.28 A 220m long retaining wall would support the north on-slip road and the A38 embankments at the Derby Garden Centre. The retaining wall would be formed of a reinforced concrete cantilever wall with piled foundations because the foundations are underlain directly by the potentially soft and compressible alluvium and landfill material.

#### *Ground Investigation*

4.4.29 The ground investigation that has been carried out to date does not cover the majority of the area of Option 2C, and in particular within the landfill. Therefore, ground investigation would be required along the proposed alignment and at structure locations. Ground gas monitoring would be undertaken as part of the investigation.

4.4.30 Where ground gas risks are identified monitoring would be required during construction. Depending on the findings of the investigation, appropriate leachate mitigation measures may be required to protect the underlying groundwater and nearby surface water body.

### **4.5 Construction Assessment**

4.5.1 For the Presented Option, much of the embankment earthworks would be completed off-line during the first construction phase while the traffic remained on the original alignment. For Option 2C, there would also be a reduction in the earthworks volume as the embankment is shorter, but more of the scheme would be constructed on the alignment of the existing A38 as it heads north.

4.5.2 To address the extended tie-in at the north of the scheme, a temporary carriageway would be required to the east of the A38. Traffic would then use a combination of the new carriageway, temporary road and the slip road down to the roundabout. Due to the significant level difference between the A38 and the adjacent land substantial temporary works will be needed. This will increase the temporary land take and complicate traffic management arrangements.

4.5.3 The bridge over the railway would be an independent structure for Option 2C as opposed to an extension of the existing structure in the Presented Option. This would present a simpler structure in terms of buildability.



- 
- 4.5.4 The realigned A38 would pass to the north of the existing roundabout and cross the realigned B6179 on a single bridge. This presents a simpler arrangement in terms of construction when compared with the Presented Option which would involve construction of a two-bridge roundabout on top of the existing roundabout with associated multi-phase traffic management requirements.
- 4.5.5 The new north dumbbell roundabout would present an additional item to programme, but as it would be remote from existing traffic it could be constructed early in the programme along with the new bridge over the B6179. This would then facilitate the diversion of the B6179 to then allow construction of the new embankment over the existing road.
- 4.5.6 Construction of the north roundabout and diversion of the B6179 could be undertaken early in the programme to enable construction of the replacement car parks for the garden centre and Starbucks prior to constructing the new A38 alignment, thereby minimising impacts to the businesses.
- 4.5.7 The existing southbound carriageway would be retained on its current alignment and would become the southbound slip roads. The existing carriageway, including the existing roundabout would be kept in use during construction whilst the majority of the scheme is constructed off-line.
- 4.5.8 The impacts on statutory undertaker's plant would be increased for Option 2C. The existing services running north-south along the A61 / B6179 route would require diversion/protection for both options. However, the extents of the diversions would be increased for Option 2C due to the realignment of the B6179 and the need to divert a number of services that currently run east-west along Ford Lane.

#### Summary

- 4.5.9 In comparison to the Presented Option, Option 2C would simplify the junction construction. Overall, it is anticipated that the construction programme would shorten by several months and traffic disruption would be reduced. The construction sequence would also enable replacement car parking to be provided for the Derby Garden Centre and Starbucks prior to taking the existing land.
- 4.5.10 For the overall scheme, the construction duration would remain unchanged as this is driven by the works at Markeaton junction.

---

## 5 TRAFFIC AND ECONOMICS

### 5.1 Traffic Forecasts And Economic Assessment Introduction

- 5.1.1 The Presented Option and Option 2C were appraised using the scheme's traffic model.
- 5.1.2 The traffic forecasts for the Option were prepared using the same forecasting process and growth assumptions as used for the Presented Option and for the 'Do-Minimum' case. The main difference is that the trip demand forecasts applied to Option 2C were the same as the Presented Option; no separate variable demand model (VDM) process was applied. The assumption was that the overall travel times between the Presented Option and the Option 2C would be similar and therefore user responses would not change the traffic flows on the road network. Any change in traffic flows between Presented Option and Option 2C would be due to reassignment effects (only).
- 5.1.3 The transport economic assessment of the Option used the same methods as used to appraise the traffic economics of the Presented Option. Road safety was not appraised.

### 5.2 Traffic Assessment

- 5.2.1 The Stage 2 traffic forecasting process prepared and presented VDM forecasts for two of the options; the:
- 'Do-Minimum' and
  - Presented Option.
- 5.2.2 To produce traffic forecasts for Option 2C, the Presented Option trip demand matrices from the VDM forecasting process were assigned onto the Option 2C highway networks. If Option 2C were to be taken forward, then further work is recommended to reassess the traffic forecasts trip demands using the more robust VDM forecasting processes and methodologies.
- 5.2.3 The Option 2C highway networks were developed directly from the equivalent future year Presented Option highway networks. As such the Option 2C highway networks also include the Presented Option for Kingsway Junction and the Presented Option for the Markeaton Junction.

### 5.3 Comparison of Journey Distances in the Traffic Model

#### Presented Option compared with Option 2C

- 5.3.1 The travel length differences between the Presented Option and Option 2C through the Little Eaton junction are shown in Table 5/1.
- 5.3.2 Along the A38 mainline, the travel distances would decrease with Option 2C compared to the Presented Option by 270m northbound and 230m southbound respectively.
- 5.3.3 However, with Option 2C, the journey lengths from the A38 South to the A61 (south) would increase by 490m compared to the Presented Option.
- 5.3.4 With Option 2C the distance from the A38 North to the A61 (south) would be 110m shorter compared to the 'Preferred Option' but in the reverse direction the Presented Option is 250m shorter.

Highway Link	Distance (metres)		
	Option 2C	Presented Option	Difference
A38 Mainline NB	4,680	4,950	-270
A38 Mainline SB	4,850	5,080	-230
A38 South to A61	2,610	2,120	490
A61 to A38 South	2,040	2,010	30
A38 North to A61	4,420	4,530	-110
A61 to A38 North	4,690	4,440	250

**Table 5/1: Travel distances between the Presented Option and Option 2C**

5.3.5 In conclusion, whilst about 60% of all the trips arriving at the Little Eaton junction would pass through on the A38 and would therefore be travelling shorter distances with Option 2C - compared to the Presented Option, half of the remaining movements at the Little Eaton junction (specifically those trips turning right from A38 South to A61 and from A61 to A38 North) would be travelling longer distances than for the Presented Option. Thus the travel benefits of Option 2C over the Presented Option are not clear-cut.

Existing ('Do-Minimum') Compared with Option 2C

5.3.6 The travel differences between 'Do-Minimum' and Option 2C through the Little Eaton junction are shown in Table 5/2:

Highway Link	Distance (m)		
	Option 2C	'Do-Minimum'	Difference
A38 Mainline NB	4,680	4,840	-160
A38 Mainline SB	4,850	5,020	-170
A38 South to A61	2,610	2,110	500
A61 to A38 South	2,040	2,040	0
A38 North to A61	4,420	4,420	0
A61 to A38 North	4,690	4,440	250

**Table 5/2: Travel distances between 'Do-Minimum' and Option 2C**

5.3.7 Compared to the existing arrangement (i.e. the 'Do-Minimum'), with Option 2C the distances along the A38 mainline would be shorter by 160m northbound and 170m southbound respectively.

5.3.8 For the traffic movements between the A61 and A38 south and between the A38 North to A61 (south), there would be no difference in length between 'Do-Minimum' and Option 2C.

5.3.9 Compared with the Existing arrangement ('Do-Minimum'), Option 2C would be longer for the traffic movement between the A38 South and the A61 (south) by 500m. The movement from the A61 (south) to A38 North would be 250m longer.

5.3.10 In conclusion, trips using A38 would be travelling 0.16km (0.1 miles) shorter distances under Option 2C compared with the existing arrangement. However, movements at the Little Eaton junction from A38 South to A61 (south) would be lengthened by 0.5km (0.3 miles) and from A61 to A38 North would be longer by 0.25km (0.2 miles). Depending upon the balance of traffic movements, the net

impact would be an increase in vehicle-kilometres travelled. This computation is presented under the economic assessment section of this report.

## 5.4 Assignment Flows

5.4.1 The Table and Figure contained in Appendix H compare the assigned flows extracted from the 2039 future year traffic forecasting models.

5.4.2 The results indicate that, compared with the Presented Option, Option 2C would:

- Increase the number of vehicles on the A38 mainline by about 1% to 2%;
- Slightly increase the number of vehicles along A6 Duffield Road south of the A6/A38 Palm Court junction;
- Decrease the number of vehicles on A6 Duffield Road to the north of the A38/A6 Palm Court junction;
- Slightly increase the number of vehicles on Croft Lane through Breadsall and A608 West of Oakwood.
- Attract flows onto Duffield Road to the west of Little Eaton.

5.4.3 Overall the forecast traffic flows on the road network are showing similar effects and impacts.

## 5.5 Outturn Cost Estimate

5.5.1 Updated cost estimates were requested from Benchmark based on the Option 2C drawings. Provisional option estimates have been supplied by Benchmark. The outturn costs for all three junction improvements, on a like-for-like basis, for the Presented Option and for Option 2C are:

- Presented Option = £223.52 million
- Option 2C = £247.97 million

5.5.2 The cost estimates for both the Presented Option and for Option 2C assume that the Preferred Route Announcement occur in December 2016. Because this is no longer possible, the preparation costs and inflation allowances are likely to be higher when the scheme costs are next reviewed.

5.5.3 The difference is a £24.45 million increase in the outturn cost with Option 2C included within the scheme.

## 5.6 Economic Assessment

5.6.1 The travel costs and journey distances of all trips were extracted from the future year assigned networks for Option 2C. This process covers all the travel distances and journey times between every origin-destination pair in the models' assigned networks for all years and modelled time periods.

5.6.2 The transport economic efficiency (TEE) benefits of Option 2C was assessed using the Department for Transport's software, TUBA version 1.9.6, and the analyses included the updated economics values to reflect TAG Data Book v1.6 issued in November 2016. This is the same software that was used to appraise the Presented Option.

5.6.3 A comparison of the TEE results for the Presented Option and for the Option 2C are summarised in the following Table 5/3. All monetary values are tabulated in thousands of pounds (£1,000), are in 2010 market prices and discounted to a 2010 present value.

	Presented Option	Option 2C
Non-business: Commuting	All Modes	All Modes
Travel Time	67,090	67,860
Vehicle operating costs	-1,374	-1,545
User charges	0	0
During Construction & Maintenance	0	0
NET NON-BUSINESS BENEFITS: COMMUTING	65,716	66,315
Non-business: Other	All Modes	All Modes
Travel Time	158,938	172,401
Vehicle operating costs	-22,322	-23,327
User charges	0	0
During Construction & Maintenance	0	0
NET NON-BUSINESS BENEFITS: OTHER	136,616	149,074
Business: User benefits	All Modes	All Modes
Travel Time	112,911	124,440
Vehicle operating costs	7,580	11,939
User charges	0	0
During Construction & Maintenance	0	0
Subtotal	120,491	136,379
Private Sector Provider Impacts		
Revenue	0	0
Operating costs	0	0
Investment costs	0	0
Grant/subsidy	0	0
Subtotal	0	0
Other business Impacts		
Developer contributions	0	0
NET BUSINESS IMPACT	120,491	136,379
TOTAL		
Present Value of Transport Economic Efficiency Benefits (TEE)	322,823	351,768

**Table 5/3 Comparison of TEE results for Presented Option and Option 2C**

- 5.6.4 An initial, high-level consideration of the transport economic performance of Option 2C transport compared against the Presented Option is described below.
- 5.6.5 Option 2C would give higher net travel time benefits for all groups of users (non-business commuting, non-business other, and business) than the Presented Option. The relative difference in travel time benefits between Option 2C and the 'Preferred Option' would be greatest for business trips.
- 5.6.6 Option 2C would give larger vehicle operating cost disbenefits for non-business (commuting and other) users than the Presented Option, and larger vehicle operating cost benefits for business users than the Presented Option.
- 5.6.7 Overall, the TEE benefits provided by Option 2C would be 1% more for non-business (commuting) users, 9% more for non-business (other) users and 13% more for business users than the TEE benefits provided by the Presented Option.
- 5.6.8 The total TEE benefit would be £29 million (9%) more for Option 2C than for the Presented Option.

---

### Noise and Local Air Quality

- 5.6.9 Monetised noise and local air quality benefits have not been calculated for Option 2C. In the Analysis of Monetised Costs and Benefits presented below, the same monetised noise and local air quality benefits that were calculated for the Presented Option have also been applied to Option 2C.

### Greenhouse Gases

- 5.6.10 The greenhouse gases benefit presented for the Presented Option was calculated by the Air Quality team, in preference to using the value calculated by TUBA. This resulted in a greenhouse gases disbenefit of £14.9 million (2010 market prices and discounted to a 2010 present value year) for the 'Preferred Option'.
- 5.6.11 For Option 2C, the greenhouse gases disbenefit was calculated *pro rata* from the value for the Presented Option, factored in proportion to the results from TUBA for the 'During Construction' and main 60-year appraisal periods. This resulted in a greenhouse gases disbenefit of £13.937 million (2010 market prices and discounted to a 2010 present value year) for Option 2C.

### Accidents

- 5.6.12 No assessment of accident benefits has been carried out for Option 2C. In the Analysis of Monetised Costs and Benefits presented below, the same monetised accident benefits calculated for the Presented Option have also been applied to Option 2C. The monetised road safety benefits are expected to be broadly similar.

### Cost to Broad Transport Budget

- 5.6.13 The Presented Option would have a Present Value of Costs (PVC) of £170.8 million (at 2010 market prices and discounted to a 2010 present value year).
- 5.6.14 The outturn costs for Option 2C have been converted, on a like-for-like basis to the Presented Option, to a present value costs (PVC). The PVC is accounted in units of 2010 market prices and discounted to a present value year of 2010.
- 5.6.15 The PVC of Option 2C is £188.92 million (in 2010 market prices & discounted to a 2010 present value year). This is £18.12 million more than the PVC for the Presented Option.

### Indirect Tax Revenues

- 5.6.16 As part of the Stage 2 appraisals, it was calculated that the Presented Option would increase the indirect tax revenues by £18.233 million. Option 2C would give indirect tax revenue benefits of £16.953 million; these values are in 2010 market prices and discounted to a 2010 present value year.

### Buildability

- 5.6.17 In Option 2C, because much of the A38 through the new junction and the new northern roundabout would be constructed off-line, there is potential for reduced disruption to travellers compared to the Presented Option. This is reflected in the estimate of delays during construction shown in Table 5/4 below.
- 5.6.18 The construction of the Presented Option would result in a net benefit during the construction period, totalling £3.459 million (2010 prices, discounted to a 2010 present value year). This net benefit reflects the conclusion that significant sections of the scheme would be opened before the construction works are completed.

5.6.19 For Option 2C, it has been assumed that the impact of works on travellers through the Little Eaton junction would be of shorter duration, and would be completed during the 534 day period allocated to construction scenarios. This has been represented in Table 5/4 by reducing the duration of some of the construction scenarios to zero (columns headed Sc1 and Sc5), and increasing the duration of other construction scenarios (columns headed Sc0 and Sc6) by a corresponding number of days.

Factoring results to the applicable durations	Sc0	Sc1	Sc2	Sc3	Sc4	Sc5	Sc6	Sc7	Total
Number of days of each scenario (from TN14, Table 2)	241	100	200	161	173	140	174	86	1275
Factor applied	0.660	0.274	0.548	0.441	0.474	0.384	0.477	0.236	
Greenhouse Gases	3	-6	-15	-6	13	9	15	5	18
Economic Efficiency: Consumer Users (Commuting)	-30	-103	-215	-1	42	102	348	225	368
Economic Efficiency: Consumer Users (Other)	-184	-357	-783	31	260	443	1322	869	1602
Economic Efficiency: Business Users and Providers	-95	-176	-261	157	150	325	864	590	1554
Wider Public Finances (Indirect Taxation Revenues)	-11	27	67	26	-58	-41	-71	-22	-82
Present Value of Benefits (PVB) for Presented Option	-316	-615	-1208	208	407	837	2480	1667	<b>3459</b>
PVB per day	-1.3	-6.2	-6.0	1.3	2.4	6.0	14.3	19.4	2.7
Modified durations to estimate maximum PVB for Option 2C	341	0	200	161	173	0	314	86	1275
Maximum PVB for Option 2C, using modified durations	-448	0	-1208	208	407	0	4475	1667	<b>5102</b>

**Table 5/4 Estimate of delays during construction**

5.6.20 This results in a net benefit during the construction period of £5.102 million (2010 market prices and discounted to a 2010 present value year) for Option 2C. Compared with the Presented Option, this represents a reduction in the delays during construction, which is evaluated at £1.6 million.

#### Economic Assessment Results

5.6.21 The economics results, for all three junction improvements combined, are summarised in the Analysis of Monetised Costs and Benefits (AMCB) in Table 5/5.

	Presented Option	Option 2C (Low Capital Cost)
Noise	-7,024	-7,024
Local Air Quality	3,440	3,440
Greenhouse Gases	-14,900	-13,937
Journey Ambience	-	-
Accidents	92,750	92,750
Economic Efficiency: Consumer Users (Commuting)	66,084	66,952
Economic Efficiency: Consumer Users (Other)	138,218	151,578
Economic Efficiency: Business Users and Providers	122,045	138,440
Wider Public Finances (Indirect Taxation Revenues)	18,233	16,953
Option Values	-	-
<b>Present Value of Benefits (PVB)</b>	<b>418,846</b>	<b>449,152</b>
<b>Present Value of Costs (PVC)</b>	<b>170,800</b>	<b>188,920</b>
<b>OVERALL IMPACTS</b>		
<b>Net Present Value (NPV)</b>	<b>248,046</b>	<b>260,232</b>
Benefit to Cost Ratio (BCR)	2.45	2.38
All monetary values are in thousands of pounds (£1,000), are in 2010 market prices and discounted to a 2010 present value year.		

**Table 5/5 Analysis of Monetised Costs and Benefits**

5.6.22 The difference in the Net Present Value (NPV), between the Presented Option and Option 2C is £12.186 million. This difference in NPV is a result of an increase in the PVB of £30.306 million and an increase in the PVC of £18.12 million.

- 
- 5.6.23 These economic assessment results indicate that, for an A38 Derby Junctions scheme that includes Option 2C at Little Eaton, the benefit to cost ratio (BCR) would be 2.38. This is 3% less than the BCR for the Presented Option.
- 5.6.24 For both options the BCR is greater than 2.0, which indicates that the scheme is very good value for money.
- 5.6.25 Table 5/5 includes costs and benefits which are regularly or occasionally presented in monetised form in transport appraisals, together with some where monetisation is in prospect. There may also be other significant costs and benefits, some of which cannot be presented in monetised form. Where this is the case, the analysis presented above does NOT provide a good measure of value for money and should not be used as the sole basis for decisions.”

Economic impact of a delay to the scheme's opening

- 5.6.26 The delay to the announcement of the preferred route is likely to delay the opening date of the scheme. The first year present value of benefits of the junction improvements is about £6.8 million. This represents the monetised opportunity value that will be lost if the scheme were to be delayed by 12 months.
- 5.6.27 The preparation cost, and hence the PVC of the scheme, is likely to increase in the event of a delay to commencing the statutory process. These cost increases are not included in the above analyses.



---

## 6 ENVIRONMENTAL ASSESSMENT

### 6.1 Overview

6.1.1 Following sections provide a qualitative appraisal of the potential environmental effects associated with Option 2C as compared with predicted effects associated with the Presented Option (as determined during the PCF Stage 2 environmental assessment). The qualitative environmental assessment presented herein takes account of the Presented Option to use the former landfilling area to the north-west of Little Eaton junction as a construction compound, both for the Presented Option and Option 2C. It is also assumed that as part of Option 2C, Highways England would facilitate the relocation of residents from the Ford Farm Mobile Home Park (which would need to be demolished) to a suitable location<sup>1</sup>, whilst the Derby Garden Centre would be provided with an alternative car parking area.

### 6.2 Air Quality

6.2.1 With the Presented Option, the air quality sensitive receptors located closest to the proposed scheme at Little Eaton junction are predicted to experience improvements in annual mean nitrogen dioxide (NO<sub>2</sub>) concentrations. At the closest receptors (approx. 40 – 60m from the A38) in the Ford Farm Mobile Home Park, a medium decrease in annual mean NO<sub>2</sub> concentrations (2.3 to 3.6µg/m<sup>3</sup>) is predicted with the Presented Option, with small decreases predicted at receptors further back. These decreases would be due to the realignment of the mainline A38 away from these receptors. In addition, the grade separation of the junction would allow traffic on the A38 to be free-flowing, thereby reducing the air emissions per vehicle compared to existing conditions. With Option 2C, the mobile home park would be demolished thus removing these properties as air quality sensitive receptors.

6.2.2 With the Presented Option, receptors located in Little Eaton village are predicted to experience imperceptible increases in annual mean NO<sub>2</sub> concentrations. No effect on air quality is anticipated in Breadsall village due to the distance between the receptors and the Presented Option. With the Presented Option, receptors in Allestree are predicted to experience small increases in annual mean NO<sub>2</sub> concentrations at those receptors closest to the A38, and imperceptible changes further back. The air quality effects in these locations are anticipated to be the same with Option 2C as traffic flows are forecast to be the similar in these areas with Option 2C as with the Presented Option.

6.2.3 Air quality effects of Option 2C and the Presented Option are considered to be not significant, and thus largely comparable.

### 6.3 Cultural Heritage

6.3.1 The existing A38 traverses the internationally designated Derwent Valley Mills World Heritage Site (WHS) (core area and buffer zone). Option 2C would require the construction of a new bridge across the Midland Mainline railway line, land take to the north of the existing A38, construction of a new raised A38 on embankment, as well as new road connections and structures within the River Derwent valley (which is an essential component of the setting of the WHS). Option 2C would impact the

---

<sup>1</sup> The environmental effects associated with a replacement mobile home park are excluded from this assessment as its location is currently unknown.

---

WHS asset, resulting in a moderate adverse effect upon the WHS's setting.

- 6.3.2 The introduction of Option 2C infrastructure (raised road, embankments, retaining walls and associated road structures) would impact the setting of the designated Breadsall Conservation Area, Breadsall Manor (listed building) and a number of non-designated historic buildings (including the former Ford Farm and the historic waterworks buildings on Alfreton Road). The significance of potential effects upon Breadsall Manor and Breadsall Conservation Area would be neutral, however, the effect upon both Ford Farm and the historic waterworks buildings on Alfreton Road would be slight adverse as Option 2C would bring the road network closer to these assets.
- 6.3.3 The area surrounding Option 2C is formed of a degraded historic landscape with fragments of former historic structures and historic land boundaries, interspersed with modern development at the A38 Little Eaton junction. Part of the historic 18th century Derby Canal, Little Eaton Branch would be impacted by Option 2C to the north of Ford Farm as a result of the construction of the new road infrastructure – this would result in a slight adverse potential effect upon that asset.
- 6.3.4 The land take required for Option 2C to the north and west of the existing A38 crosses an area that is known to be a historic landfill and where there is no potential for buried archaeology. However, to the west of the Midland Mainline Railway there is potential for Option 2C to impact an unknown buried archaeology resource within a small area of the River Derwent floodplain, and would also potentially impact an unknown deeply stratified palaeo-environmental deposit within the same area. The potential effect upon the buried archaeological resource, if present, would be slight adverse; whilst the effect upon the palaeo-environmental deposits would be neutral as this resource is likely to extend beyond the footprint of Option 2C.
- 6.3.5 Option 2C has the potential to result in a moderate adverse effect with regard to the WHS which is significant, due to the additional land take and the introduction of new structures – increasing the risk of scheme objection by heritage statutory consultees (e.g. Historic England, Derby City Conservation Officer, Erewash Borough Council Conservation and Design Officer, Amber Valley Borough Council Conservation Officer, and Derbyshire County Council Planning Archaeologist). Thus the potential heritage effects of Option 2C are worse than those as associated with the Presented Option (i.e. slight adverse effect on the WHS).

## 6.4 Landscape

- 6.4.1 Within the area covered by the Presented Option, the A38 would be expanded to the south and east into agricultural land. This land is within the Riverside Meadows Landscape Character Type which falls in the Derbyshire Peak Fringe and Lower Derwent Landscape Character Area (LCA) and also the Derwent Valley Mills WHS.
- 6.4.2 The Presented Option would result in the loss of characteristic flood plain landscape, as well as an increased perception of highway infrastructure encroachment into the adjacent rural landscape (noting that the mainline A38 embankment would be provided with lighting). It is assessed that the Presented Option would result in a minor adverse effect on landscape character (of the Derbyshire Peak Fringe and Lower Derwent LCA) during Year 1 of operation, reducing to be of negligible significance following maturation of the proposed scheme landscape works (Year 15).

- 6.4.3 Option 2C would expand the road network onto brownfield land to the north and west of the existing A38, which would expand the road footprint of the junction, given that the existing roundabout would be retained. This land is within the Riverside Meadows Landscape Character Type which falls in the Derbyshire Peak Fringe and Lower Derwent LCA, plus partly within the Derwent Valley Mills WHS. However, the land within the proposed junction currently comprises the Ford Farm Mobile Home Park, car parking associated with the Derby Garden Centre and former landfill site which has become vegetated with scrub.
- 6.4.4 Option 2C would result in an increased perception of highway infrastructure, but would occur on land which has largely been developed previously with limited encroachment into the adjacent rural landscape or loss of characteristic landscape elements. It is anticipated that with Option 2C, the mainline A38 embankment would not require the provision of lighting, although lighting would be needed along the slip-roads. Option 2C would require the construction of a new bridge on embankment across the Midland Main railway line (within the Derwent Valley Mills WHS), thereby increasing adverse landscape effects, but within an area already highway influenced and locally dominated. It is anticipated that Option 2C would potentially result in a minor adverse landscape effect during Year 1 operation with the provision of the proposed scheme landscaping mitigation, and the retention of existing woodland along sections of the A38, reducing to be of negligible significance following the maturation of the proposed scheme landscaping (Year 15).
- 6.4.5 Although Option 2C would encroach into land north of the existing junction and have a larger footprint than the Presented Option it, would largely comprise developed land and the junction layout would facilitate a degree of landscape integration through land available for structure planting (although parts of the layout would need to accommodate a replacement carpark for the Derby Garden Centre). Thus the overall landscape effect of Option 2C would be slightly reduced in comparison with the Presented Option, although this depends upon the ability to integrate a suitable landscape design into the junction layout.

## 6.5 Visual

- 6.5.1 Within the area covered by the Presented Option, the modified A38 would increase visibility of highway infrastructure (noting that the mainline A38 embankment would be provided with lighting), principally from the Derwent Valley Heritage Way and properties on the elevated fringe of Breadsall village.
- 6.5.2 Visual effects arising from Little Eaton junction are assessed to be of negligible to major significance at proposed scheme opening (Year 1), reducing to be of negligible to minor significance following maturation of the proposed landscape mitigation (Year 15). Viewers at Breadsall are assessed to experience a maximum moderate effect on visual amenity (Year 1).
- 6.5.3 The main visual receptors would be users of public rights of way such as the Derwent Valley Heritage Trail (major adverse effects during Year 1, reducing to minor adverse by Year 15). Existing views from the edge of the residential area of Allestree are dominated by vegetation on Ford Lane in the foreground and vegetation associated with the River Derwent in the middle and background of the view, which combine to obstruct visibility of the Little Eaton junction from Allestree.
- 6.5.4 The land take required for Option 2C would increase highway visibility principally

impacting users of the Derwent Valley Heritage Way to the north of the existing A38. This would potentially be exacerbated by the loss of existing screening features such as the trees to the north of the existing Little Eaton junction in the vicinity of the Derby Garden Centre. It is anticipated that with Option 2C, the mainline A38 embankment would not require the provision of lighting, although lighting would be needed along the slip-roads.

- 6.5.5 Overall, it is anticipated that Option 2C would result in a maximum major adverse effect on visual amenity in Year 1 for users of the Derwent Valley Heritage Way (reducing to minor adverse by Year 15). Views from Breadsall would be partially filtered by vegetation on the existing A38 embankments, such that effects would be of minor significance (Year 1).
- 6.5.6 Option 2C would remove residential viewers within the Ford Farm Mobile Home Park who would be adversely impacted under the Presented Option to a degree similar or greater than users of the Derwent Valley Heritage Way. Overall, visual amenity effects of Option 2C would be comparable to the Presented Option, although Option 2C would deliver a beneficial reduction of views of the modified highway for residents at Breadsall village (and remove visual sensitive receptors at the Ford Farm Mobile Home Park), with a corresponding dis-benefit on views for residents within Allestree.

## 6.6 Nature Conservation

- 6.6.1 Option 2C would be unlikely to result in any change in the significance of effects on statutory designated sites relative to those that would arise through construction and operation of the Presented Option (see Figure 7.1 in Appendix G). However, Option 2C would not result in any direct habitat loss within Alfreton Road Field rough grassland Local Wildlife Site (LWS) non-statutory designated site. This is compared to approximately 22% loss due to the Presented Option which would result in a permanent negative effect on the functional integrity of the LWS (see Figure 7.1 in Appendix G). However, Option 2C would result in direct habitat loss within Site ER017/3 (Plantation), recognised as being a site of interest (see Figure 7.1 in Appendix G). This would result in a permanent negative effect on the functional integrity of this site. This represents a new effect in comparison to the Presented Option.
- 6.6.2 Option 2C would result in a reduction in the loss of the following habitats compared to the Presented Option (potential changes in level of effect, prior to any additional mitigation measures being implemented, are detailed in brackets) (see Figure 7.2 in Appendix G):
- Hedgerow loss similar, but hedgerows lost to Option 2C would be of less conservation value (reduced from Local level to Site level);
  - Plantation broadleaved woodland reduction in area lost to Option 2C (remains at Local level);
  - Semi-improved grassland, reduction in loss of area to Option 2C (reduced from County/ Unitary Authority Level to Local Level compared to the Presented Option); and
  - Arable, reduction in loss of area to Option 2C (reduced from Local to Site level).

6.6.3 Option 2C would result in new, similar or increased loss of the following habitats compared to the Presented Option (see Figure 7.2 in Appendix G) – refer to Table 6/1.

Feature	Habitat Effect	Comment
Marshy grassland habitat	Option 2C would result in an adverse effect up to County or Unitary Authority level.	Represents a new effect in comparison to the Presented Option.
Wet ditch	Option 2C would result in an adverse effect at County/ Unitary Authority level.	No change in level of effect on watercourses in comparison to the Presented Option.
Pond (Pb8)	Option 2C would result in an adverse effect at Unitary Authority level	Represents a new effect in comparison to the Presented Option.
Scrub	Option 2C would result in an adverse effect at Site level.	No change in level of effect in comparison to the Presented Option.
Tall ruderal	Option 2C would result in an adverse effect at Site level.	No change in level of effect in comparison to the Presented Option.

**Table 6/1 Option 2C Ecological Habitat Effects compared to Presented Option**

6.6.4 Option 2C would be unlikely to result in any change in the significance of effects on the habitats present that are common to both (as detailed above) relative to those that would arise due to the Presented Option. Option 2C would, however, result in an adverse effect on pond Pb8 and marshy grassland habitat, which the Presented Option would not affect.

6.6.5 Option 2C would have reduced loss, or impacts upon, the following species compared to the Presented Option (see Figure 7.2 in Appendix G):

- White-clawed crayfish (reduced from Regional level to potentially no effect given that Option 2C would move away from Dam Brook, where a single white-clawed crayfish was confirmed during surveys in 2015).

6.6.6 The mosaic of habitats as detailed in Table 6/1 have the potential to support species/ species groups, which would thus be affected by Option 2C (with associated effects prior to any additional mitigation measures being implemented) – refer to Table 6/2.

Species	Habitat Effect	Comment
Foraging and commuting bats	Option 2C likely to affect foraging and commuting bats due to increased habitat loss and fragmentation to the north-west of Little Eaton roundabout that could impact bats from the known roosts at B1 & B3. This would result in an adverse effect up to Regional level.	Potentially increases the level of effect relative to the Presented Option.
Reptiles	Option 2C could affect common reptiles through loss of suitable reptile habitat north of the mobile home park. If present as significant populations, this would result in an adverse effect up to County/ Unitary Authority level.	Represents a new effect relative to the Presented Option.
Badger	Option 2C would result in the loss of an outlier badger sett in the south-west and there would be loss of foraging land used by a main badger sett. This could adversely affect the badger social group based in the Main sett.	Represents an increase in the effect as compared to the Presented Option.
Riparian mammals (water vole and otter)	Option 2C could affect populations of riparian mammals (water vole and otter) that may be present on drain Pb1. Impacts on this drain could result in an adverse effect up to Regional level.	No change in level of effect in comparison to the Presented Option.
Aquatic invertebrate	Should there be notable species of aquatic invertebrate present in drain Pb8, these could be significantly affected by Option 2C and could result in an adverse effect at County/ Unitary Authority level. However, there would be no effect of Option 2C on other drains affected by the Presented Option.	No change in level of effect in comparison to the Presented Option.

Species	Habitat Effect	Comment
Birds	Option 2C affects land that may be used by notable and legally protected birds could result in an adverse effect up to Regional level.	Potentially increases the level of effect relative to the Presented Option, depending on the species and numbers concerned.
Invasive non-native plant species	Option 2C could affect further areas of invasive non-native plant species identified, including Japanese knotweed ( <i>Fallopia japonica</i> ) and Himalayan balsam ( <i>Impatiens glandulifera</i> ).	-

**Table 6/2 Option 2C Protected Species Effects compared to Presented Option**

6.6.7 Given the above, Option 2C has the potential to result in an overall large negative nature conservation effect (unmitigated) with regard to nature conservation compared to the overall assessed moderate negative effect (unmitigated) of the Presented Option. The effects of Option 2C could be greater than those associated with the Presented Option, as there is the potential to impact several more ecological receptors of up to Regional Value. However, as detailed in para. 6.1.1, the former landfill area to the north-west of Little Eaton roundabout may be used as a construction compound for both the Presented Option and Option 2C. Such temporary use of the former landfill site would elevate the ecological effects as associated with the Presented Option and make them largely comparable with those associated with Option 2C.

6.6.8 An appropriate ecological mitigation strategy could be developed that has potential to reduce nature conservation effects to non-significant levels, both for Option 2C and the Presented Option (including the use of the former landfill as a construction compound). This strategy will be defined following confirmation of which option is to be taken forward.

## 6.7 Geology and Soils

6.7.1 The underlying geology along the Option 2C route is similar to the geology beneath the Presented Option. Therefore, the geology and soils effects as associated with Option 2C would be similar to some of those that would be experienced with the Presented Option. However, a number of changes to impacts as associated with Option 2C have been identified which are detailed below.

6.7.2 Option 2C would take the route over a former landfill site, existing properties, and over the disused and infilled Derby Canal (located along the B6179 Alfreton Road). The new Option 2C northern roundabout and associated link roads would also fall within the footprint of the former landfill. The Presented Option would place the A38 outside of the former landfill footprint, although the former landfill site may be used as a temporary construction compound. The former landfill site is recorded by the Environment Agency to have received waste from factory or industrial process (excluding waste from mines, quarries and agricultural wastes) – refer to Section 4.4 for further details. Materials within the landfill, and the infilled Derby Canal, may contain potential contaminants; generate contaminated leachate and landfill gases. Potential soil and leachate contamination may include metals, inorganic contaminants and organic contaminants (such as, Total Petroleum Hydrocarbons, Polycyclic Aromatic Hydrocarbons, Volatile Organic Compounds and Semi-Volatile Organic Compounds). Methane, carbon dioxide, carbon monoxide, hydrogen sulphide and depleted concentrations of oxygen may also be present. The landfilled materials may also present aggressive ground conditions, which may affect the specification of construction materials, such as concrete, used in any underground

---

structures.

- 6.7.3 Piling within the landfill as associated with Option 2C construction, may be obstructed by the presence of large waste material, whilst the piles may create a new pathway for migration of contaminants into the underlying Secondary A Aquifer.
- 6.7.4 Option 2C would take the carriageway through the Ford Farm Mobile Home Park, which would be avoided by the Presented Option. There is potential for low scale hydrocarbon contamination within the mobile home park from spills and leaks of motor/ heating oils and fuels, as well as other potential contaminants.
- 6.7.5 An agricultural land survey has been undertaken which identified that local soils, located to the south and east of the current A38, have an Agricultural Land Classification (ALC) predominantly of ALC subgrades 3a and 3b, with the majority being 3b. It is currently predicted that the Presented Option would result in the permanent loss of less than 6ha of agricultural land and woodland, of which circa 0.9ha would be of grade 3a and 3.1ha of grade 3b. The Presented Option would thus result in the loss of a minor amount of 'best and most versatile agricultural land'. The loss of agricultural land of ALC grades 3a and 3b for Option 2C would be significantly lower in comparison to the Presented Option.
- 6.7.6 Given the above, Option 2C would have a negligible effect with regard to the loss of agricultural land as compared to a minor to negligible effect associated with the Presented Option. However, given that Option 2 would cross a former landfill site, overall Option 2C has the potential to result in a moderate adverse effect (unmitigated) upon soils and geology. An appropriate mitigation strategy could be developed that has the potential to reduce residual effects to negligible levels, noting that the mitigation strategy for Option 2C would be more technically complex and expensive than the mitigation strategy for the Presented Option.

## **6.8 Materials**

- 6.8.1 Both the Presented Option and Option 2C would require large amounts of construction material resources that are commonly used for road projects, whilst both would generate waste materials.
- 6.8.2 In comparison with the Presented Option, Option 2C would place highway infrastructure on an area of historic landfilling to the north of the existing Little Eaton junction, thus potentially generating contaminated waste which would require off site treatment and/ or disposal. Using the former landfill site as a construction compound is not anticipated to result in the generation of significant volumes of contaminated waste requiring management and disposal. The effects of Option 2C would, therefore, be slightly worse than the Presented Option, although significant effects would be avoided through minimising excavation requirements, adherence to appropriate materials sourcing and usage, and adherence to good construction practices and compliance with relevant land local waste and planning policies.

## **6.9 Noise and Vibration**

- 6.9.1 With the Presented Option, the Ford Farm Mobile Home Park would experience a minor reduction in noise levels in the short term as the new A38 Little Eaton junction would be slightly further away than the existing junction. With Option 2C, the mobile home park would be demolished, thus removing these properties as noise sensitive receptors.

- 6.9.2 In Allestree the closure of the Ford Lane junction with both options would reduce traffic flows in the eastern half of the housing estate, though a corresponding increase would occur in the western half of the estate (due to traffic accessing the A38 via the A6). The eastern façade of properties at the eastern edge of Allestree would experience a negligible increase to minor decrease in noise levels in the short term with the Presented Option, depending on their location. With Option 2C the extent of the negligible increase in traffic noise levels is likely to be greater, and the extent of the negligible to minor reduction smaller (as compared to the Presented Option), due to the relocation of the A38 to the north-west of the existing junction.
- 6.9.3 With the Presented Option the majority of residential receptors in Little Eaton village would experience a negligible increase in noise levels in the short term, with a minor increase along Duffield Road as both it and Alfreton Road would become more attractive routes when delays would be reduced at the junction. With Option 2C the impacts are likely to be fairly comparable, as although the A38 would be relocated to the north-west, it would still be a considerable distance from the closest residential properties in Little Eaton village.
- 6.9.4 With the Presented Option the noise impact on residential properties in Breadsall would be negligible in the short term. The increase in noise from the A38, due to the relocation of the junction to the south-east of the existing A38 with the Presented Option would be partially offset the lower traffic speeds on the A38 through parts of the junction, and new low noise surfacing within the extents of the option. With Option 2C, the extent of the negligible increases in traffic noise is likely to be reduced and the extent of the negligible reductions increased as the A38 mainline would be relocated to the north-west of the junction. There would be the potential to achieve minor reductions in traffic noise levels in the north of Breadsall village, away from the A61 and Croft Lane/ Brookside Road, which would experience an increase in traffic due to the reduction in delays at the junction.
- 6.9.5 Overall the significance of the effect on traffic noise in the vicinity of Little Eaton junction varies from slight beneficial to slight adverse for both the Presented Option and Option 2C, although the location of impacted receptors would vary.

## 6.10 People and Communities

- 6.10.1 With regard to permanent land take, approximately 6.9ha of land outside of the existing highway boundary would be required for Option 2C – thus approximately 1.19ha more land than required for the Presented Option. Both Option 2C and the Presented Option would traverse areas designated as Green Belt.
- 6.10.2 **Demolition of private property:** Option 2C would require the demolition of residential and commercial properties namely: mobile homes within the Ford Farm Mobile Home Park, Fourways, the Freeberne Plant Haulage Services and the David Ray Commercials – such demolition works would result in a major adverse effect on private property. Option 2C would also have a moderate adverse effect on land belonging to the Derby Garden Centre that occupies the space between the A38 and the B6179 to the north of the junction (accessed off the B6179). When compared to the Presented Option, Option 2C land use effects would be significantly worse than those associated with the Presented Option due to the requirement for the demolition of residential and commercial properties. However, as indicated in para. 6.1.1, as part of Option 2C, Highways England would facilitate the relocation of residents from



---

the Ford Farm Mobile Home Park to a suitable location, whilst the Derby Garden Centre would be provided with an alternative car parking area. Provision of such facilities would reduce the residual adverse effect upon the mobile home park residents and the Derby Garden Centre, such that effects could be neutral in the long term. However, impacts upon Fourways, the Freeberne Plant Haulage Services and the David Ray Commercial would remain as indicated above.

- 6.10.3 **Effects on agricultural land and individual farm units:** The Presented Option would have potential moderate adverse effects on two land holdings, although only one holding (turf production site) is engaged in commercial agriculture - alternative access arrangements for the turf production site would reduce effects to non-significant levels. Access issues associated with the turf production site would be the same with Option 2C. Option 2C would require land from a number of land holdings located to the north and west of the A38, although effects upon agricultural land would be lower than those as compared with the Presented Option.
- 6.10.4 **Community severance:** Closure of the Ford Lane access is considered to constitute a moderate adverse effect in terms of community severance – such effects would be common to both the Presented Option and Option 2C.
- 6.10.5 **Non-motorised users (NMUs):** There would be some temporary disruption to NMU facilities during construction of Option 2C and the Presented Option, resulting in a potential minor adverse effect. Both Option 2C and the Presented Option have the potential to improve NMU infrastructure during the operational phase by separating cycle routes and footpaths from A38 traffic, resulting in a minor to moderate beneficial effect.
- 6.10.6 **Vehicle travellers:** Effects on drivers view and driver stress associated with Option 2C would be comparable to those that would be experienced with the Presented Option.

## 6.11 Water Quality and Drainage

- 6.11.1 Water resources impacts as associated with Option 2C would be similar to those that would result due to construction and operation of the Presented Option, with the following differences:
- Option 2C would avoid diversion to Dam Brook to the east of the existing A38, although some works to watercourse ditches (and the former Derby Canal) would likely be required to the north of the existing Little Eaton junction. Impacts on these ditches could be managed through the implementation of appropriate mitigation measures;
  - Option 2C would require construction works within groundwater Source Protection Zones (SPZ) 1, 2 and 3 and within a former landfill area to the north of the existing junction and west of the B6179 Alfreton Road. There would be potential for the works to create pathways for contaminants to enter groundwater and, subsequently, the groundwater SPZ and the River Derwent. In contrast, the Presented Option would not require intrusive works within the landfill area (although the area would be used a construction compound) and less extensive works within SPZs 1 and 2 than with Option 2C. The risk to groundwater during Option 2C construction could require additional mitigation measures;

- Option 2C incorporates two roundabouts, namely a modified layout to the existing Little Eaton roundabout and an additional roundabout to the north (west of the B6179). The potential for traffic accidents resulting in spillages which could give rise to a pollution event, is generally considered to be greater for roundabouts than for other road layouts - hence there could be a potentially slightly greater spillage risk for Option 2C than with the Presented Option;
- Option 2C would require more construction within Flood Zones 2 and 3 (see Section 6.12) than with the Presented Option, which would constrain space available for the management of surface runoff quantity and quality from the new highways. This could mean that it would be more problematic to manage drainage from Option 2C than from the Presented Option.

6.11.2 Given the above and compared to the Presented Option, Option 2A would avoid impacts upon Dam Brook, whilst appropriate additional mitigation would be required to mitigate for the increased likelihood of adverse impacts of Option 2C on groundwater. Provided that appropriate additional mitigation can be put in place, the overall residual effects of Option 2C on surface water quality and groundwater quality and drainage would be neutral, as for the Presented Option.

## **6.12 Flood Risk**

6.12.1 Option 2C would require construction on land within Flood Risk Zones 2 and 3 as associated with the River Derwent, and would thus require appropriate mitigation through the provision of flood storage compensation. In order to quantify the flood risks associated with Option 2C, appropriate flood risk modelling would need to be undertaken. However, based upon existing understanding of area flood risk issues, it is anticipated that Option 2C could have a moderate adverse effect on area flood risks. The unmitigated flood risk effects associated with Option 2C would thus be more significant than those associated with the Presented Option (unmitigated), as the Presented Option would require significantly less construction within Flood Zones 2 and 3.

6.12.2 Flood risk modelling is indicating that there is an emerging solution to reduce flood risks associated with the Presented Option to non-significant levels. Appropriate mitigation is required in order to avoid an objection to the proposed scheme from the Environment Agency.

6.12.3 Given the need for more flood compensation than with the Presented Option, and locational constraints associated with defining suitable flood compensation areas, development of a suitable flood mitigation strategy for Option 2C would be more problematic than for the Presented Option, both technically and in terms of the costs of acquiring suitable land for compensation areas and undertaking associated earthworks (plus potential significant works to the existing flood arch which would need to be extended). Thus the risks of objection from the Environment Agency are higher with Option 2C than with the Presented Option should a suitable flood mitigation strategy prove difficult to define. If a suitable flood mitigation strategy can be defined to reduce residual effects due to Option 2C to non-significant levels, it is anticipated that the potential technical complexity and cost of the mitigation works would be higher than for the Presented Option.

## 6.13 Comparison

6.13.1 Table 6/3 provides a summary of the qualitative comparison of the potential environmental effects associated with the Presented Option and Option 2C. This indicates that Option 2C performs slightly better than the Presented Option in terms of landscape effects, reduced effects upon Dam Brook and agricultural land and effects upon Breadsall village, and worse than the Presented Option in terms of effects upon the Derwent Valley Mills WHS, risks associated with encountering and managing contaminated materials in the former landfill site to the north of the existing Little Eaton junction, effects upon private property and increased flood risks. Effects on private property could be partly mitigated through the provision of a new location for the mobile home park and an alternative car park for the Derby Garden Centre. However, effects of Option 2C on the Derwent Valley Mills WHS increase the risk of scheme objection by heritage statutory consultees, whilst finding an appropriate flood risk mitigation strategy for Option 2C are predicted to be technically more complex and expensive than that needed for the Presented Option.

6.13.2 Table 6/3 indicates that overall, the environmental effects associated with Option 2C are worse than those as associated with the Presented Option.

	Presented Option	Option 2C
<b>Air Quality</b>	Not significant	Not significant
<b>Cultural Heritage</b>	Slight adverse	Moderate adverse (higher risk of objection from statutory consultees)
<b>Landscape</b>	Minor adverse effect on landscape character (on the Derbyshire Peak Fringe and Lower Derwent LCA) during Year 1 of operation, reducing to negligible by Year 15	Minor adverse effect on landscape character (on the Derbyshire Peak Fringe and Lower Derwent LCA) during Year 1 of operation, reducing to negligible by Year 15 (landscape effects slightly less than for the Presented Option, with potentially greater opportunity for landscape integration as a result of the layout creating land for mitigation planting)
<b>Visual</b>	Major adverse effects for users of the Derwent Valley Heritage Way and moderate effects for residents at Breadsall Village in Year 1. Reducing to minor adverse by Year 15	Major adverse effects for users of the Derwent Valley Heritage Way and minor effects for residents at Breadsall Village in Year 1. Reducing to minor adverse by Year 15
<b>Nature Conservation</b>	Large negative at up to the Regional level (unmitigated) taking into account use of former landfill site as a construction compound – effects potentially reducing to non-significant levels with mitigation	Large negative at up to the Regional level (unmitigated), potentially reducing to non-significant levels with mitigation
<b>Geology &amp; Soils</b>	Negligible to minor adverse	Negligible to minor adverse (noting that the contamination mitigation strategy for Option 2C would be more technically complex and expensive than the mitigation strategy for the Presented Option, although effects on agricultural soils would be reduced)
<b>Materials</b>	Slight adverse	Slight/ moderate adverse
<b>Noise &amp; Vibration</b>	Sight adverse to slight beneficial	Sight adverse to slight beneficial
<b>People &amp; Communities</b>	<p><b>Demolition of private property:</b> Neutral</p> <p><b>Agricultural land:</b> Moderate adverse effect on turf production site - alternative access would reduce effects to non-significant levels</p> <p><b>Community severance:</b> Moderate adverse due to Ford Lane closure</p> <p><b>NMUs:</b> Minor to moderate beneficial effect during scheme operation</p> <p><b>Vehicle travellers:</b> Drivers stress - large beneficial; Drivers view - minor beneficial</p>	<p><b>Demolition of private property:</b> Moderate to major adverse (i.e. Ford Farm Mobile Home Park, Fourways, Freeberne Plant Haulage Services and the David Ray Commercials), although provision of a new location for the mobile home park and an alternative car park for the Derby Garden Centre would reduce residual adverse effects upon these receptors to be potentially neutral in the long term.</p> <p><b>Agricultural land:</b> Moderate adverse effect on turf production site - alternative access would reduce effects to non-significant levels</p> <p><b>Community severance:</b> Moderate adverse due to Ford</p>

	<b>Presented Option</b> (operational phase)	<b>Option 2C</b>
		Lane closure <b>NMUs:</b> Minor to moderate beneficial effect during scheme operation <b>Vehicle travellers:</b> Drivers stress - large beneficial; Drivers view - minor beneficial (operational phase)
<b>Water Quality &amp; Drainage</b>	Surface water during construction – Slight adverse (due diversion of Dam Brook) Groundwater during construction – Neutral Surface water and groundwater during operation – Neutral	Surface water and groundwater during construction and operation – Neutral (subject to implementation of appropriate additional mitigation for potential risks to groundwater)
<b>Flood Risk</b>	Slight adverse (with the provision of an appropriate flood risk mitigation strategy)	Slight adverse (on the assumption that an appropriate flood risk mitigation strategy can be developed, noting that the option has a greater risk of objection from the Environment Agency and that any flood risk mitigation strategy likely to be technically more complex and expensive than that needed for the Presented Option)

**Table 6/3 Comparison Matrix of the Significance of Potential Effects of the Presented Option and Option 2C**

---

## **7 STAKEHOLDERS AND LAND**

### **7.1 Overview**

7.1.1 This section provides a summary of the feedback received from parties who would be directly affected by Option 2C and identifies a potential course of action. Drawing HE514503-ACM-LLO-Z3\_ZZ\_ZZ\_ZZ-DR-CH-0001 in Appendix D shows the land ownership boundaries

### **7.2 Former Landfill Area**

7.2.1 This area comprises land registry plots DY36046 and DY67646 and refers to land north of the Ford Farm Mobile Home Park and between the B6179 and the Midland Mainline railway.

7.2.2 The plot is a former recycling site and landfill containing inert waste material. It is currently informally used as a skip storage area by a cousin of the land owners.

7.2.3 The landowners are: Elizabeth and Roger Bullivant (DY36046) and Dennis and Patricia Hibbs, Janet Brocklehurst, Rose Alice Horner (DY67646).

7.2.4 Mr Brock is the agent representing the individual family members who own these areas of land and he is also a relation of the family. Mr Brock has stated that the owners would have no objection to any alignment proposals which would encroach onto their land. In addition they would be happy to enter into discussions with HE to acquire their land either by agreement or via Compulsory Purchase. The family has aspirations to develop this land but has so far not been able to progress these due to planning issues - the site is currently within designated greenbelt.

7.2.5 Mr Brock is aware that Highways England acquisition of the land would not have any bearing on any planning applications they may submit for development of their site.

7.2.6 This assessment assumes that the required land would be acquired outright, either through negotiation or CPO. This would enable the scheme to provide a replacement car park for the garden centre.

### **7.3 Ford Farm Mobile Home Park and van hire business**

7.3.1 The area comprises an unregistered land plot located north of the existing A38, and between the B6179 and the Midland Mainline railway. The land is currently occupied by the Ford Farm Mobile Home Park and a van hire business, both owned by Mr David Ray.

7.3.2 Mr Ray has confirmed that, as the owner of both the land and the businesses, he would be happy to be relocated. He has previously identified a site between Breadsall village and the A61, although he would be open to other sites. Mr Ray also confirmed that, if Highways England could not relocate his business under agreement, he would strongly object to any Compulsory Purchase Orders or offers to buy the businesses outright.

7.3.3 There are 20 full-time occupied mobile home units currently on the park. These are mostly owned by the occupiers, with some rented from Mr Ray. Most of the tenants have lived in the park for at least 15 years with the oldest tenant having lived there for 44 years.

7.3.4 When contacted and asked for their opinions on possible relocation, 11 residents were available and willing to provide comments:

- 1 resident was in favour of relocation;
- 2 residents had some difficulty understanding the question; and
- the remaining 8 residents were strongly opposed to moving from the site.

7.3.5 The majority of the residents of this site should be considered vulnerable due to their age and in some cases illness or disability. Any relocation of the residents and their homes would have to be, in most cases, managed for them entirely.

7.3.6 With regards to whether Highways England can use statutory powers to acquire a replacement site and include the development in any Order, it is doubtful that this would be possible. This is a legal issue and advice will need to be taken to explore the options.

7.3.7 This assessment assumes that the land can be made available for the scheme either through a negotiated relocation once the legal mechanism has been identified, or by acquiring the land outright through the CPO.

#### **7.4 Freeberne's recycling facility and Fourways**

7.4.1 This area comprises land registry plots DY39896 and DY67167 and refers to land west of the Ford Farm Mobile Home Park and north of the A38.

7.4.2 The plots are currently used as the residential property "Fourways", a recycling facility, haulage/plant hire and sign-writing businesses. The land is owned by Ron and Brenda Freeberne.

7.4.3 Mr Julian Freeberne, the owner of the recycling site and haulage/plant business, has confirmed that his parents, partner and children reside at the Fourways residential property on the site. His parents, as the land owners would object to the CPO of their home and land. Julian Freeberne has, however, confirmed he would be happy to relocate his family and business if his disturbance costs were met. This includes meeting the costs from obtaining new planning permissions and waste licenses. Mr Paul Freeberne as the owner of the sign writing business was not available for comment.

7.4.4 This assessment assumes that the site will be acquired outright with the extinguishment of the businesses.

#### **7.5 Starbucks and Subway**

7.5.1 This area comprises land registry plots DY473796 and DY124878 and refers to land between the A38, B6179 and Ford Farm Mobile Home Park. The plots are currently used as a Starbucks and Subway coffee shop. The land is owned by Walbrook (IOM) Nominees (NO3) Limited and leased by Eurogarages who operate the Starbucks and Subway.

7.5.2 The operators of the site also own the fuel station at Markeaton junction. Their agent, SCP Consultants, has previously confirmed that the operators would not accept any loss of car parking or impact to continuous business use during construction.

- 7.5.3 The layout of Option 2C would take part of the existing car park. Replacement car parking can be provided from land left by the mobile home park and it is assumed this can be achieved through negotiation. It is difficult to judge what the precise impact will be during the works but it is anticipated that the business can be retained consequently, Highways England would not be compelled to purchase the land in its entirety or that this would be an extinguishment case.
- 7.5.4 This assessment assumes a significant impact in compensation terms. But that the business remains open as car park facilities are retained and the site offers a roadside location with good access to the surrounding routes.

## **7.6 Derby Garden Centre**

- 7.6.1 This area comprises land registry plot DY80993 and refers to land to the north of the junction and east of the B6179. The site is currently occupied by the Derby Garden Centre. The land is owned by Derby Garden Centre (Matlock Garden Waterlife and Pet Centre Limited).
- 7.6.2 The manager of the garden centre has attended the Little Eaton Reference Group meetings and previously confirmed that the garden centre could not sustain the business if car parking areas were lost and there was no guarantee of business continuity during construction. Under these conditions it would therefore have to be bought out in its entirety. Under 'Critchell Down' rules, Highways England could not purchase the land required to replace the car parking at the garden centre without offering it to the original owner first.
- 7.6.3 It is anticipated that the garden centre would be unable to operate as a consequence of losing their existing car parking as there is insufficient land within the current ownership to expand or to reconfigure the existing arrangements.
- 7.6.4 It would potentially be possible to purchase land by agreement from Mr Brock's Family (see section 7.2 above) and this would therefore not be subject to the 'Critchell Down' rules. There are risks that Highways England could be held to ransom by the existing land owners, however they have informed us they would be happy to sell their land by agreement.
- 7.6.5 This assessment assumes that replacement car parking is provided to the garden centre from land currently forming the former landfill site and that this land can be obtained through negotiation at a price reflecting the development value. The land costs also assume some compensation will be due to the garden centre for disruption during construction.

## **7.7 Talbot Turf**

- 7.7.1 This area comprises land registry plot DY364098 and refers to land to the north of the A38, east of Ford Lane and west of the Midland Mainline railway. The site is currently occupied by Talbot Turf Limited. The land is owned by Sean Goodwin & Mark Goodwin.
- 7.7.2 Sean Goodwin runs the turf growing business and he has been quite amenable when he has been consulted regarding the Presented Option provided that access to his business is maintained.

7.7.3 Option 2C would have a lesser impact on Talbot Turf than the Presented Option. This is because the land take required for Option 2C would be around 50% of that for the Preferred Option and the land required for Option 2C on the north side of the A38 is not used for growing turf (whereas the land required for the Presented option would require some of the turf meadow).

7.7.4 The Presented Option and Option 2C would require the closure of the Ford lane junction with the A38 northbound carriageway so the impact on the access to Talbot Turf would be the same for both options.

## 7.8 Alan Camp

7.8.1 This area comprises land registry plot DY54733 and refers to land to the north of the A38, east of the River Derwent and west of Ford Lane. The site is currently used as grazing pasture. The land is owned by Mr Alan Barry Camp.

7.8.2 The Presented Option would have no impact on this plot of land but Option 2C would require a small amount of land to widen the existing embankment.

## 7.9 Summary

7.9.1 The following table (Table 7/1) summarises the position for each landowner

Land Plot	Action
Former Landfill Area	Land required for the scheme can be acquired by CPO or by agreement. Additional land acquisition to provide replacement car parking area for the garden Centre is expected to be obtained by agreement.
Mobile Home Park and van hire business	The site would need to be acquired in total. The owner of the sites would be happy to be relocated but would object if simply purchased through the CPO process, without an alternative site provided. An alternative site would require the support of the local planning authority. The majority of the mobile home residents do not want to be relocated. Many of them should be considered vulnerable and the relocation process would need to be managed for them.
Recycling facility and Fourways	Parents of the Freebernes would object to a CPO but Julian Freeberne is open to relocating his family and recycling business if his disturbance costs were met. Paul Freeberne, as the owner of the sign writing business, was not available for comment.
Starbucks and Subway	Part of car park would be lost - likely to be content with replacement parking and assurances of mitigated construction impact to the businesses and financial compensation.
Derby Garden Centre	Most of car park would be lost - likely to be content with replacement parking and assurances of mitigated construction impact to the businesses and financial compensation.
Talbot Turf	Talbot Turf land would be required for both the Presented Option and Option 2C – although less is required for Option 2C and the area is not used for turf production
Alan Camp	Currently grazing land. Some land would be required for Option 2C although it is likely this can be designed out at a later stage.

**Table 7/1 Summary of Stakeholders**



## 8 PROGRAMME

8.1.1 An outline programme has been developed for undertaking PCF Stage 2 options assessment of Option 2C. The programme for the subsequent stages has been based on the durations included in the delivery programme for the current scheme.

8.1.2 The estimated programme is shown in Table 8/1 below.

Activity	Start	End
Instruction to undertake PCF Stage 2 assessment of Option 2C	end Feb 2017	-
Options design (4w)	mid-March	mid-April 2017
Modelling, options assessment and reporting for PCF Stage 2 (20w)	mid-April 17	August 17
Public consultation	June 2017	July 2017
SGAR 2	mid-September 2017	-
Submission with DfT (8w)	October 2017	November 2017
Preferred Route Announcement	mid-December 2017	-
DCO Application	February 2018	-
DCO Examination	June 2019	January 2020
DCO Decision	April 2020	July 2020
Notice to Proceed	mid-September 2020	-
Start of Construction	January 2021	-
Open for Traffic	June 2024	-

**Table 8/1 Key Delivery Milestones for Option 2C**

8.1.3 The delivery programme for the current scheme option will achieve the following outcome dates:

- Start of Works – December 2019.
- Open for Traffic – June 2023.

Delivering Option 2C would represent an increase of 12 months compared to the Presented Option.

---

## 9 SUMMARY AND CONCLUSIONS

### 9.1 Engineering Assessment

9.1.1 In terms of engineering and operational performance, Option 2C would perform better than the Presented Option in many respects as follows:

- Full 120kph design speed alignments achievable with no Departures from Standards on the main line and with the National Speed Limit applied.
- Simpler construction with more of the route being 'off-line'
- No lighting required on the main line so visual impact of the high embankment would be reduced.

9.1.2 It is anticipated that the construction programme for Option 2C would be several months shorter than for the Presented Option. This would not affect the whole scheme construction which is driven by the improvements at Markeaton junction.

9.1.3 For both options, much of the construction is off-line from the existing A38.

### 9.2 Traffic and Economic Assessments

9.2.1 The forecast traffic flows are expected to be similar for both options. As a result, Option 2C would perform as effectively as the Presented Option.

9.2.2 Some trip lengths, particularly through trips on the A38 strategic route, would be reduced. However, other trip lengths, particularly those trips that would turn right to or from the A61, would increase in length. Thus the travel benefits of Option 2C over the Presented Option are not clear-cut.

9.2.3 The Presented Option has a monetised net present value of £248m. Option 2C has a monetised net present value of £260m. The net increase of £12m represents the additional value to the economy of Option 2C over the Presented Option.

9.2.4 The benefit-to-cost ratio of the Presented Option is 2.45 and of Option 2C is 2.38. With either option the whole scheme would deliver very good value for money.

9.2.5 The expected delays to the scheme opening date will increase the present value costs and reduce the present value of benefits (by about £6.8m for each 12 months of delay). This will have the effect of reducing the net present value of the scheme.

### 9.3 Environmental Assessment

9.3.1 The environmental assessment indicates that overall, the environmental effects associated with Option 2C are worse than those associated with the Presented Option. The key environmental issues relating to Option 2C are:

- increased flood risks and the technical complexity of determining a workable mitigation strategy
- effects upon the private property which would need to be purchased to provide land for the scheme
- managing contaminated materials in the former landfill site
- effects on the Derwent Valley Mills World Heritage Site (WHS).

9.3.2 Effects on private property would be partly mitigated through the provision of a new location for the mobile home park and an alternative car park for the Derby Garden Centre.

9.3.3 Option 2C would pass over land designated as green belt land. However much could be considered as 'brownfield' land (a large part of it is occupied by the former landfill, mobile home park, Fourways and its associated businesses and the garden centre car park). This compares with the Presented Option which would involve construction on designated green belt land which is principally agricultural land.

#### **9.4 Stakeholders**

9.4.1 The agent for the former landfill area (to the north of the mobile home park) has said the family would be happy to sell their land by agreement. This land could be utilised for the mobile home park relocation and garden centre parking.

9.4.2 The owner of the mobile home park and the van hire business is willing to be relocated to a suitable site. Surplus land could be used to offset the loss of parking for Starbucks.

9.4.3 The mobile home owners with one exception do not want to move and any relocation would have to be carefully managed due to their age and vulnerability. It is likely that new mobile homes would have to be purchased due to the age and condition of the existing ones.

9.4.4 The Freeberne family (recycling business, family home, and haulage business) have differing views on whether they could be bought out by agreement but this could be investigated further.

9.4.5 The Garden Centre and Starbucks are both likely to be content with replacement parking and assurances of mitigated construction impact to the businesses and financial compensation. The replacement car parks could be provided at an early stage in the works and in advance of taking land from the existing sites.

9.4.6 Talbot Turf land would be required for both the Presented Option and Option 2C – although less is required for Option 2C and the area is not used for turf production

9.4.7 Overall, not all land could be obtained by CPO but it appears that the land required for Option 2C could be largely obtained by agreement – albeit at a higher cost. Any new location of the mobile home park would be subject to agreement with the planning authority and the moving process would need to be fully managed for many of the residents.

#### **9.5 Conclusions**

9.5.1 Option 2C has advantages over the Presented Option in terms of engineering design and perceived impacts on Breadsall village (in terms of noise, air quality and visual intrusion). It also reduces the impact on agricultural land within the designated green belt.

9.5.2 The main disadvantages of Option 2C are the impacts on the property Fourways (and associated businesses) and the mobile home park; the societal impacts to the residents; and the increased scheme construction costs.

9.5.3 Delivery of Option 2C could be achieved by June 2024. This is 12 months after the current programme for the Presented Option.

9.5.4 In terms of outturn cost, the cost estimates for the whole scheme, including Option 2C, represent an increase of £24.45 million compared to the current budget for the Presented Option.

## **Appendix A** Layout of the Presented Option

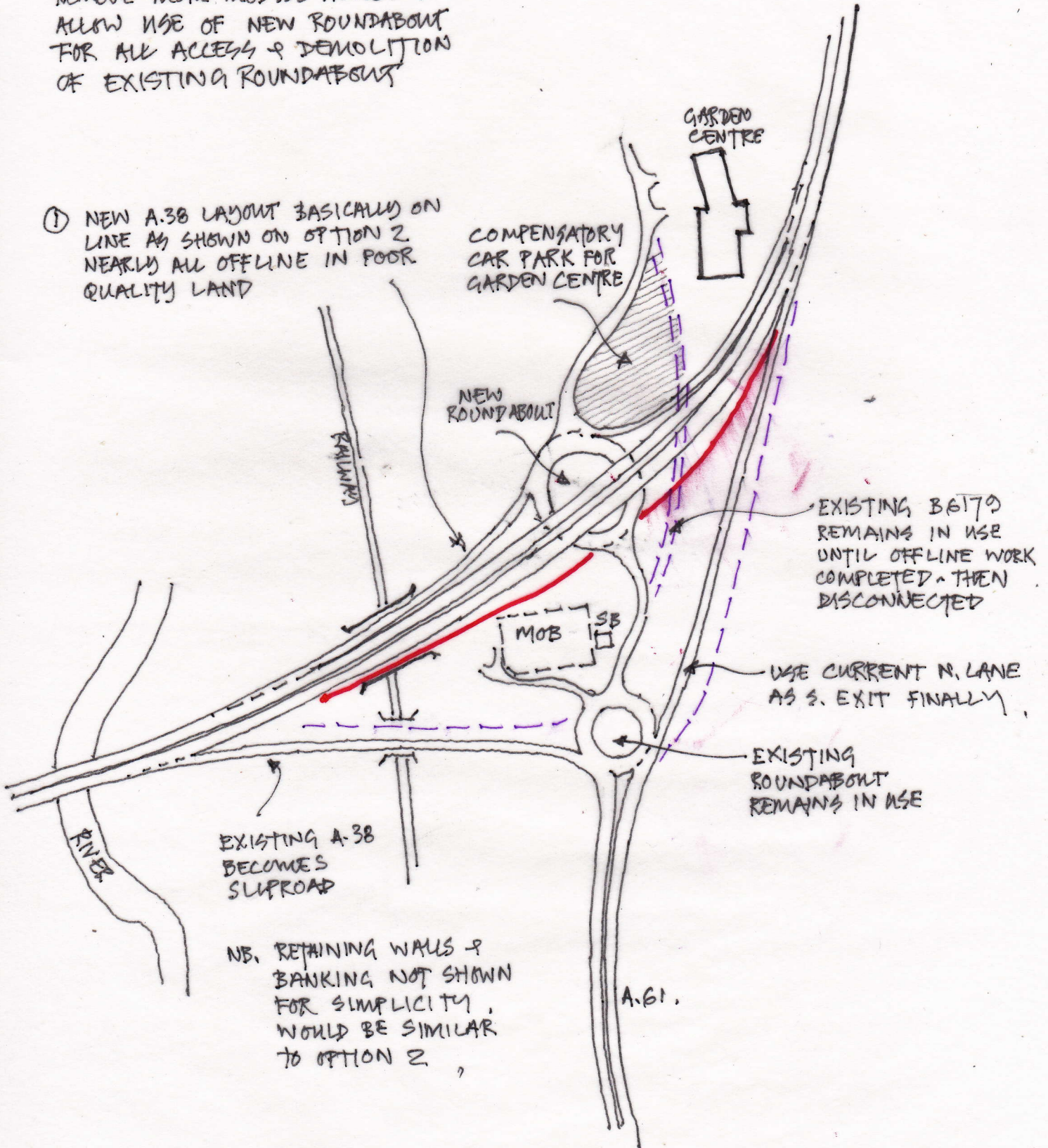


## **Appendix B**    **Layout of Option 2A**

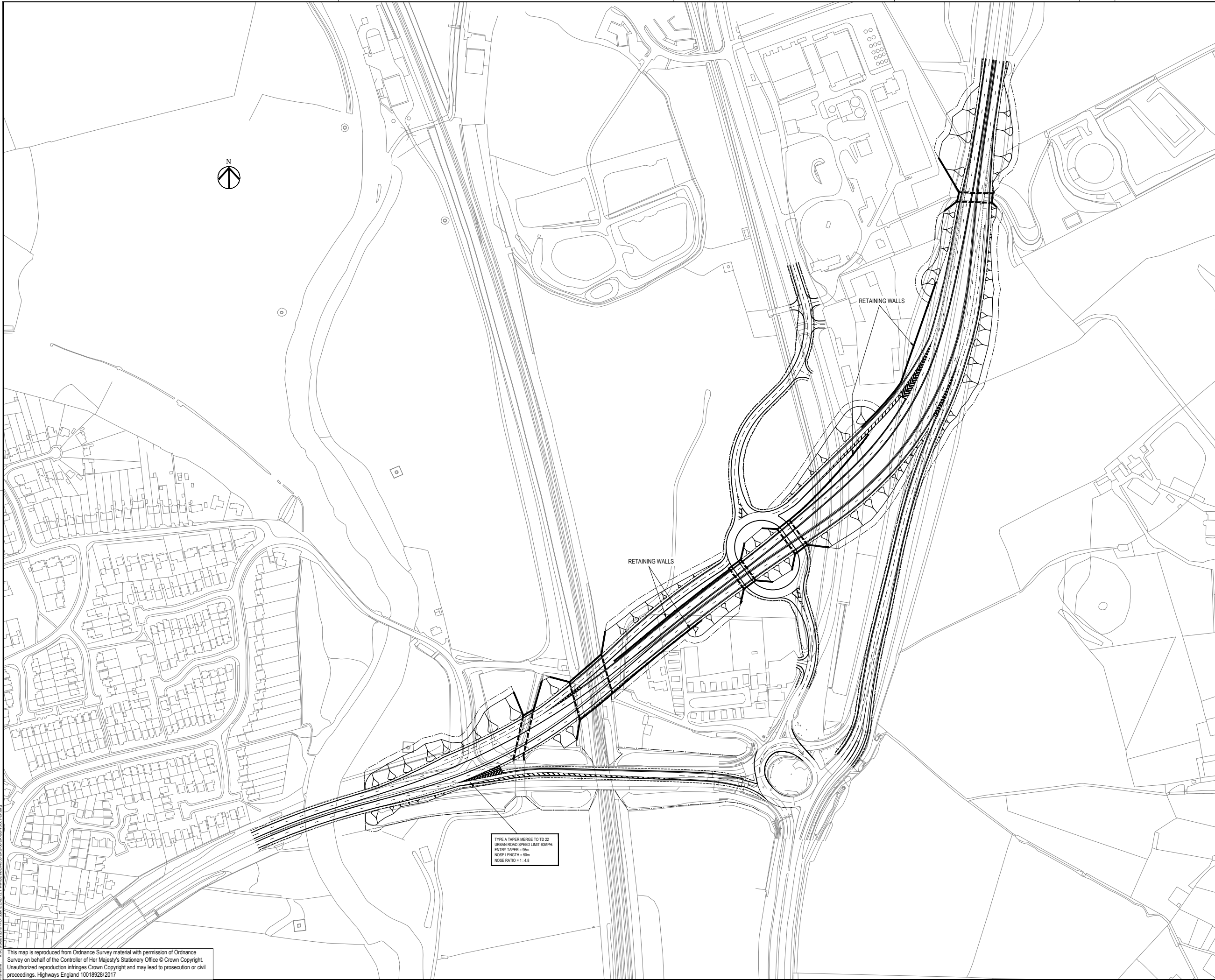
# OPTION 2A

OPTION 2B SHOWN IN RED.  
REMOVE MORE MOBILE HOMES TO  
ALLOW USE OF NEW ROUNDABOUT  
FOR ALL ACCESS & DEMOLITION  
OF EXISTING ROUNDABOUT

① NEW A.38 LAYOUT BASICALLY ON  
LINE AS SHOWN ON OPTION 2.  
NEARLY ALL OFFLINE IN POOR  
QUALITY LAND







This document has been prepared in accordance with the scope of AECOM's appointment with its client and is subject to the terms of that appointment. AECOM accepts no liability for any use of this document other than by its client and only for the purposes for which it was prepared and provided. Any written dimensions shall be used.  
©AECOM 2017

**HEALTH AND SAFETY INFORMATION**  
EXCEPTIONAL RISKS RELATING TO THE WORKS ASSOCIATED WITH THIS DRAWING ARE IDENTIFIED BELOW.

**CONSTRUCTION**  
NO EXCEPTIONAL RISKS RELATING TO THE WORKS SHOWN ON THIS DRAWING HAVE BEEN IDENTIFIED DURING THE DESIGN.

**MAINTENANCE / OPERATION / DECOMMISSIONING / DEMOLITION**  
NO EXCEPTIONAL RISKS RELATING TO THE WORKS SHOWN ON THIS DRAWING HAVE BEEN IDENTIFIED DURING THE DESIGN.

WORK CAN ONLY BE CARRIED OUT BY SUITABLY TRAINED AND BRIEFED PERSONNEL.

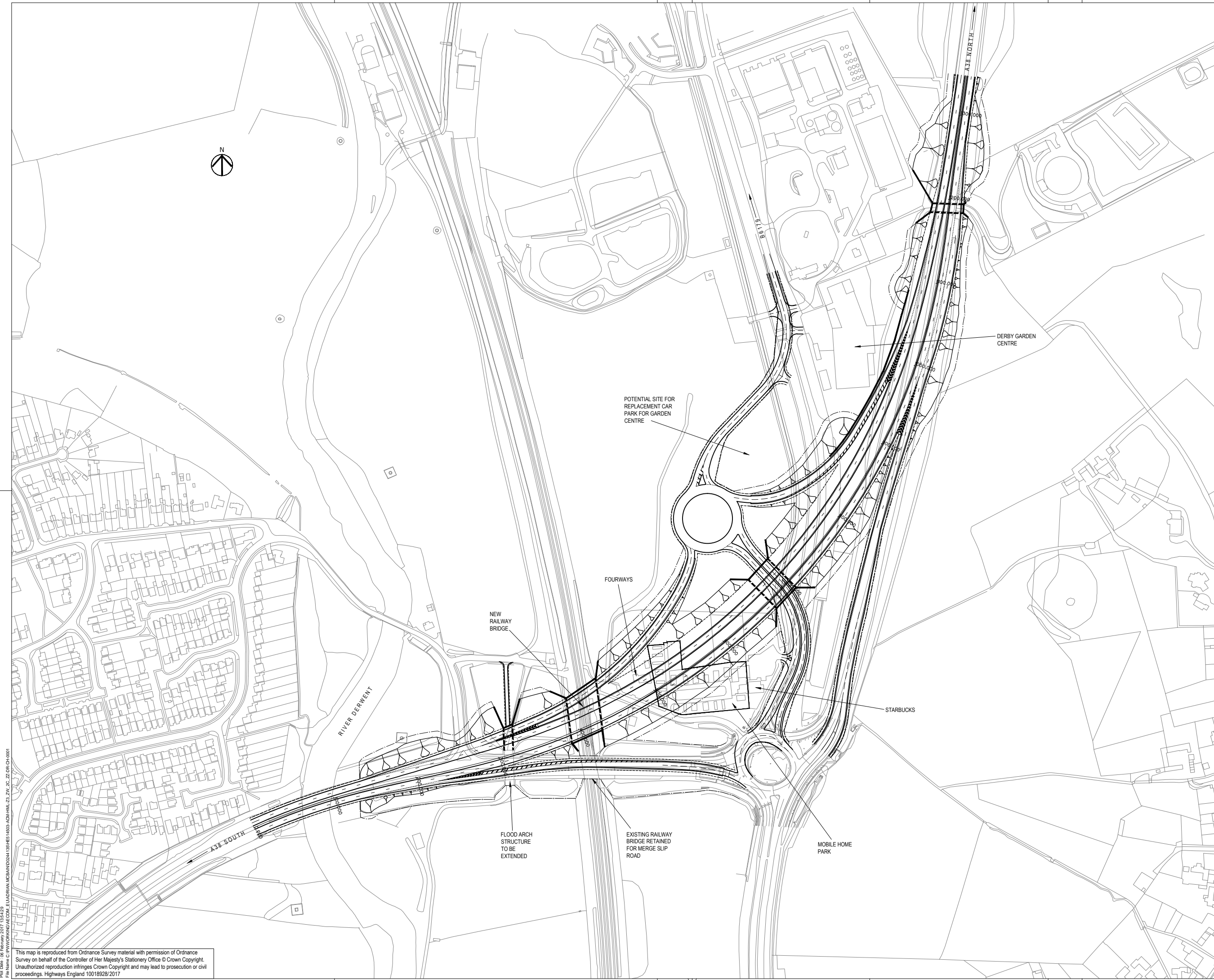
**NOTES**

1. THE JUNCTION POSITION AND LAYOUT SHOWN IS SUBJECT TO DISCUSSIONS WITH AND APPROVAL FROM THE RELEVANT AUTHORITIES. THE CONTENT OF THIS DRAWING SHALL THEREFORE NOT BE RELIED UPON UNTIL SUCH APPROVAL HAS BEEN GRANTED.

Drawing title amended					
2P	AMCB	14/6/16	AW	14/6/16	AW
First Issue					
1P	AMCB	21/4/16	AW	21/4/16	AW
P PRELIMINARY					
Job Title					
<b>A38 DERBY JUNCTIONS</b>					
Drawing Title					
<b>LITTLE EATON OPTION 2A GENERAL LAYOUT PLAN</b>					
AECOM Internal Project Number		Zone / Mileage		Suitability	
47071319					
Designed	Drawn	Stage 1 check	Stage 2 check	Approved	
AMCB	AMCB	AW	AW	AW	
Scale at A1			Originated	Date	
1:1000				21/04/16	
Highways England					
Major Projects					
Locality Gate					
Stone Street					
Manchester					
M1 2WD					
AECOM					
Royal Court					
Basil Close, Chesterfield					
Derbyshire, S41 7SL					
+44 (0) 1246 209221					
+44 (0) 1246 209229					
www.aecom.com					
Drawing Number					
HA514503-URS-06-DR-GD-10.007-2P					

This map is reproduced from Ordnance Survey material with permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationery Office © Crown Copyright. Unauthorised reproduction infringes Crown Copyright and may lead to prosecution or civil proceedings. Highways England 10018928/2017

## **Appendix C** Layout of Option 2C



**SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION BOX**

IT IS ASSUMED THAT ALL WORKS ON THIS DRAWING WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR WORKING, WHERE APPROPRIATE, TO AN APPROPRIATE METHOD STATEMENT.

THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT.

EXCEPTIONAL RISKS RELATING TO THE WORKS ASSOCIATED WITH THIS DRAWING ARE IDENTIFIED BELOW.

**CONSTRUCTION**

**MAINTENANCE / OPERATION / DECOMMISSIONING / DEMOLITION**

- NOTES**
1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DOCUMENTATION.
  2. DO NOT SCALE FROM THIS DRAWING, USE ONLY PRINTED DIMENSIONS.
  3. ALL DIMENSIONS IN MILLIMETRES, ALL CHAINAGES, LEVELS AND COORDINATES ARE IN METRES UNLESS DEFINED OTHERWISE.
  4. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE PROJECT HEALTH & SAFETY FILE FOR ANY IDENTIFIED POTENTIAL RISKS.
  5. THE JUNCTION POSITION AND LAYOUT SHOWN IS SUBJECT TO DISCUSSIONS WITH AND APPROVAL FROM THE RELEVANT AUTHORITIES. THE CONTENT OF THIS DRAWING SHALL THEREFORE NOT BE RELIED UPON UNTIL SUCH APPROVAL HAS BEEN GRANTED.

First Issue	AMCB	31/01/17	P01
	AW		
Annotation notes added	AMCB	03/02/17	P02
	AW		
Revision Details	By	Date	Suffix
	Check		

Purpose of issue

**FOR INFORMATION**

Client  
 Highways England  
 The Cube  
 199 Wharfside Street  
 Birmingham  
 B1 1RN



Project Title  
**A38  
 DERBY JUNCTIONS**

Drawing Title  
**LITTLE EATON  
 OPTION 2C  
 GENERAL LAYOUT  
 PLAN**

Designed AMCB	Drawn AMCB	Checked GS	Approved AW	Date 03/02/17
Internal Project No. 60533462	Subsidiary S2	Zone A38/A61 Little Eaton		

THIS DOCUMENT HAS BEEN PREPARED PURSUANT TO AND SUBJECT TO THE TERMS OF AECOM'S APPOINTMENT BY ITS CLIENT. AECOM ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS ORIGINAL CLIENT OR FOLLOWING AECOM'S EXPRESS AGREEMENT TO SUCH USE, AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED.

**AECOM**  
 Royal Court  
 Basil Close, Chesterfield  
 Derbyshire, S41 7SL  
 Tel: 01246 209221  
 Fax: 01246 209229  
 www.aecom.com

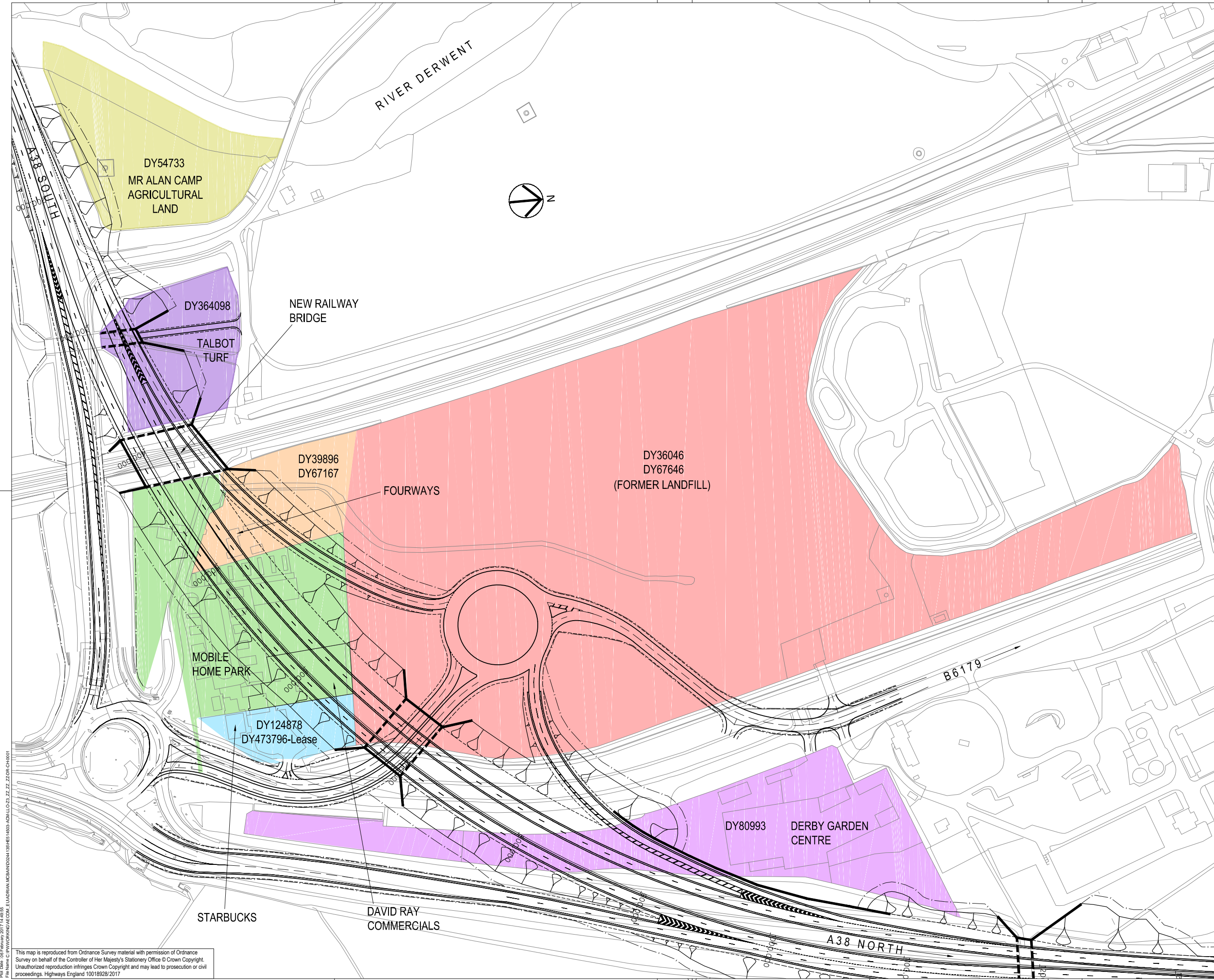
**AECOM**  
 AECOM Infrastructure & Environment UK Limited  
 Registered in England Registered number: 880328  
 Registered office: Scott House, Altonon Link,  
 Basingstoke, Hampshire RG21 7YP

Drawing Number HE514503 -ACM	Originator -HML -	Volume -DR-CH-0001	Rev P02
Z3_ZW_2C_ZZ	Localities	1 Type 1 Role 1 Number	

PO Date: 08 February 2017 13:54:29  
 File Name: C:\P\WORK\AECOM\_E\LAAD\RIAN\MCB\N\02044135\HE514503\_ACM\_HML\_Z3\_ZW\_2C\_ZZ\_DR-CH-0001

This map is reproduced from Ordnance Survey material with permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationery Office © Crown Copyright. Unauthorized reproduction infringes Crown Copyright and may lead to prosecution or civil proceedings. Highways England 10018928/2017

## **Appendix D** Land Ownership



**SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION BOX**

IT IS ASSUMED THAT ALL WORKS ON THIS DRAWING WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR WORKING, WHERE APPROPRIATE, TO AN APPROPRIATE METHOD STATEMENT.

THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT.

EXCEPTIONAL RISKS RELATING TO THE WORKS ASSOCIATED WITH THIS DRAWING ARE IDENTIFIED BELOW.

**CONSTRUCTION**

**MAINTENANCE / OPERATION / DECOMMISSIONING / DEMOLITION**

- NOTES**
1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DOCUMENTATION.
  2. DO NOT SCALE FROM THIS DRAWING, USE ONLY PRINTED DIMENSIONS.
  3. ALL DIMENSIONS IN MILLIMETRES, ALL CHAINAGES, LEVELS AND COORDINATES ARE IN METRES UNLESS DEFINED OTHERWISE.
  4. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE PROJECT HEALTH & SAFETY FILE FOR ANY IDENTIFIED POTENTIAL RISKS.
  5. THE JUNCTION POSITION AND LAYOUT SHOWN IS SUBJECT TO DISCUSSIONS WITH AND APPROVAL FROM THE RELEVANT AUTHORITIES. THE CONTENT OF THIS DRAWING SHALL THEREFORE NOT BE RELIED UPON UNTIL SUCH APPROVAL HAS BEEN GRANTED.

First Issue	AMCB	06/02/17	P01
	AW		
PLOT OWNER INFORMATION ADDED: OS DISCLAIMER ADDED.	AMCB	06/02/17	P02
	AW		
Revision Details	By	Date	Suffix
	Check		

**FOR INFORMATION**

Client  
Highways England  
The Cube  
199 Wharfedale Street  
Birmingham  
B1 1RN

Project Title  
**A38  
DERBY JUNCTIONS**

Drawing Title  
**LITTLE EATON  
OPTION 2C  
LAND OWNERSHIP  
BOUNDARIES**

Designed	Drawn	Checked	Approved	Date
	AMCB	GS	AW	06/02/17
Internal Project No.	Subsidiary			
60533462	S2			
Scale @ A1	Zone			
1:1250	A38/A61 Little Eaton			

THIS DOCUMENT HAS BEEN PREPARED PURSUANT TO AND SUBJECT TO THE TERMS OF AECOM'S APPOINTMENT BY ITS CLIENT. AECOM ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS ORIGINAL CLIENT OR FOLLOWING AECOM'S EXPRESS AGREEMENT TO SUCH USE, AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED.

**AECOM**  
Royal Coast  
Basildon Close, Chatterfield  
Derbyshire, S41 7SL  
Tel: 01246 209221  
Fax: 01246 209229  
www.aecom.com

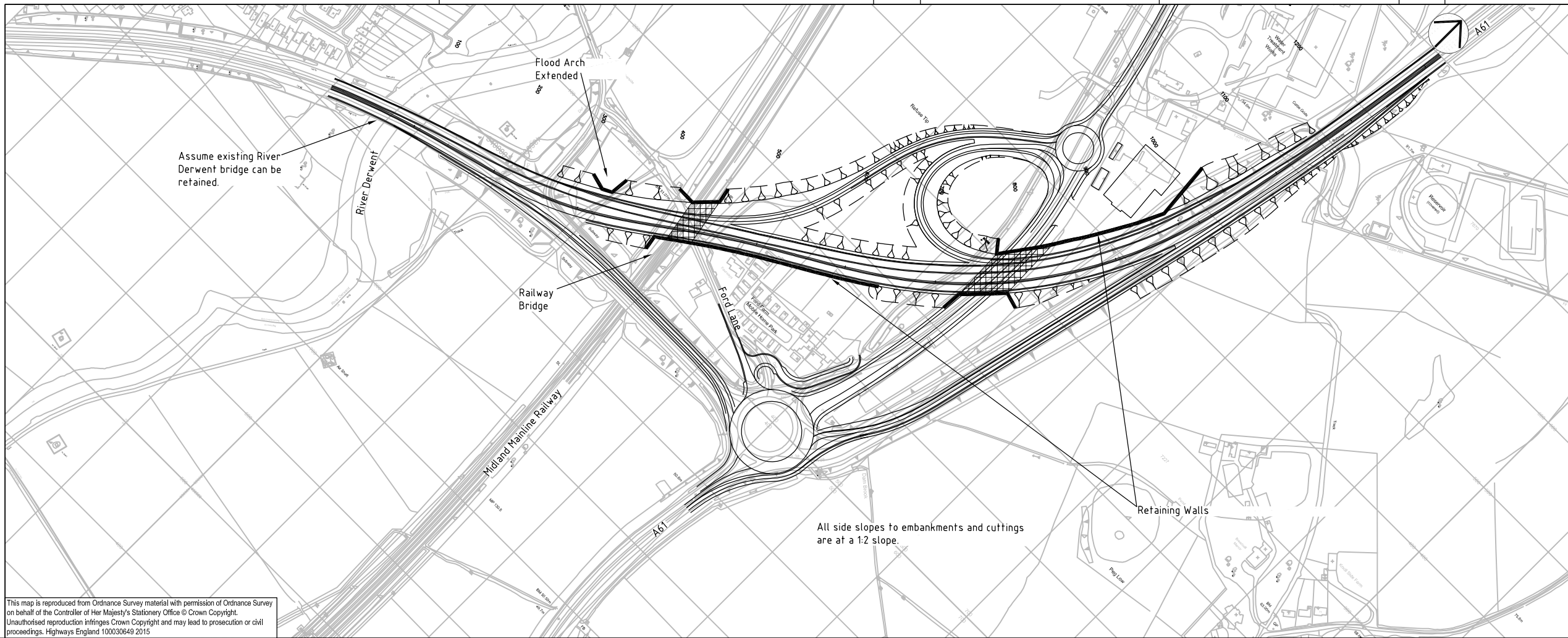
AECOM Infrastructure & Environment UK Limited  
Registered office: Scott House, Altonon Link,  
Basingstoke, Hampshire RG21 1PP

Drawing Number	Highways England PIN	1 Originator	1 Volume	Rev
HE514503 -ACM	-LLO -			P02
Z3 ZZ ZZ ZZ	-DR-CH-0001			
Local	1 Type	1 Role	1 Number	

PO Date: 06/February/2017 14:49:55  
 File Name: C:\P\WORK\AECOM\_E\LAAD\RIAN\MCB\N\02044135\HE514503-ACM\LOZ3\_ZZ\_ZZ\_ZZ\DR-CH-0001

This map is reproduced from Ordnance Survey material with permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationery Office © Crown Copyright. Unauthorized reproduction infringes Crown Copyright and may lead to prosecution or civil proceedings. Highways England 10018928/2017

# Appendix E    Layout of Option 2



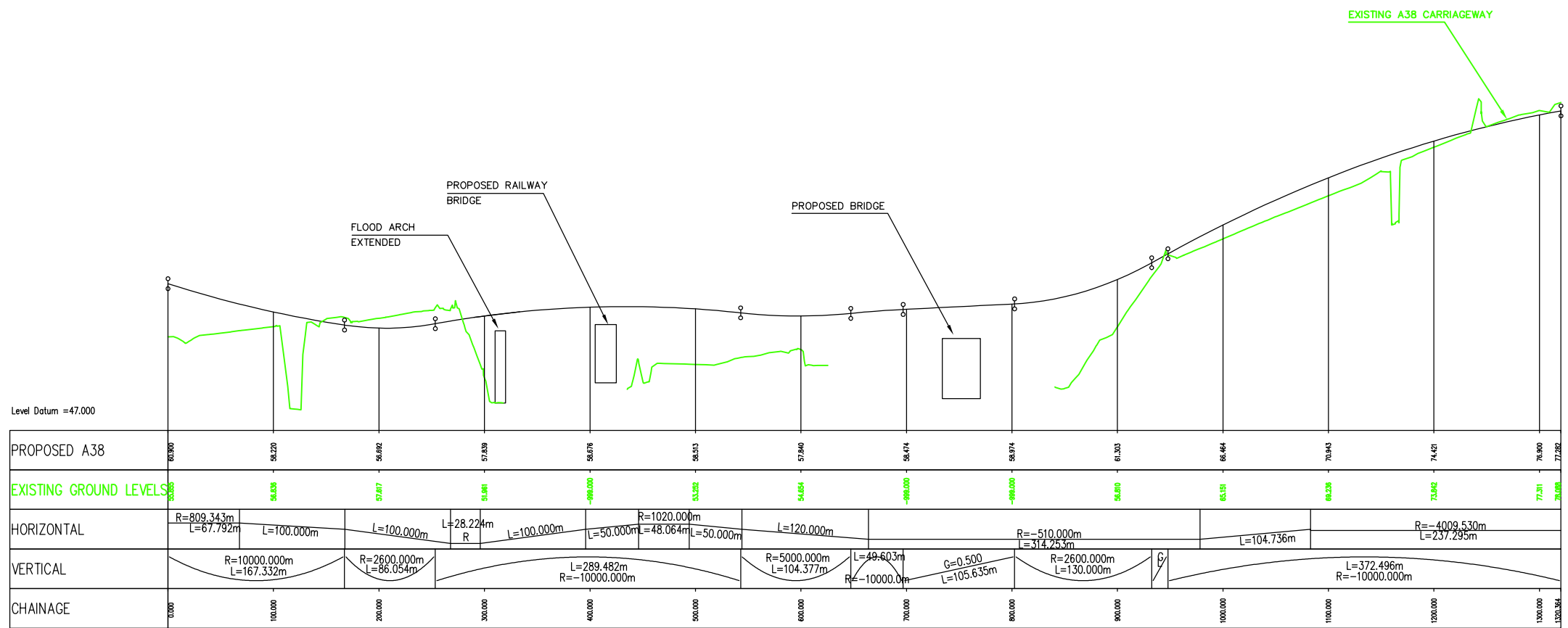
This map is reproduced from Ordnance Survey material with permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationery Office © Crown Copyright. Unauthorised reproduction infringes Crown Copyright and may lead to prosecution or civil proceedings. Highways England 100030649 2015

This document has been prepared in accordance with the scope of AECOM's appointment with its client and is subject to the terms of that appointment. AECOM accepts no liability for any use of this document other than by its client and only for the purposes for which it was prepared and provided. Only written dimensions shall be used. © AECOM 2015

<b>HEALTH AND SAFETY INFORMATION</b>
EXCEPTIONAL RISKS RELATING TO THE WORKS ASSOCIATED WITH THIS DRAWING ARE IDENTIFIED BELOW.
<b>CONSTRUCTION</b>
NO EXCEPTIONAL RISKS RELATING TO THE WORKS SHOWN ON THIS DRAWING HAVE BEEN IDENTIFIED DURING THE DESIGN.
<b>MAINTENANCE / OPERATION / DECOMMISSIONING / DEMOLITION</b>
NO EXCEPTIONAL RISKS RELATING TO THE WORKS SHOWN ON THIS DRAWING HAVE BEEN IDENTIFIED DURING THE DESIGN.

WORK CAN ONLY BE CARRIED OUT BY SUITABLY TRAINED AND BRIEFED PERSONNEL.

- NOTES**
- Little topographical data available so high risk of variance in earthwork volumes.
  - All side slopes were modeled at 1:2 - it should be noted these are more likely to be 1:2.5 (or 1:3 in flood plain).



Level Datum = 47,000

**PRELIMINARY**

1	Additional text added, and drawing re-numbered.					
SB	15/07/15	GJS	15/07/15	AW	16/07/15	
DRAFT ISSUE						
0						
SB	09/07/15					
Revision Details						
Rev #	Drawn By	Date	Checked By	Date	Approved By	Date
D						

Job Title  
**A38  
DERBY JUNCTIONS  
IMPROVEMENTS**

Drawing Title  
**LITTLE EATON JUNCTION  
OPTION 2  
PLAN AND SECTION**

AECOM Internal Project Number 47071319	Zone / Mileage	Sustainability
Designed SB	Stage 1 check GJS	Stage 2 check AW
Scale at A1 1:2500	Originated	Date

Highways England  
Major Projects  
The Cube  
199 Whitfield Street  
Birmingham  
B1 1RN

AECOM  
Royal Court  
Beal Close, Chesterfield  
Derbyshire, S41 7SL  
+44 (0) 1246 200221  
+44 (0) 1246 200229  
www.aecom.com

Drawing Number  
**HA514503-URS-06-DR-GD-25-024-1D**

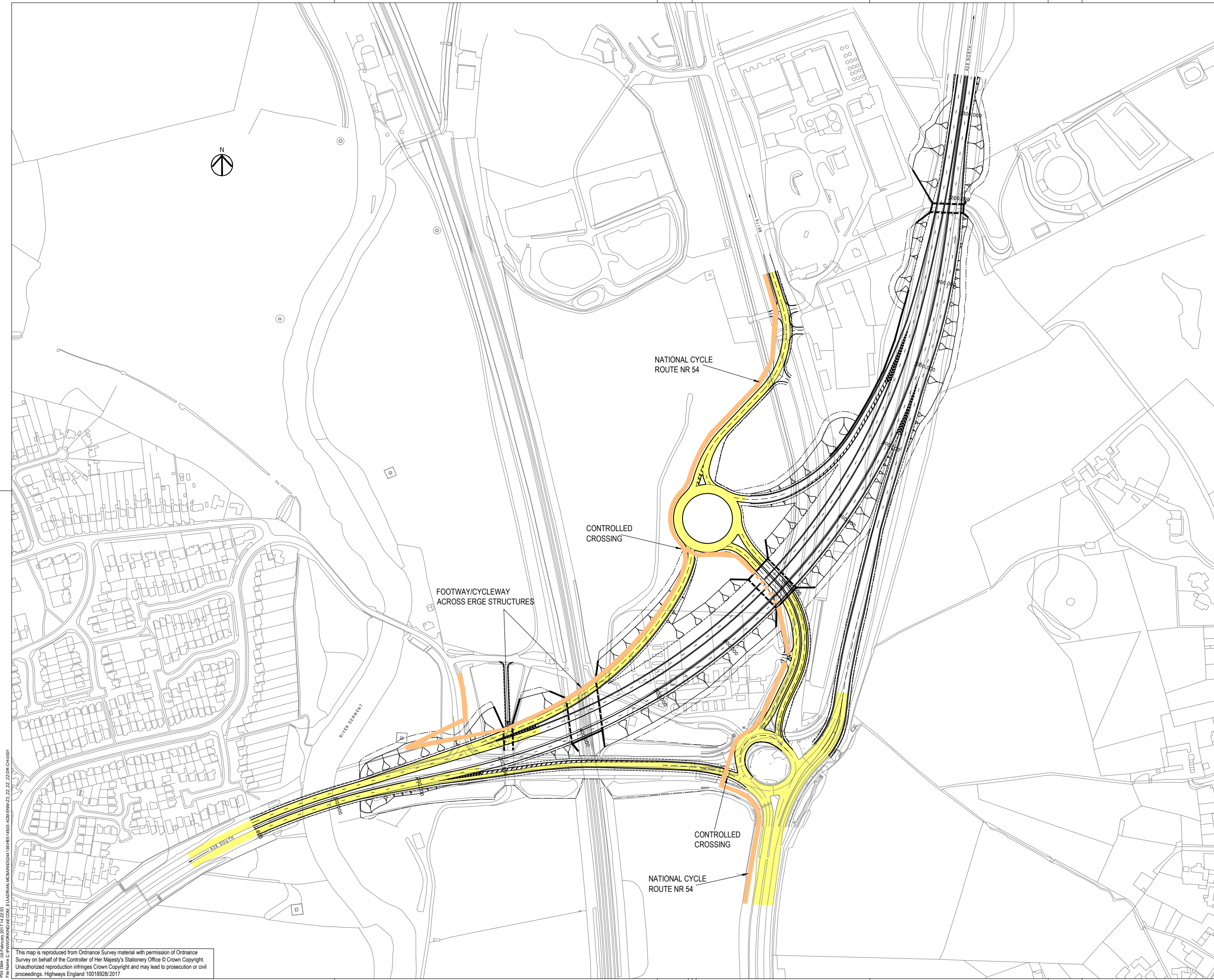
File Path: \\A:\Projects\06-URS\06-DR-GD-25-024-1D\06-DR-GD-25-024-1D.dwg  
 Plot Name: K:\A38\Derby Junctions Improvements\06-DR-GD-25-024-1D.dwg

Attached Xrefs: | OPTION 7 LAYOUT JULY 15  
09/15

# **Appendix F**

## **NMU Routes and Extents of Lighting**





PO Date: 02 February 2017 14:22:53  
 File Name: C:\P\WORK\AECOM\_ELAD\DRN\MCB\N\02014115\HE514503-ACM-ENM-Z3\_ZZ\_ZZ-DR-CH-001

This map is reproduced from Ordnance Survey material with permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationery Office © Crown Copyright. Unauthorized reproduction infringes Crown Copyright and may lead to prosecution or civil proceedings. Highways England 10018928/2017

**SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION BOX**

IT IS ASSUMED THAT ALL WORKS ON THIS DRAWING WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR WORKING, WHERE APPROPRIATE, TO AN APPROPRIATE METHOD STATEMENT.

THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT.

EXCEPTIONAL RISKS RELATING TO THE WORKS ASSOCIATED WITH THIS DRAWING ARE IDENTIFIED BELOW.

---

**CONSTRUCTION**

---

**MAINTENANCE / OPERATION / DECOMMISSIONING / DEMOLITION**

---

**NOTES**

- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DOCUMENTATION.
- DO NOT SCALE FROM THIS DRAWING, USE ONLY PRINTED DIMENSIONS.
- ALL DIMENSIONS IN MILLIMETRES, ALL CHAINAGES, LEVELS AND COORDINATES ARE IN METRES UNLESS DEFINED OTHERWISE.
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE PROJECT HEALTH & SAFETY FILE FOR ANY IDENTIFIED POTENTIAL RISKS.
- THE JUNCTION POSITION AND LAYOUT SHOWN IS SUBJECT TO DISCUSSIONS WITH AND APPROVAL FROM THE RELEVANT AUTHORITIES. THE CONTENT OF THIS DRAWING SHALL THEREFORE NOT BE RELIED UPON UNTIL SUCH APPROVAL HAS BEEN GRANTED.

AREAS OF CARRIAGEWAY TO BE LIT

COMBINED FOOTWAY / CYCLEWAY

First Issue	AMCB	03/02/17	PO1
Revision Details	By	Date	Suffix
	AW		
	Check		

FOR INFORMATION

Client  
 Highways England  
 The Cube  
 199 Wharfside Street  
 Birmingham  
 B1 1RN

A38  
DERBY JUNCTIONS

LITTLE EATON  
OPTION 2C  
NMU & LIGHTING  
PROVISION

Designed AMCB	Drawn AMCB	Checked GS	Approved AW	Date 03/02/17
Internal Project No. 60533462	Subsidiary S2			
Scale @ A1 1:2000	Zone A38/A61 Little Eaton			

THIS DOCUMENT HAS BEEN PREPARED PURSUANT TO AND SUBJECT TO THE TERMS OF AECOM'S APPOINTMENT BY ITS CLIENT. AECOM ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS ORIGINAL CLIENT OR FOLLOWING AECOM'S EXPRESS AGREEMENT TO SUCH USE, AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED.

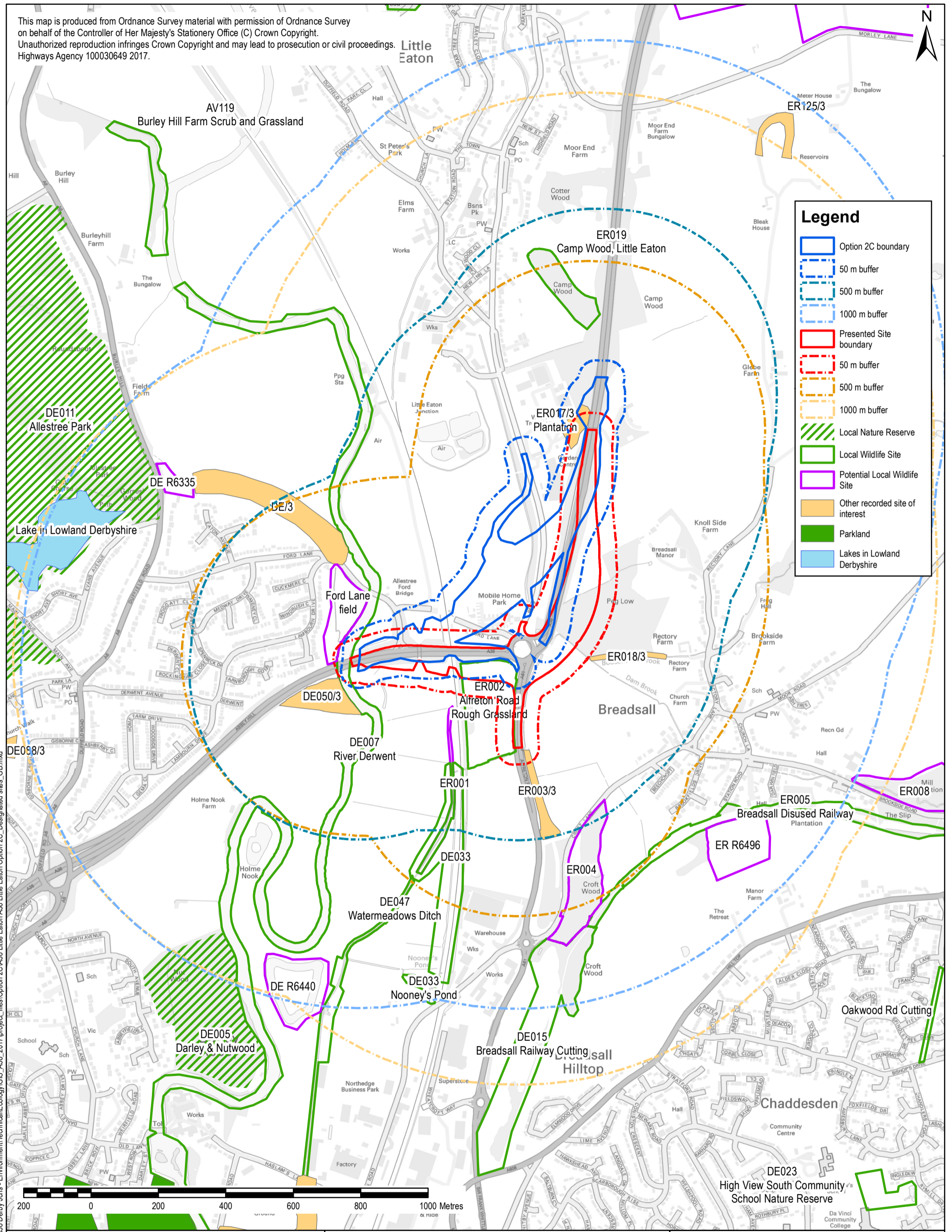
AECOM  
 Royal Court  
 Basil Close, Chesterfield  
 Derbyshire, S41 7SL  
 Tel: 01246 209221  
 Fax: 01246 209229  
[www.aecom.com](http://www.aecom.com)

AECOM Infrastructure & Environment UK Limited  
 Registered in England Registered number: 880328  
 Registered office: Scott House, Altonon Link,  
 Basingstoke, Hampshire RG21 1YP

Drawing Number HE514503 -ACM	Originator -ENM-	Volume -ENM-	Rev PO1
Z3 ZZ_ZZ_ZZ	-DR-CH-0001		
Local07	I Type	I Role	I Number

## **Appendix G** Environmental Plans

This map is produced from Ordnance Survey material with permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationery Office (C) Crown Copyright. Unauthorized reproduction infringes Crown Copyright and may lead to prosecution or civil proceedings. Highways Agency 100030649 2017.



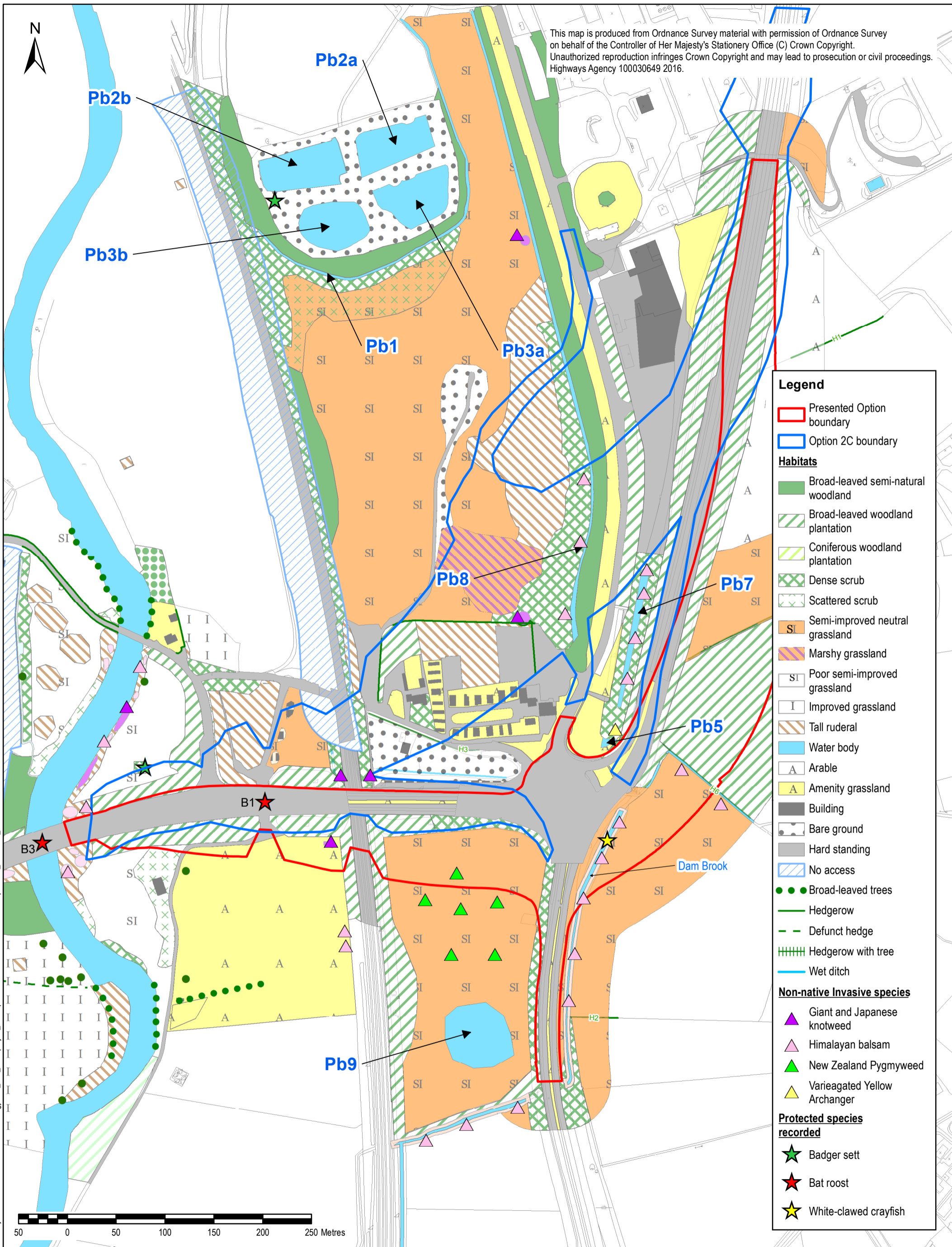
**Legend**

- Option 2C boundary
- 50 m buffer
- 500 m buffer
- 1000 m buffer
- Presented Site boundary
- 50 m buffer
- 500 m buffer
- 1000 m buffer
- Local Nature Reserve
- Local Wildlife Site
- Potential Local Wildlife Site
- Other recorded site of interest
- Parkland
- Lakes in Lowland Derbyshire

File Name: X:\Highways Agency\47071390\_A38 Derby Juncs - Environment\Technical\Ecology\GIS\_A38\_2017\project\_files\Option 2C\A38 Little Eaton Option 2C - Designated sites\_GB.mxd

Project Title/Drawing Title		AECOM Internal Project Number		
A38 DERBY JUNCTIONS LITTLE EATON - OPTION 2C DESK STUDY		60533462		
DESIGNATED AND NON-DESIGNATED SITES		Drawn	Checked	
		GSB	PB	PB
Date		Scale @ A3		Purpose of issue
01/02/2017		1:10,000		FINAL
Drawing Number		Rev		AECOM Royal Court Basil Close, Chesterfield Derbyshire, S41 7SL +44 (0) 1246 209221 +44 (0) 1246 209229 www.aecom.com
Figure 7.1		0		

This map is produced from Ordnance Survey material with permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationery Office (C) Crown Copyright. Unauthorized reproduction infringes Crown Copyright and may lead to prosecution or civil proceedings. Highways Agency 100030649 2016.



Project Title/Drawing Title  
**A38 DERBY JUNCTIONS  
 LITTLE EATON - OPTION 2C  
 PHASE 1 HABITAT SURVEY**

THIS DOCUMENT HAS BEEN PREPARED PURSUANT TO AND SUBJECT TO THE TERMS OF AECOM'S APPOINTMENT BY ITS CLIENT. AECOM ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS ORIGINAL CLIENT OR FOLLOWING AECOM'S EXPRESS AGREEMENT TO SUCH USE, AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED.

Project Number 60533462		Highways England Major projects Piccadilly Gate Store Street Manchester M1 2WD	
Drawn GSB	Checked PB	Approved PB	
Date 01/02/2017	Scale @ A3 1:3,500	Purpose of issue FINAL	AECOM Royal Court Basil Close, Chesterfield Derbyshire, S41 7SL +44 (0) 1246 209221 +44 (0) 1246 209229 www.aecom.com
Drawing Number Figure 7.2		Rev 0	<b>AECOM</b>




## **Appendix H Comparison of the Assigned Traffic Flows**

2039 Forecast Year Flows on Key Links		2039 AM2 (vehicles / hour)			2039 IP (vehicles / hour)			2039 PM2 (vehicles / hour)			2039 AADT (vehicles / day)		
		DM	Presented Option	Option 2 C	DM	Presented Option	Option 2 C	DM	Presented Option	Option 2 C	DM	Presented Option	Option 2 C
1	A38 North of Little Eaton Junction (NB)	2,015	2,542	2,543	2,120	2,282	2,288	2,775	3,274	3,264	30,251	34,011	34,164
	A38 North of Little Eaton Junction (SB)	2,580	3,697	3,699	2,070	2,151	2,181	2,579	2,781	2,963	32,316	34,923	35,848
2	A38 West of Little Eaton Junction (NB)	2,045	3,078	3,190	1,956	2,402	2,484	2,118	2,930	3,187	27,665	35,199	36,786
	A38 West of Little Eaton Junction (SB)	2,173	3,472	3,515	2,002	2,277	2,312	2,610	2,835	2,895	29,416	34,503	35,245
3	A61 South of Little Eaton Junction (NB)	1,180	1,149	1,172	1,609	1,672	1,763	1,820	1,895	1,972	20,818	21,978	22,533
	A61 South of Little Eaton Junction (SB)	2,004	2,012	2,092	1,613	1,666	1,737	1,525	1,486	1,692	22,942	23,190	24,002
4	B6179 North of Little Eaton Junction (NB)	277	306	443	416	446	605	387	589	668	5,116	6,144	7,711
	B6179 North of Little Eaton Junction (SB)	479	391	530	394	445	512	399	521	349	5,204	5,826	6,023
5	A6 Duffield Road South of Palm Court (NB)	579	627	717	317	305	309	1,009	927	974	6,017	5,691	6,076
	A6 Duffield Road South of Palm Court (SB)	478	590	568	396	422	444	390	401	374	5,230	5,583	5,738
6	A6 Duffield Road North of Palm Court (NB)	829	931	870	841	938	804	1,342	1,288	1,201	12,396	12,924	11,671
	A6 Duffield Road North of Palm Court (SB)	730	1,163	1,116	737	867	778	916	1,018	966	9,847	12,228	11,383
7	Croft Lane, Breadsall (EB)	292	349	302	314	379	471	586	535	575	4,777	5,134	5,737
	Croft Lane, Breadsall (WB)	432	464	417	362	408	549	272	252	311	4,531	5,047	6,061
8	A61 Approaching Pentagon Island	1,226	1,189	1,157	1,188	1,137	1,128	1,016	1,032	991	15,653	15,166	15,021
	A61 Leaving Pentagon Island	791	737	694	827	750	737	488	496	447	11,249	10,746	10,508
9	A38 West of Palm Court (NB)	2,151	3,485	3,520	1,949	2,493	2,525	2,067	3,125	3,235	28,101	36,816	37,464
	A38 West of Palm Court (SB)	1,788	3,485	3,526	1,870	2,145	2,137	2,483	2,835	2,874	26,810	33,213	33,441
10	Moor Road, Breadsall (NB)	94	96	94	9	9	8	245	159	158	840	582	579
	Moor Road, Breadsall (SB)	11	15	12	11	10	11	11	11	11	130	146	119
11	Alfreton Road (EB)	315	301	295	353	373	338	701	651	623	4,993	4,996	4,627
	Alfreton Road (WB)	750	804	788	171	151	139	195	166	235	3,635	3,586	3,676
12	Ford Lane (EB)	329	0	0	128	0	0	87	0	0	2,005	0	0
	Ford Lane (WB)	4	0	0	8	0	0	8	0	0	88	0	0
13	A6 Burley Hill (NB)	816	819	804	719	790	690	1,115	1,044	1,000	11,074	11,296	10,396
	A6 Burley Hill (SB)	814	969	944	712	711	660	743	756	753	9,986	10,448	9,964
14	Eaton Bank/Duffield Road, Little Eaton (NB)	252	279	348	168	175	331	129	223	339	2,197	2,629	4,104
	Eaton Bank/Duffield Road, Little Eaton (SB)	108	145	236	126	150	262	176	229	261	1,802	2,187	3,293
15	A608, Morley (EB)	368	438	335	388	413	372	853	762	782	6,120	6,161	5,729
	A608, Morley (WB)	733	771	673	411	429	422	433	397	409	5,926	6,177	6,070

Location of Key Links and 2039 Forecast Year 2-Way AADT Flows

