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Project:	<b>Lower Thames Crossing</b>	Job No:	<b>60287784</b>
Subject:	<b>Module 3: Potential Additional Network Investment at M25 Junction 30 and on the A13</b>		
	<b>Revision 6</b>		
Prepared by:	<b>Maclean Hastie</b>	Date:	<b>May 2014</b>
Checked by:	<b>Richard Lyon</b>	Date:	<b>May 2014</b>
Approved by:	<b>Paul Hanson</b>	Date:	<b>May 2014</b>

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**This document has been withdrawn as the preferred route for the Lower Thames Crossing has been announced.**

## 1. Purpose and Scope

### 1.1 Purpose of Technical Note

- 1.1.1 In May 2013, the Department for Transport published the *Review of Lower Thames Crossing Options: Final Report (April 2013)* together with a suite of supporting reports. The Department used this Review report for the purposes of public consultation on the merits of three location options (Options A, B and C; a variant to Option C improving the A229 between the M2 and M20 was also consulted on) to provide additional highway capacity across the River Thames.
- 1.1.2 The Department for Transport (DfT) has consulted on options for the provision of additional Lower Thames Crossing (LTC) capacity. The provision of additional capacity would be expected to change travel demands to the north of the existing crossing, around M25 Junctions 30/31 and along parts of the A13.
- 1.1.3 This technical note (Module 3) responds to part of a brief to Jacobs/AECOM provided by the Department for Transport entitled *Annex D: Lower Thames Crossing – further assessment of the respective cases for Options A and C*. The purpose of this technical note is to estimate the level of additional capital investment that may be required by the time the Review assumed a new crossing would be open (2025). This note considers the requirements for scenarios both with and without a new Lower Thames Crossing (either at Option A or C) to understand the significance of changes in demand along the A13 that might arise from the new crossing and the potential additional capacity and investment needed.
- 1.1.4 This technical note is not a comprehensive and detailed investigation into the impacts of each LTC option on the surrounding network nor does it consider all the options for upgrading the surrounding network. The assessment and findings draw upon the collective knowledge of DfT, the Highways Agency and their consultants. They are based on a straightforward analysis of model forecast flows and professional judgement, both which have limitations. A detailed analysis would need to be undertaken to explore the merits of alternative options.

## 1.2 Schemes within the future baseline

### *M25 Junction 30 Congestion Relieving Scheme*

1.2.1 The purpose of the M25 Junction 30 congestion relieving scheme is to address current capacity problems at M25 Junction 30 on the A13 through Junction 30 and to the junction with the A126. Essentially, the scheme consists of; widening the A13 to dual 4 lanes (M25 J30 to A126), improvements to Junction 30 slip roads and free flow lanes from the M25 southbound to A13 eastbound and A13 eastbound to M25 northbound. The layout drawing is included in Appendix 4. The scheme is due to be open in 2017.

### *Other Schemes on the M25 and A13*

1.2.2 Other recent and pipeline schemes on adjacent sections of the M25 and A13 comprise:

- Dartford Free Flow Charging; due to be implemented in 2014
- M25 Junction 30 Interim scheme; minor improvements at J30 to accommodate initial additional traffic from the London Gateway Port. Opened Q4 2013.
- The recently completed A13/A1014 (The Manorway) Junction Improvements; widening the junction roundabout, new bridge over the A13 and works to the slip roads to accommodate additional traffic from the London Gateway Port.

1.2.3 The *Review of Lower Thames Crossing (LTC) Options - Central Forecasts and Sensitivity Tests Report*, AECOM, November 2012 appended a schedule of highway schemes. This included future improvements on the A13 by Essex County Council and developers. These were excluded from the model because funding was not in place at the time of assessment.

## 1.3 Scope

1.3.1 The geographical scope of our this technical note comprised the following parts :

- Junction 30 of the M25, its slip roads, part of the Highways Agency's strategic road network (SRN)
- A13 from the TfL boundary at the A1036 junction to its junction with the A1089, part of the Highways Agency's SRN
- A1089 from the A13 south to its junction with the A126 (where LTC Option B joins the A1089) part of the Highways Agency's SRN
- A13 from the A1089 junction to its junction with the A1014, (managed by Thurrock Council)

## 1.4 Overall approach

1.4.1 AECOM has used available reports and data and applied professional judgement to interpret available information. The key existing reports and data used to inform the study were

- *Technical Appraisal Report for M25 Junction 30/ A13 Corridor Relieving Congestion Scheme*, Parsons Brinkerhoff Report No: HHT91730BG/170/041/C, September 2010 (the 2010 technical appraisal report)
- *Review of Lower Thames Crossing Options*, AECOM, April 2013

#### 1.4.2 Our analysis was structured in three steps

- first current data on the existing A13 traffic flows and capacity were used, with judgement on the effects of the currently planned improvements and likely traffic growth to develop a view of the performance along the A13 that might be expected, in the absence of any further capacity changes, in the mid 2020s;
- secondly, using available data a judgement was made of the impacts of each LTC option that might be of significant magnitude, in themselves, to require mitigation; and
- finally drawing on existing scheme option plans, cost estimates were made of schemes that might provide suitable capacity

1.4.3 A workshop was held on 15<sup>th</sup> July 2013 with DfT, the Highways Agency and consultants to conclude the first and second stages. The objective of the workshop was to review and agree the problems and potential investment solutions. The agreed outcomes and actions from the workshop are included in Appendix 3.

1.4.4 Following the workshop the agreed potential investment solutions were reviewed to determine high level engineering feasibility of the potential engineering solutions identified and risks. The solutions at Junction 30 are largely based on Options 'E1 and 9' (E1+9) and 'E2' from the 2010 technical appraisal report. Exclusions and additional inclusions were made to suit each LTC option. Drawings were produced for the solutions at Junction 30 and are included in Appendix 4.

1.4.5 The Highways Agency's cost consultant Benchmark was provided with a briefing note giving the drawings and details of each potential investment option. Order of magnitude capital cost estimates were produced for each option. Section 3 provides details of the estimation of costs.

### 1.5 Assumptions/Limitations

1.5.1 The opening year for the LTC is assumed for assessment purposes to be 2025. The same opening year is assumed for pricing the potential M25 J30 investment solutions. This thereby assumes Junction 30 would be improved by the time the new LTC would open.

1.5.2 The Do Minimum base case assumes the M25 J30 Congestion Relief Scheme and A1014 Junction improvements are constructed and no new LTC.

1.5.3 Traffic forecast data available for this exercise is drawn from LTC option testing. Direct traffic flow forecasts are constrained by the modelled A13 capacity. Forecast demand changes (i.e. traffic also forecast to use adjacent roads) were used therefore to avoid the risk of understating potential impacts. There remains a risk however that the impacts may be overstated, and the potential solutions of a greater scale than required.

1.5.4 For each LTC option, a solution that was judged to provide capacity to address impacts has been priced. The actual design of mitigation would require detailed consideration and testing if potential scheme designs for Option A and Option C are developed. It is likely that more cost effective options could be identified than E1+9 and E2.

1.5.5 Detailed geometric design, checks against DMRB standards and specialist engineering input are excluded from this exercise.

## 2. Assessment and Solutions

### 2.1 Introduction

2.1.1 This section details the assessment methodology and how indicative solutions were agreed at the workshop held on the 15<sup>th</sup> July 2013.

### 2.2 Methodology for Assessment

2.2.1 The matrix included in Appendix 1 was developed to illustrate the potential effect of each LTC option on the A13 links and junctions. It was developed by comparing the indicative traffic flow changes that could arise from the LTC against the existing and forecast traffic provided by Jacobs in the compatibility study.

2.2.2 Parts of the A13 between the M25 and A130 suffer from congestion. While short term measures, such as the congestion relieving scheme and other schemes referred to in Section 1.2, are designed to address current pinch points it is noted that development is planned along the A13 and that there will be a need for the highway authorities, jointly, to develop a corridor strategy for the A13.

2.2.3 In this context, in order to determine if additional investment was required, the threshold was set at an increase in traffic greater than 200 vehicles per hour during the peak hour. It was considered that provision of an additional lane of capacity, providing 1600-1800 vehicle capacity would be disproportionate to the scale of impact for lower flows.

2.2.4 The workshop looked at each link and junction in the study area and agreed potential investment solutions based on standard DMRB design assumptions (that lane capacities are 1600 to 1800 vehicles per hour for links) and broad strategies for accommodating additional movements at the junctions.

2.2.5 The 2010 technical appraisal report produced ten options that would have varying effects on relieving current and future congestion at M25 Junction 30.

2.2.6 The workshop participants agreed that it was reasonable to use two of the options identified in the 2010 technical appraisal report – namely 'E1 and 9' and 'E2' - as a basis for potential investment solutions at M25 Junction 30.

### 2.3 Existing network capacity and traffic flows

2.3.1 M25 Junction 30 is currently operating at or above capacity during peak periods. The congestion relieving scheme will facilitate predicted traffic growth until the mid-2020s, broadly the assumed opening date of the new LTC. Beyond that date further improvements are likely to be required to accommodate additional traffic growth. Weaving on the short A13 link between Junction 30 and A126 is an issue that would

require consideration in the longer term.

2.3.2 The compatibility report showed that the A13 is currently operating above capacity during peak periods between A128 (Orsett Cock) and A132 (Pitsea). Also, the A13 link to the west of M25 Junction 30 and links to the east of the A128 junction are operating near to capacity.

2.3.3 The Do Minimum scenario with no new LTC is expected to justify a level of investment at Junction 30 to address future capacity and weaving issues. It was agreed at the workshop that this would be assumed to be equivalent to Option E2 in the 2010 technical appraisal report.

## 2.4 Indicative Traffic Changes Arising from the Lower Thames Crossing Options

2.4.1 An indicative view of the additional traffic arising from each LTC option is included in Appendix 2. The changes are shown diagrammatically as movements at Junction 30. While most of the additional traffic would use Junction 30 it may well be routed elsewhere on the network if Junction 30 is constrained by capacity and particularly if improvements are made on other parts of the wider network. In summary, the indicative effects are:

- Do Minimum (No LTC) – Junction 30 would be overcapacity by about 2026
- LTC Option A may have the greatest effect, significantly increasing the demand in both directions between the M25 south of Junction 30 and A13 east of Junction 30.
- LTC Option B could reduce demand in both directions between the M25 south of Junction 30 and A13 east of Junction 30. It may also slightly increase demand in both directions between M25 north of J30 and A13 east of J30
- LTC Option C could slightly increase demand in both directions between M25 south of J30 and A13 east of J30 and reduce demand in both directions between M25 north of J30 and A13 east of J30
- All options could slightly increase demand between the M25 south of J30 and A13 west of J30.

2.4.2 All three options would be expected slightly to increase demand along the A13 corridor to the East of Orsett.

## 2.5 Assessment of Need for additional capacity

2.5.1 The assessment was carried out on each link and junction along the A13. The indicative findings are described below for each junction and link in a west to east direction along the A13. An annotated extract from the assessment matrix is included where improvements were identified.

### *A13/A1036 Junction & A13/A1036 to M25/Junction30 Link*

2.5.2 This is the first junction to the west of Junction 30 and the connecting section of the A13 should not be adversely affected materially by any of the LTC Options.

*M25 Junction 30*

- 2.5.3 For No LTC (Do Minimum), further improvement (beyond the 2015 scheme) by 2025 is expected to be required, to a capacity similar to “E2”.
- 2.5.4 For Option A, the improvement option called “E1+9”, shown in Appendix 4, is assumed to be needed, as it provides additional free-flow links between M25South and A13East – a movement where demand would be higher if Option A were built.
- 2.5.5 For Options B and C, the “E2” improvement would be assumed as the traffic flows would be similar to or reduced relative to the No LTC scenario, but not to such an extent as to redress the long term J30 performance issues.

*M25 Junction 30 to A13/A126 Junction Link*

- 2.5.6 The capacity issues on this link are closely related to those at Junction 30. The congestion relieving scheme would widen this link to dual 4 lane rural all-purpose road in both directions..
- 2.5.7 The improvements assumed above for M25 Junction 30 would address potential LTC related impacts for this link.

*A13/A126 Junction*

- 2.5.8 No changes to this junction appear to be warranted.

*A13/A126 Junction to A13/A1012 Junction Link*

- 2.5.9 The existing layout is dual 3 lane rural all-purpose road with a length of 1.2 miles. The improvements assumed above for M25 Junction 30 would address potential LTC related impacts for this link.

*A13/A1012 Junction and eastwards to the A1014 Junction*

- 2.5.10 It was judged that potential impacts from LTC would not be sufficient, in themselves, to justify significant investment in capacity to the remaining section of the A13 and its junctions as far as the eastward limit of the geographical scope due to proportionately small flow changes indicated with each of the LTC options.

**3. Cost Estimates**

**3.1 Methodology for Cost Estimating**

- 3.1.1 Option estimates were produced for both Options ‘E1 and 9’ and ‘E2’ as part of the 2010 technical appraisal report. These data supplemented by the brief detailing specific engineering requirements and risk for each LTC option has been used by HA Commercial to develop order of magnitude capital cost estimates for this study. The order of magnitude estimates are outturn costs, which include an allowance for risk, uncertainty, inflation and programme risk, as detailed below.
- 3.1.2 Risk and uncertainty identified in the 2010 technical appraisal report estimates has generally been retained but has been specifically adjusted where adaptations have been made.
- 3.1.3 Inflation has been applied to cost estimates using the inflation profile used for other HA schemes. For the purposes of estimating inflation, the opening year was assumed to be 2025.
- 3.1.4 Programme risk has been allocated in accordance with the approach currently taken for schemes within the HA Major Projects programme.
- 3.1.5 Both options would require land acquisition, particularly Option ‘E1 and 9’ to accommodate new free flow links. Provision has been included within risk and uncertainty.
- 3.1.6 The order of magnitude estimates represent the maximum, minimum, and most likely costs of two possible solutions.

**3.2 Summary of Costs**

- 3.2.1 The HA commercial order of magnitude capital cost estimates are detailed in Table 3.1.

**Table 3.1 Order of Magnitude Capital Cost Range Estimates, nominal**

Investment Option	Minimum (£M)	Most Likely (£M)	Maximum (£M)
Option E1 and 9	711	860	1090
Option E2	333	402	504

- 3.2.2 Option E1 and 9 is shown in Figures 2 and 3 in Appendix 4. It includes a free flow from the A13 westbound to M25 southbound along with widening to dual 4 lanes on the A13 between the A126 and A1012. All the components in E1 will be constructed as part of the congestion relieving scheme so have been omitted from the estimate.
- 3.2.3 Option E2 is shown in Figure 1 in Appendix 4, it excludes minor works to the link roads between Junction 31 and 30 that will be constructed as part of the congestion relieving scheme.



**4. Summary and Conclusions**

**4.1 Objectives**

4.1.1 The purpose of this technical note has been to consider whether changes in traffic arising from a new Lower Thames Crossing may have significant impacts on the M25 Junction 30 and A13 and to provide indicative ‘order of magnitude’ estimates of the cost of additional capital investment that could mitigate these impacts.

4.1.2 This work has utilised existing reports and data and drawn upon professional judgement to interpret available information. A workshop was held on 15<sup>th</sup> July 2013 at which the potential capacity issues and solutions for each LTC option were agreed. High level engineering and risk was developed for each solution, which informed the order of magnitude capital cost estimates.

4.1.3 Further assessment would be required to properly assess impacts arising from a new crossing and additional capacity required as a result.

**4.2 Potential Capital Costs**

4.2.1 The existing network is operating at or above capacity particularly at M25 Junction 30. A congestion relieving scheme is planned with a design life until approximately 2026, following which, further investment could be required to accommodate the future traffic demand without a new Lower Thames Crossing.

4.2.2 Option A may require the largest incremental investment in the existing network to accommodate changes in demand from the new crossing particularly at M25 Junction 30. Option B and C also need additional investment at M25 Junction 30 but this is expected to be comparable to that required in the Do Minimum scenario, (i.e. with no new LTC).

**Table 4.1 Solutions and Cost**

LTC Option	Summary of the Potential Solution	Most likely Order of Magnitude cost (£M)	Net Additional Capital Investment (£M)
Do Minimum (no LTC) & LTC Options B & C	increase capacity on the gyratory and slip roads at Junction 30 (Option E2)	402	0
LTC Option A	Increase capacity at Junction 30 (Option E1 & 9) <ul style="list-style-type: none"> <li>• provide free flow links (both directions south to east)</li> <li>• widen A13 to dual 4 lanes from Junction 30 to the A1012</li> </ul>	860	458



4.2.3 There would be no incremental investment cost difference for LTC Options B & C as the investment would be similar to the Do Minimum scenario. LTC Option A could require £460M incremental investment cost above that considered for the Do Minimum scenario.

#### 4.3 **Conclusion**

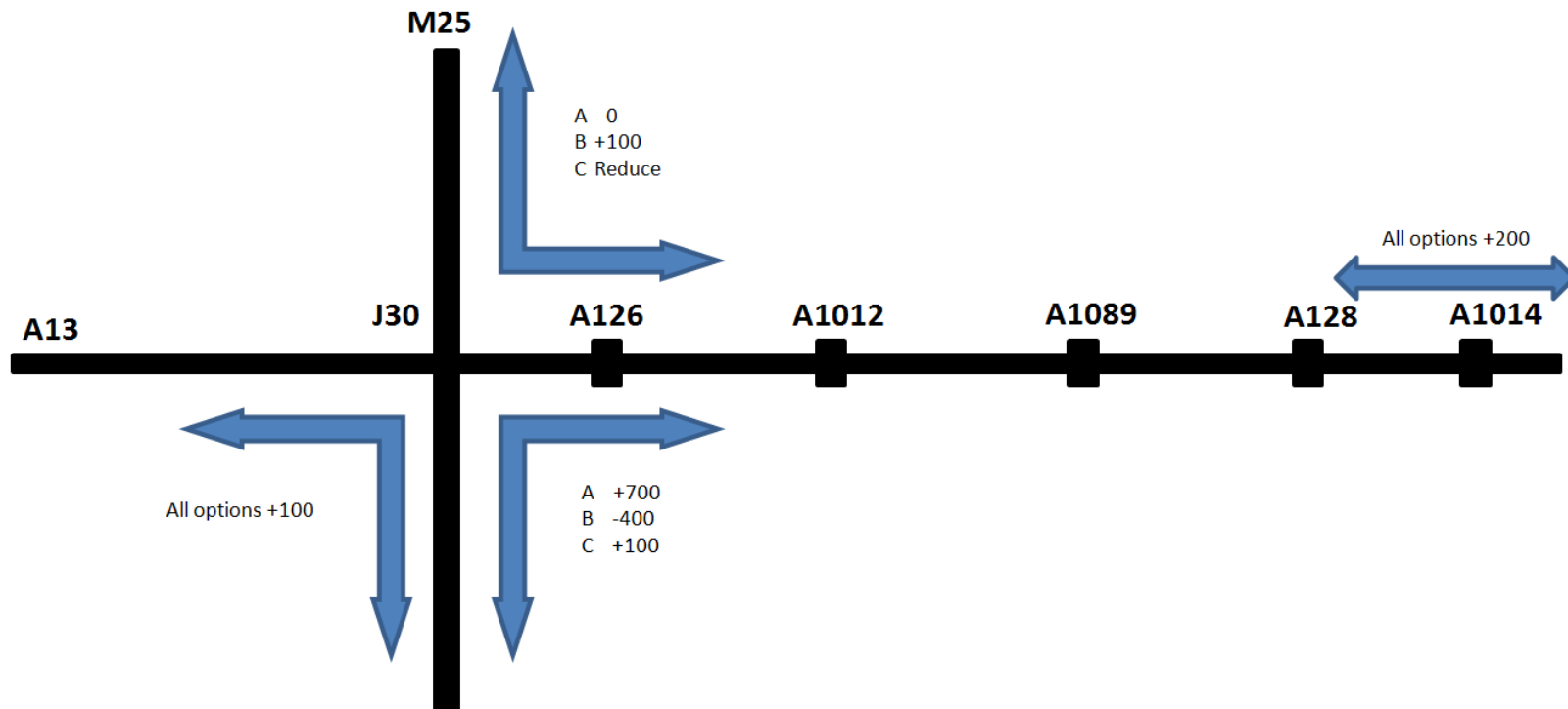
4.3.1 The agreed solutions and cost that may address the potential impacts of each LTC option are detailed in the Table 4.1. These potential solutions may address the capacity problems. A full Options stage assessment of the selected LTC route would need to be undertaken to determine solutions with more certainty and ensure value for money.

**Appendix 1: Impacts of the Lower Thames Crossing Options on the Network**

	A13/ A1036 Junction	Link	M25 J30 /A13 Junction	Link	A13/ A126 Junction	Link	A13/ A1012 Junction	Link	A13/ A1089 Junction	A1089 Tilbury Port approach road	Link	A13/ A128 Junction	Link														
<b>Performance of A13 – expected in Mid 2020's</b>																											
<table border="1"> <tr> <td>Above capacity</td> <td>Red</td> </tr> <tr> <td>85% - 100% capacity</td> <td>Yellow</td> </tr> <tr> <td>&lt;85% capacity</td> <td>Green</td> </tr> </table>														Above capacity	Red	85% - 100% capacity	Yellow	<85% capacity	Green								
Above capacity	Red																										
85% - 100% capacity	Yellow																										
<85% capacity	Green																										
Do Minimum (No Lower Thames Crossing)																											
<table border="1"> <tr> <td>Green</td> <td>Yellow</td> <td>Yellow</td> <td>Red</td> <td>Yellow</td> <td>Yellow</td> <td>Red</td> <td>Red</td> <td>Green</td> <td>Green</td> <td>Red</td> <td>Red</td> <td>Red</td> <td>Red</td> </tr> </table>														Green	Yellow	Yellow	Red	Yellow	Yellow	Red	Red	Green	Green	Red	Red	Red	Red
Green	Yellow	Yellow	Red	Yellow	Yellow	Red	Red	Green	Green	Red	Red	Red	Red														
<b>Impact of LTC Options</b>																											
<table border="1"> <tr> <td>Worse</td> <td>Orange</td> </tr> <tr> <td>Better</td> <td>Light Green</td> </tr> <tr> <td>Neutral</td> <td>White</td> </tr> </table>														Worse	Orange	Better	Light Green	Neutral	White								
Worse	Orange																										
Better	Light Green																										
Neutral	White																										
Lower Thames Crossing Option A			Above Capacity (>200 vph)	Increasingly Above Capacity (>200 vph)		Above Capacity (>200 vph)		Increasingly Above Capacity (<200 vph)																			
Lower Thames Crossing Option B			Reduced demand	Reduced demand		Reduced demand		Slightly Reduced demand	Increased Demand	Increased Demand																	
Lower Thames Crossing Option C			Reduced demand	Reduced demand		Reduced demand																					

Note: Option B would be forecast substantially to increase traffic using the A1089 to a level close to the capacity of the road.

## Appendix 2: Estimate of additional peak hour demand induced by the LTC options



Note: some traffic could use alternative routes to the A13; pressure on the A13 could be lower

### Appendix 3: Workshop Output

Project:	<b>Junction 30/ A13</b>	Job No/Ref:	<b>60287784</b>
Purpose:	<b>M25 J30/a13 Improvements Workshop</b>	Date held:	<b>15/07/2013</b>
Held at:	<b>AECOM Mid City Place</b>	Made by:	<b>KC</b>
Present:	<p><u>DfT</u>: Eike Ndiweni-Muller            HA: Neil Owen, Gary Hough, Mark Rowley, Paul Robinson            AECOM: Richard Lyon, Paul Hanson, Maclean Hastie, Kathryn Carman            Jacobs: Simon Beany, Ollie Hart, David Clark, James Nash,</p>		<p>Distribution:  All present</p>

No.	Item	Action By
	The following points were agreed by all present at the meeting:	
1	The assumed LTC opening year is 2025.	
2	The purpose of the exercise is to determine the order of magnitude of investment costs in the network that could arise as a direct result of providing a Lower Thames Crossing (LTC).	
3	For this exercise our judgement is that Option C and Option C variant would have a similar effect on A13 traffic.	
4	<p>Existing problems on the network were acknowledged:</p> <ul style="list-style-type: none"> <li>- A13 is currently at or overcapacity at peak times particularly on the dual 2 lane links east of the A128</li> <li>- Several movements at Junction 30 are forecast to be over capacity at opening of the Congestion Relieving Scheme.</li> <li>- Weaving issues have been identified east of Junction 30. These issues will be helped/eased but not solved by the Congestion Relieving Scheme.</li> </ul>	
5	Traffic modelling work is ongoing and forecasts with post LTC and the Congestion Relieving Scheme are not available for the workshop. The best information available was used to develop a matrix indicating how the links and junctions might be affected by the LTC options.	
6	It was acknowledged that the network is constrained by capacity. Rerouting will affect demand pattern arising from provision of a LTC option or any A13 corridor improvements. Option A will increase pressure at J30 between A13 east and M25 south. Option B will reduce pressure at this location. Option C is forecast to have little net impact for this	

	movement.	
7	Improvements on the A13 will be considered from the A1306 (Wennington) junction to the A1014 junction. Brief commentary on A13 from A1014 to A130 will be provided in the report.	
8	Brief commentary on J29 of the M25 will be included in the report.	
9	For this costing exercise indicative improvements to M25 J30 / A13 (including A126 Junction) will be assumed	
	<ul style="list-style-type: none"> <li>- E1 and 9 for LTC Option A. Estimate should include cost of E9, as E1 is broadly the equivalent of the Congestion Relieving Scheme. It will also need to consider works to accommodate increased flow (A13 westbound to M25 southbound) Drawings to be provided to HA Commercial for Costing by 19<sup>th</sup> July.</li> <li>- E2 for LTC Option B, Option C and the Do Minimum (option to not implement LTC). Drawings to be provided to HA Commercial for Costing by 19<sup>th</sup> July.</li> </ul>	AECOM
10	HA to provide cost estimates for these two option by 26 <sup>th</sup> July.	HA
11	The matrix showing how the LTC options affect the network was reviewed – potential improvements to A13 links and junctions discussed were	
	<ul style="list-style-type: none"> <li>- A126 to A1012 link - widen from dual 3 to dual 4 lanes</li> <li>- A13 /A1012 junction - lane drop / lane gain west side</li> <li>- A1012 to A1089 link – no improvements</li> <li>- A13/A1089 Junction - no improvements for LTC Option A &amp; C. AECOM to determine any improvements as a result of Option B.</li> <li>- A1089 south of A13 – AECOM to determine improvements (if any) required with LTC Option B</li> <li>- A1089 to A128/A1013 link – no improvements</li> <li>- A128/A1013 Junction - no improvements</li> <li>- A128/A1013 to A1014 link (The Manorway) - no improvements</li> </ul>	AECOM
12	The general conclusion was that traffic changes arising from the LTC may bring forward or postpone the need for improvements along the A13 corridor. Nevertheless the decision to invest in improved infrastructure capacity along the corridor would primarily be driven by the economic and social requirements along the corridor AECOM will provide commentary documenting this.	AECOM
13	Outline of the report to be provided to EN for approval. The matrix to be updated as agreed at workshop and included with the report outline by 18 <sup>th</sup> July	AECOM

## **Appendix 4: Figures**

Congestion Relieving Scheme

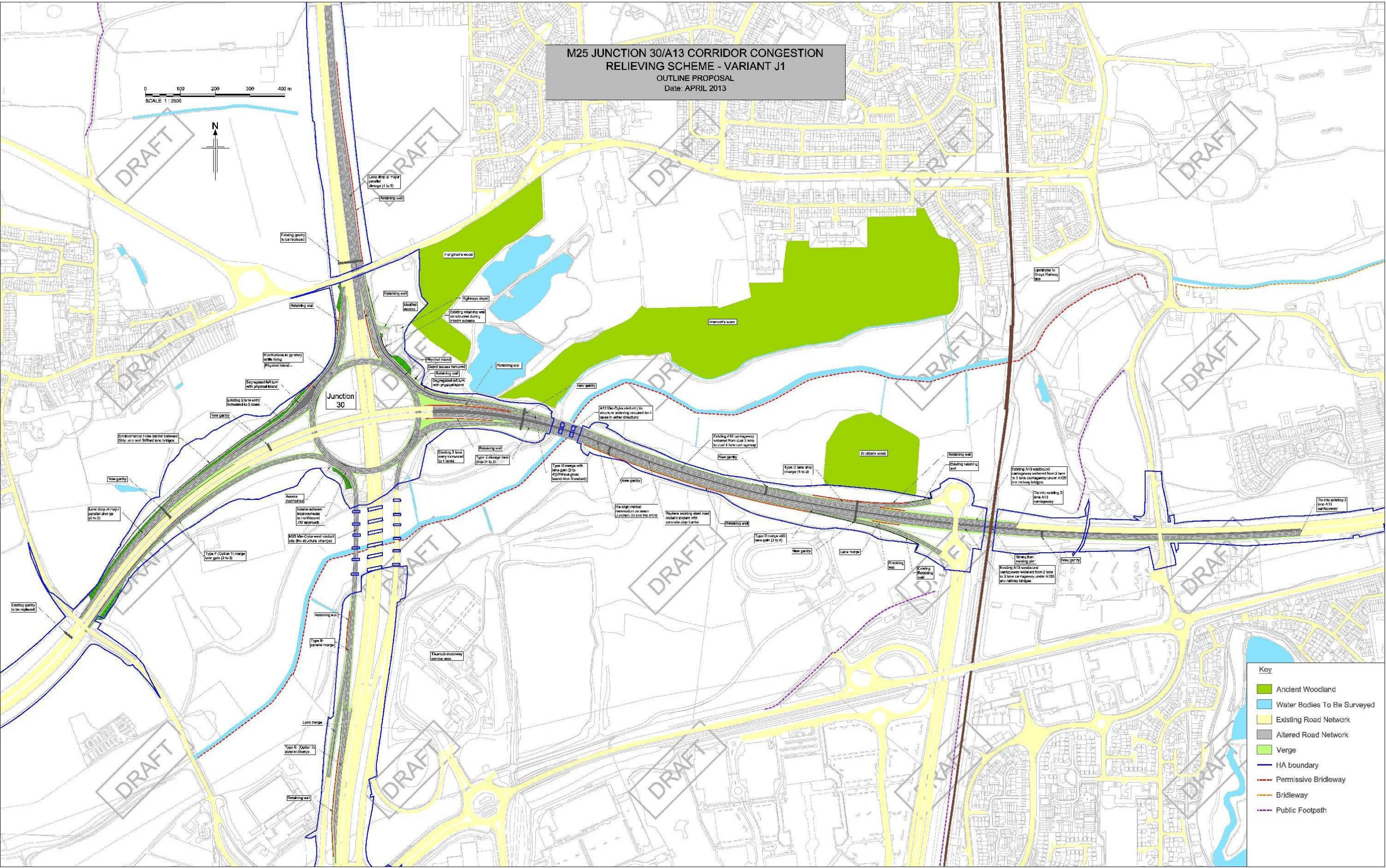
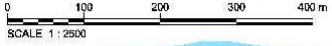
Figure 1 – Option E2

Figure 2 – Option E1 & 9

Figure 3 – Option E1 & 9



M25 JUNCTION 30/A13 CORRIDOR CONGESTION  
RELIEVING SCHEME - VARIANT J1  
OUTLINE PROPOSAL  
Date: APRIL 2013



- Key**
- Ancient Woodland
  - Water Bodies To Be Surveyed
  - Existing Road Network
  - Altered Road Network
  - Verge
  - HA boundary
  - Permissive Bridleway
  - Bridleway
  - Public Footpath



1. This drawing is for indicative costing purposes only. It should be read in conjunction with the costing brief to HA commercial.
2. The design is based on option E2 developed in the 2010 TAR for the M25 J30/A13 corridor congestion reducing scheme. The original design has been modified for this study.
3. No checks against the DMRB have been undertaken.

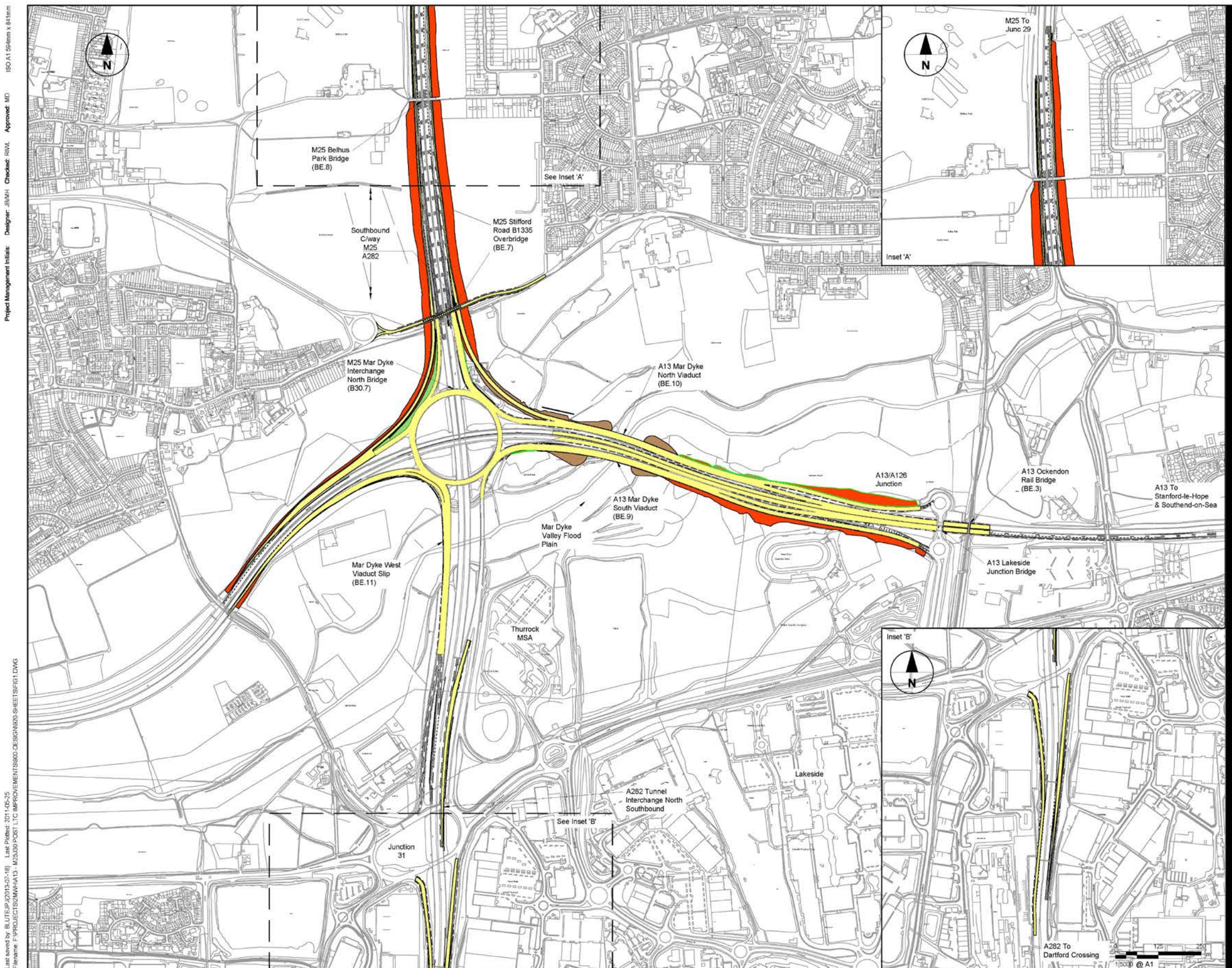
- New Carriageway
- New Verge
- New Embankment Slope
- New Cutting Slope
- New Footway/Hardened Reserve
- New Structure
- Retaining Wall
- (BE.3) Structure Reference

IR	DATE	DESCRIPTION
A	29/07/13	NEW CARRIAGEWAY AMENDED

60287784

OPTION E2  
 GENERAL ARRANGEMENT  
 FOR LTC OPTION B, C AND NO LTC

FIGURE 1

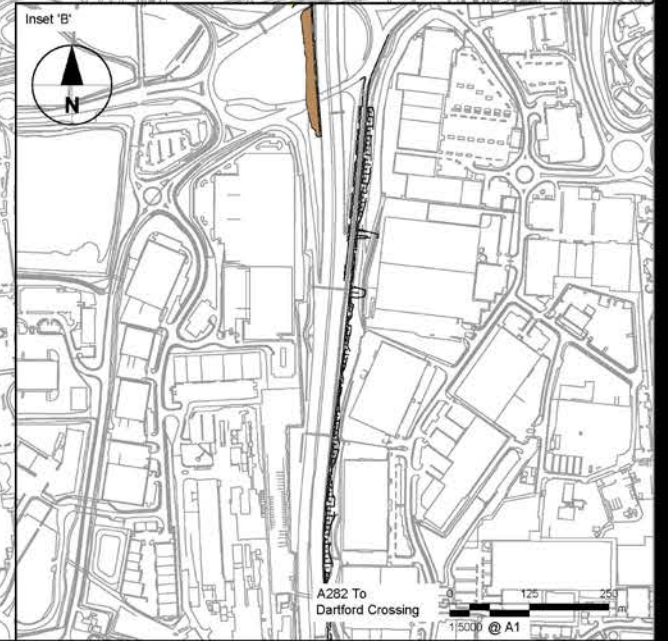
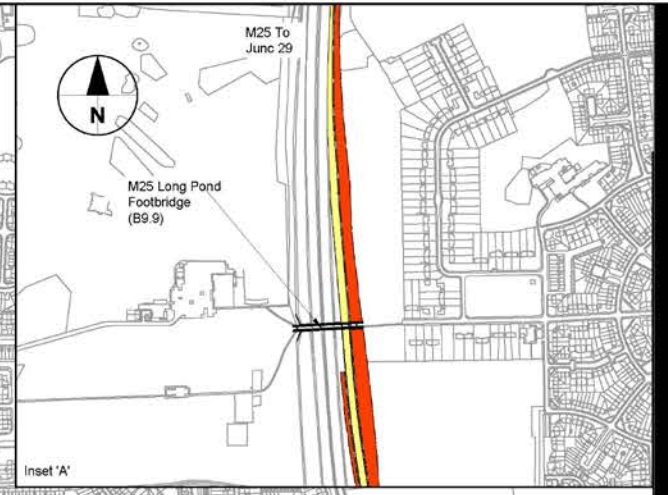
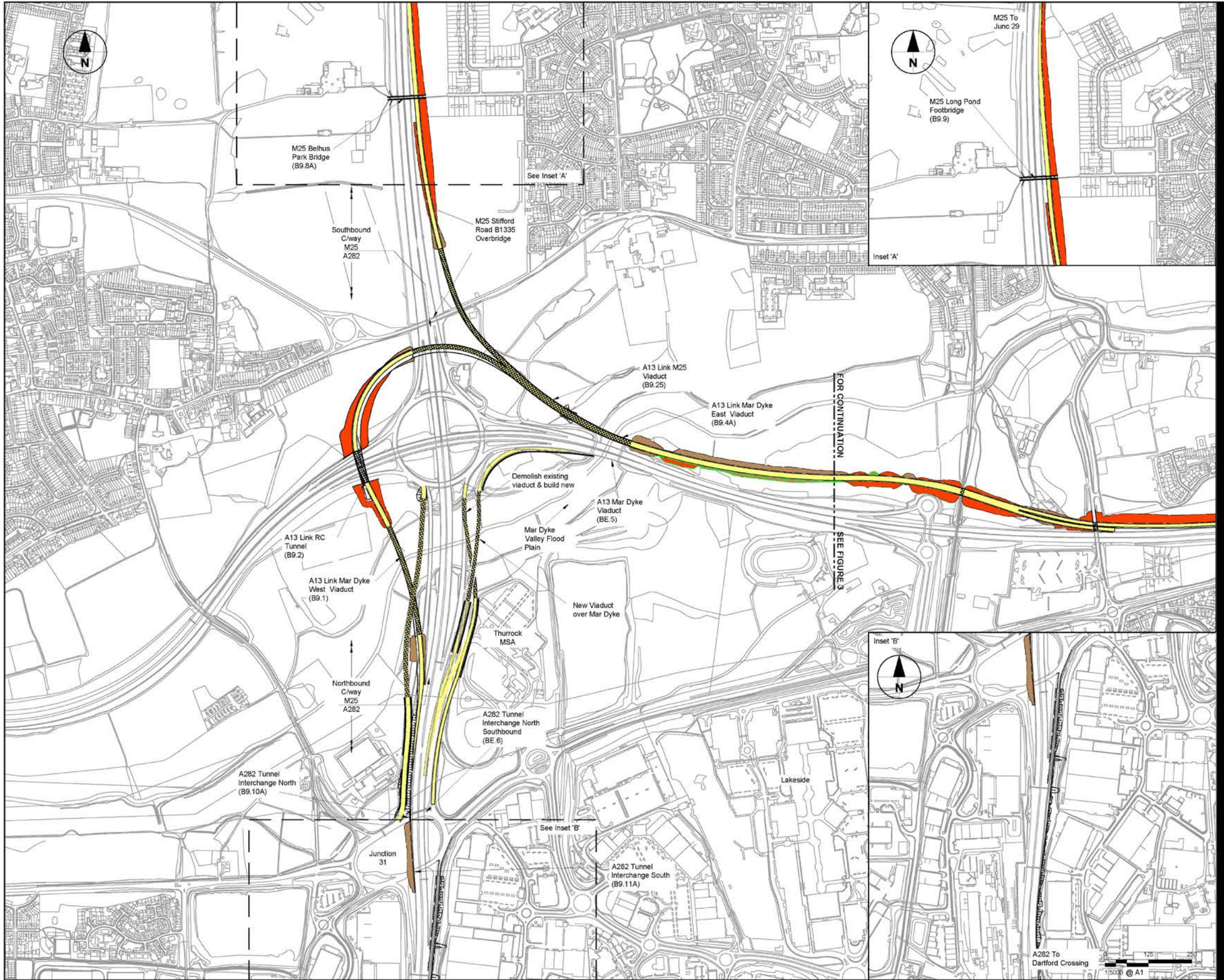


Project Management Initials: Designer: JSM/H Checked: RVM Approved: MD  
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Project Management Initials: Designer: JSM/H Checked: R/WL Approved: MD  
 ISO A1 564mm x 841mm  
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# AECOM

**PROJECT**  
 LOWER THAMES  
 CROSSING  
 POTENTIAL ADDITIONAL  
 NETWORK INVESTMENT AT  
 M25 J30 & A13

**CLIENT**  
 Department for  
 Transport

**CONSULTANT**  
 AECOM  
 Saxon House  
 27 Duke Street  
 Chelmsford, Essex CM1 1HT  
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 +44 (0) 1245 77 1299 fax  
 www.aecom.com

- NOTES**
- This drawing is for indicative costing purposes only. It should be read in conjunction with the costing brief to HA commercial.
  - The design is based on options E1 & 9 developed in the 2010 TAR for the M25 J30/A13 corridor congestion reducing scheme. The original design has been modified for this report as agreed at the workshop on the 15/07/13.
  - No checks against the DMRB have been undertaken.
  - Works on the A13 are not shown on this figure but are included in the HA cost estimate for this option.
    - modify west facing slips at A1012 Junction
    - widening A13 westbound between the A126 & A1012 from 3 to 4 lanes and associated works

**KEY**

- New Carriageway
- New Verge
- New Embankment Slope
- New Cutting Slope
- New Footway/Hardened Reserve
- New Structure
- Retaining Wall

(BE-3) Structure Reference

**ISSUE/REVISION**

IR	DATE	DESCRIPTION
B	29/07/13	CARRIAGEWAY EXTENTS & NOTES AMENDED
A	23/07/13	LINKS AMENDED, RETAINING WALLS ADDED

**PROJECT NUMBER**  
 60287784

**SHEET TITLE**  
 OPTION 9  
 GENERAL ARRANGEMENT  
 FOR LTC OPTION A - SHT 1 OF 2

**SHEET NUMBER**  
 FIGURE 2



PROJECT  
**LOWER THAMES CROSSING**  
 POTENTIAL ADDITIONAL NETWORK INVESTMENT AT M25 J30 & A13

CLIENT  
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- NOTES
1. This drawing is for indicative costing purposes only. It should be read in conjunction with the costing brief to HA commercial.
  2. The design is based on options E1 & 9 developed in the 2010 TAR for the M25 J30/A13 corridor congestion reducing scheme. The original design has been modified for this report as agreed at the workshop on the 15/07/13.
  3. No checks against the DMRB have been undertaken.
  4. Works on the A13 are not shown on this figure but are included in the HA cost estimate for this option.
    - modify west facing slips at A1012 Junction
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KEY

	New Carriageway
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	New Embankment Slope
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	New Footway/Hardened Reserve
	New Structure
	Retaining Wall
	(BE.3) Structure Reference

ISSUE/REVISION

NO	DATE	DESCRIPTION
A	29/07/13	NOTES AMENDED

PROJECT NUMBER  
 60287784

SHEET TITLE  
 OPTION 9  
 GENERAL ARRANGEMENT  
 FOR LTC OPTION A - SHT 2 OF 2

SHEET NUMBER  
 FIGURE 3

Project Management Initials: Designer: JSM/H Checked: RVL Approved: MD ISO A1 564mm x 841mm  
 Last saved by: BLUTE/PJ (2013/07/18) List: Printed: 2013/05/25  
 Filename: F:\PROJECTS\2MWH\A13 - M25 J30 POST LTC IMPROVEMENTS\SD-DESIGN\SD-SHEETS\FIG1.DWG  
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