

M20 Junction 10a

TR010006

Environmental Statement

Chapter 3 Consideration of Alternatives

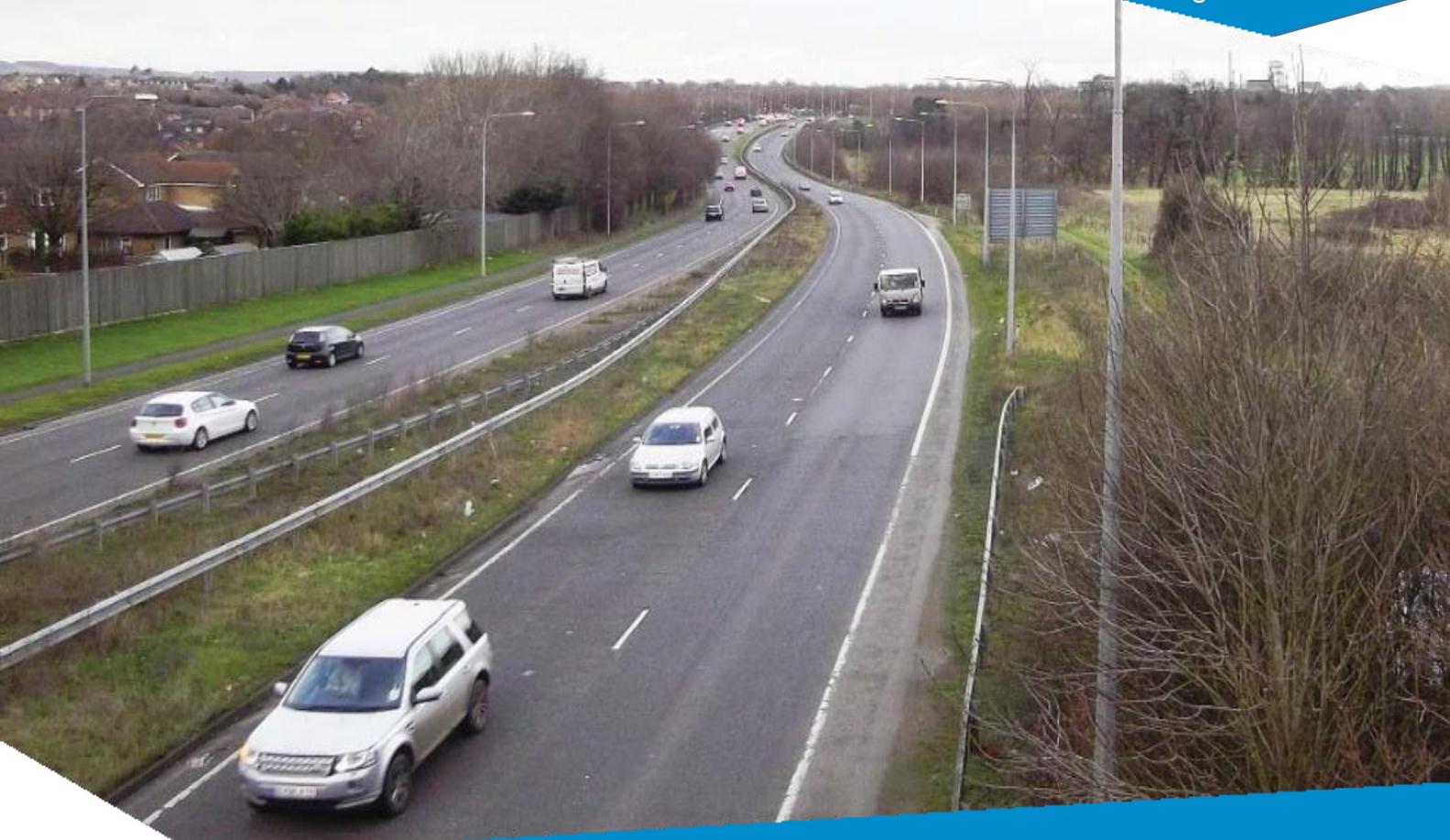
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M20 Junction 10a

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Content

Chapter	Title	Page
3	Consideration of Alternatives	2
3.1	Introduction	2
3.2	Scheme Need	2
3.3	Scheme Objectives	2
3.4	History of the Scheme and the Alternatives Considered	3

3 Consideration of Alternatives

3.1 Introduction

3.1.1 This chapter describes only those alternatives which have been considered historically as part of the Scheme development but do not form part of the proposed Scheme. It therefore does not consider the proposed development – the Main Scheme or the Alternative Scheme.

3.2 Scheme Need

3.2.1 Ashford has been identified as a major growth area for the South East in the Government's Sustainable Communities Plan. The provision of 31,000 additional homes and 28,000 new jobs in the area is anticipated by 2031. As a result it is predicted the existing M20 junction 10 will suffer from congestion and long delays in the future if additional capacity is not provided. The M20 is an international route and is used by large volumes of heavy goods vehicles (HGVs) and holiday traffic. Long distance traffic from the M20, A20 and A2070 (south of Ashford) conflicts with local traffic from Hythe Road and Kennington Road.

3.2.2 The M20 junction 10a Construction Scheme has been identified as a key transport requirement and is essential to the future development of south Ashford. The recent improvements at junction 10, to increase the capacity and improve safety, will allow some development to go ahead but will not be sufficient for all of the proposed developments.

3.3 Scheme Objectives

3.3.1 The overall objectives for both the Main Scheme and the Alternative Scheme are:

- Increasing the capacity of the road network to support the proposed development areas in Ashford.
- Alleviating congestion around the existing junction 10 and improving safety, whilst creating the opportunity to enhance local transport facilities for non-motorised users.
- Providing a new route for traffic into Ashford by way of the new junction and dual carriageway link road.
- Minimise the environmental impact of the Scheme and where possible allow enhancements to be made to the environment.
- To improve journey time reliability on the strategic road network.
- To improve safety through the junction by reducing congestion.

3.4 History of the Scheme and the Alternatives Considered

- 3.4.1 Major road schemes are progressed under Highways England's Project Control Framework (PCF) where options are designed and evolved in accordance with the Highways England Design Manual for Roads and Bridges (DMRB). The design of a road is therefore constrained by the standards specified within the DMRB. An additional constraint on the design of a major road scheme is also often its location. The existing M20 junction 10 currently suffers from congestion and delays, and it is predicted that this will be exacerbated with the anticipated future growth of Ashford if additional capacity is not provided. Subsequently, the M20 junction 10a Scheme is limited to the location identified due to its requirement to alleviate future congestion problems in that area, and therefore no other locations for the Scheme were considered. As such, initial feasibility and optioneering studies focused on the range of solutions rather than locations.
- 3.4.2 In November 2003, it was announced that the M20 junction 10a Scheme had been added to the Government's Targeted Programme of Improvements, now known as the Programme of Major Schemes. Since then a number of further studies have been undertaken by Highways England (HE), Kent County Council (KCC) and Ashford Borough Council (ABC). The primary study was the Greater Ashford Development Framework¹ (GADF), which focused on transforming Ashford Town Centre and producing a master plan to facilitate Ashford's growth including new urban communities and its impact on surrounding rural villages.
- 3.4.3 During the initial phases it was identified that the existing junction 10 would not be able to accommodate the additional traffic generated by the proposed development of Ashford. As a result of this and the announcement by the Minister in 2003, Highways England was instructed to develop and appraise options for a junction 10a.
- 3.4.4 Following the publication of the GADF in 2004, 3 strategies were presented to HE's Major Projects Directorate in December 2005:
- Improvements to the existing junction 10.
 - New junction 10a (single bridge).
 - New junction 10a (gyratory interchange).
- 3.4.5 These 3 strategies were then developed by Parsons and Brinkerhoff into a number of options focusing on the theme of these strategies with, however, variations in the structures and key elements of the design. The options were appraised and following review 3 options were favoured; these are presented in Table 3.1.

¹ Greater Ashford Development Framework, Urban Initiative, April 2005.

Table 3.1 Options favoured by Parsons and Brinkerhoff following review

Option	Overview
<p>Option R2: Improvements to existing junction 10 - Modified junction 10 Interim Scheme with new bridge for north – south movement</p>	<ul style="list-style-type: none"> Existing junction layout upgraded to provide additional capacity. A new dual, 2 lane bridge within junction 10 to cater for north – south movements. A292 / M20 westbound on slip junction widened and signalised. Access to development area off A2070 via new signalised junction north of Church Road Footbridge. Elements of junction 10 Interim Scheme (completed in 2007) to be demolished and junction 10 balancing pond to be relocated.
<p>Option R5 / R6: junction 10a Single bridge interchange – junction 10a Compact Diamond Interchange linked to A20 with local connection to Highfield Lane (R5) / without local connection to Highfield Land (R6)</p>	<ul style="list-style-type: none"> Junction 10a is a compact diamond signalised interchange with local connection to A20 Hythe Road. A new dual, 2 land skew bridge at junction 10a. A2070 link road is dual carriageway meeting the A2070 via a signalised T-junction north of Church Road Footbridge. Access to development area off A2070 link road via a signalised junction. New Kingsford Street vehicular access bridge over the M20. M20 junction 10 east facing slip roads and Highfield Lane Bridge to be demolished. New balancing ponds required.
<p>Option P3: junction 10a Gyratory interchange – junction 10a Gyratory with realigned A2070 South Orbital Road and Kingsford Street footbridge</p>	<ul style="list-style-type: none"> Junction 10a is a gyratory interchange with local connections to A20 Hythe Road. Two 3 lane bridges at junction 10a. A2070 link road is a dual carriageway joining the A2070 which will be realigned to direct traffic towards junction 10a. New Kingsford Street pedestrian and cycleway bridge over the M20. Access to development area off A2070 link road via a signalised junction. M20 junction 10 east facing slips, Highfield Lane Bridge and A2070 Church Road Footbridge to be demolished. Sewage pumping station to be relocated. Loss of 1 residential property and 3 commercial properties. New Footbridge over Aylesford Stream. New balancing ponds required.

3.4.6 Option P3 offered several advantages over Options R2, and R5 / R6:

- It was favoured by ABC and KCC as it provided for the planned development strategy in South Ashford.
- It fulfilled Highways England’s strategic requirement to realign the A2070 towards junction 10a.
- It provided the greatest reserve capacity and scope to be modified in the future.
- Properties to the west of the A2070 would benefit from reduced noise and air quality impacts.
- A new footbridge over the M20 would provide benefits for pedestrians and cyclists.

3.4.7 In addition, Options R2 and R5 / R6 had several disadvantages when compared with Option P3 as outlined in Table 3.2.

Table 3.2 Options R2 and R5 / R6 Disadvantages when compared to Option P3

Disadvantages of Option R2	Disadvantages of Option R5 / R5
<ul style="list-style-type: none"> • Least favoured by ABC. • Complicated and difficult to build within an existing heavily used junction. • Some demolition of the recently completed improvement works required. • Greater impact on Willesborough properties to the west of the A2070. • Capacity reached sooner than with a new junction 10a option. • Complex signing and signals likely to cause traffic disruption and safety issues. • Existing balancing pond to be relocated prior to construction of new bridge. • Increased noise impact at properties close to the A2070. • Complicated and difficult to build with abortive works soon after Interim Scheme. • New bridge over live motorway traffic to be constructed within an already congested junction. • A292 Hythe Road signalised junction at the head of the M20 Londonbound on slip will need widening. 	<ul style="list-style-type: none"> • Route strategic traffic from A2070 to junction 10a less clear as right hand turn required at signalised junction. • Greater impact on Willesborough properties to the west of the A2070. • Less scope for improvements in the future when compared to a gyratory option.

3.4.8 In addition, Option P3 was considered to be the most feasible option fulfilling the Scheme objectives, it provided value for money, as shown by the Benefit Cost Ratio (BCR) and, based on engineering data obtained, did not involve any unduly complex engineering requirement problems.

3.4.9 Between 13 June 2008 and 5 September 2008 a public consultation was held with the 3 options presented as potential solutions to address the infrastructure requirements for increased traffic volumes near Ashford. Option P3 was taken to consultation as the 'Proposed Option', and Options R2 and R5 / R6 were taken as 'Alternative Option 1' and 'Alternative Option 2', respectively, as they were not favoured by Highways England. Views on these Options were sought from the general public and other interested parties. The 'Proposed Option' was selected as the preferred route following the public consultation, which incorporates a new junction 10a gyratory interchange as per the Main and Alternative Schemes presented within this ES.

Secretary of State Preferred Route announcement

3.4.10 Subsequent to this the Secretary of State for transport made the Preferred Route Announcement of the 'Preferred Scheme' (Option P3 – the Proposed Option) in Autumn 2008.

- 3.4.11 Following the Preferred Route Announcement, Highways England commissioned URS Scott Wilson to carry out a preliminary design as part of PCF Stage 3. The Preferred Scheme was developed as part of the preliminary design accommodating feedback from the public consultation, and included the following elements:
- A new M20 junction 10a, 700m southeast of junction 10, to include a roundabout over the motorway, new slip roads and a new dual carriageway link road to the A2070 Bad Munstereifel Road. Partial signalling of junction 10a will be with two, 3 lane bridges over the M20 and controlled non-motorised user crossings.
 - The A20 Hythe Road would be incorporated in the new junction, to allow traffic in both directions to travel via the new roundabout.
 - A new pedestrian / cyclist bridge over the M20 from Kingsford Street to the A20.
 - Demolition of the existing Highfield Lane Bridge and Church Road footbridge.
 - Construction of a signalised junction with controlled non-motorised user crossings at the A2070 link road junction with the A2070, Bad Munstereifel Road.
 - Construction of a signalised junction with controlled non-motorised user crossings for the further South Ashford Development access junction with the A2070 link road proposed.
 - Removal of the east-facing slips at the existing junction 10.

Secretary of State Announcement in 2010

- 3.4.12 In October 2010 the Secretary of State announced that the Scheme would be 1 of 4 Schemes nominated for further review to ensure that the proposed design was the best possible. Subsequent to this announcement, in 2011 the Preferred Scheme was reviewed by URS Scott Wilson who identified value engineering opportunities and LEAN initiatives that would reduce the estimated cost. This subsequently generated an additional 2 sub-options, known as the 'Alternative Scheme' and the 'Modified Scheme'. The 'Alternative Scheme' in this instance is not the Alternative Scheme presented in this ES as described in Chapter 1 Introduction, Volume 6.1, but the one described in Section 3.4.14.
- 3.4.13 The Modified Scheme included the same elements as the Preferred Scheme with more or less the same layout occupying a slightly increased footprint. The key differences between the Modified Scheme and Preferred Scheme being the incorporation of Value Engineering Opportunities; these are presented in Table 3.3.

Table 3.3 Value Engineering Opportunities incorporated into the Modified Scheme

Element of the Scheme	Value Engineering Opportunities Incorporated
M20 mainline	Retain the existing steel vehicle restraint system in the central reserve and not to provide a replacement vertical concrete barrier. The cost of clearance of the existing steel beam barrier and providing paved areas, concrete drainage channels and associated drains and chambers to accommodate the vertical concrete barrier is also saved.
Kingsford Street	New pedestrian / cycle bridge to be removed and retaining structure height on south side reduced accordingly as a result.
Junction 10a slip roads	<ul style="list-style-type: none"> Retaining walls supporting east facing slip road cutting slopes shortened to reflect an initial geotechnical assessment that suggests the slopes may be stable to gradients of 1:1 to 1:1½ (further ground investigation was required to confirm this). Kerbs and gullies removed and over the edge drainage into combined filter / carrier drains adopted.
Junction 10a	Road lighting on gyratory, slip roads and A20 approaches removed.
A2070 link road	<ul style="list-style-type: none"> Gullies to discharge directly into ditches instead of carrier drain obviates cost of providing formal carrier drain and chamber drainage. Vertical alignment to be raised. Significantly reduces spoil disposal off-site and helps the case for high pressure gas main protection instead of diversion. Central reserve to be soiled and seeded instead of hard paved.
A2070 link / Bad Munstereifel Road	Footway / cycleway width reduced from 3.5m to 2.0m minimum.
18" Local High Pressure gas main	Accommodated under the new west facing slip roads at junction 10a and the A2070 Trunk Road by protection in-situ instead of by diversion.

3.4.14 The Alternative Scheme consisted of a number of options which were considered to provide a less expensive solution that would generally meet the objectives outlined. These are outlined in Table 3.4.

Table 3.4 Description of the Alternative Scheme Options

Option	Description
1	Junction 10a to have a 'dumbbell' roundabout arrangement and 1 bridge supporting a dual-carriageway link between, instead of an oval roundabout with circulatory supported on 2 bridges over the M20.
2	Junction 10a to have a 'dumbbell' roundabout arrangement as Option 1 but the A2070 link road to be a realigned single carriageway instead of a dual carriageway, the development area access to be provided off a larger south roundabout instead of off the A2070 link road and the A2070 link road to be tied into A2070 Bad Munstereifel Road via a roundabout instead of off-line via a signal controlled, all-movements, junction.
3	Junction 10a to be an 'interchange type' arrangement comprising east facing merge and diverge slip roads only both joining at a conventional roundabout further west on the route of the A2070 link road away from the M20, the development area access provided off the roundabout, the eastbound diverge crossing the M20 at junction 10A on a skew bridge with curved horizontal alignment and the shorter A2070 link road single carriageway tied into A2070 Bad Munstereifel Road via a roundabout as Option 2.
4	Junction 10a to have a 'dumbbell' roundabout arrangement as Option 1 complete with east and west facing slip roads but with no connection to the A20. Otherwise the A2070 link road is to be a realigned single carriageway, the development area access is to be provided off the dumbbell south roundabout and the A2070 link road is to be tied into A2070 Bad Munstereifel Road via a roundabout all as in Option 2. The east facing slip roads at junction 10 will be decommissioned.

Option	Description
5	Junction 10a to have a 'dumbbell' roundabout arrangement with no connection to the A20 (as Option 4) but with a reduced width link over the M20 and no west facing merge and diverge slip roads. The A2070 link road is to be a realigned single carriageway. The development area access is to be provided off the dumbbell south roundabout and the A2070 link road is to be tied into A2070 Bad Munstereifel Road via a roundabout all as in Option 2.
6	All as Option 4 but with the A2070 Link Road as a realigned dual carriageway.
7	<p>This was an option considered by the developer, DMI / AXA, to deliver access to the development site.</p> <p>Junction 10a comprises a new bridge over the M20 east of but adjacent to Highfield Lane overbridge and east facing slip roads with respective junctions at either end of the new bridge onto the A2070 link road running from a new junction with the A20 and back south over the new bridge to continue west as a single carriageway joining the A2070 Badmunstereifel Road at a restricted movement, signal controlled junction just north of Barrey Road. The existing Highfield Lane overbridge will be retained for Non-Motorised User (NMU) use, Highfield Lane will be realigned to continue into Kingsford Street with no link to the A20 and the development area to the south will be accessed via a signal controlled, all movement junction off the A2070 link road.</p>

3.4.15 The Modified Scheme was put forward as it showed the highest Benefit Cost Ratio (BCR), with saving of at least 18% compared to the Preferred Scheme. The Alternative Scheme was eliminated from the scheme review as it offered no benefits to Highways England.

The SELEP Scheme

3.4.16 In May 2011 the progression of Highways England's Modified Scheme was halted due to questions over affordability. A third party developer, 'AXA', and KCC presented an interim scheme, which is now known as the 'SELEP' Scheme. The main objective of the SELEP Scheme was to provide access to the Stour Park development site.

3.4.17 The major differences between the SELEP scheme and the Modified Scheme were that the SELEP scheme would not have provided a roundabout at the proposed junction 10a. Instead a new bridge would have been provided over the M20 approximately 20m to the south west of the existing Highfield Lane bridge, with only east facing slip roads. The east facing slip roads at junction 10 would have remained, in order to enable access to and from the west, whereas the Modified Scheme would have removed these, in order to make way for the west facing slip roads at junction 10a. The SELEP Scheme proposed a single carriageway link road between the new junction 10a and the A2070 Bad Munstereifel Road, the Modified Scheme proposed a dual carriageway link road. The benefits of the Modified Scheme over the SELEP were therefore that the Modified Scheme would provide greater capacity at junction 10 and allow for increased traffic movements along the A20 and A2070, whereas the SELEP Scheme simply facilitated access to the proposed Stour Park development site.

3.4.18 In August 2014, Highways England resurrected the Modified Scheme and awarded the PCF Stage 3 preliminary design to the Mott MacDonald Sweco Joint venture (MMSJV). The SELEP scheme has subsequently been

withdrawn. The proposed Stour Park development site is being processed under a separate planning application which was submitted to ABC in November 2015, as discussed further in Chapter 1 Introduction, Volume 6.1.

The Modified Scheme versus the Scheme (The Main Scheme and the Alternative Scheme)

- 3.4.19 MMSJV have reviewed and updated the URS Scott Wilson 'Modified Scheme' design as described in Sections 3.4.15 to produce the Main Scheme and the Alternative Scheme as described in Chapter 1 Introduction and Chapter 2 The Proposed Scheme, Volume 6.1.
- 3.4.20 The main differences between the MMSJV Main Scheme and the URS Scott Wilson Modified Scheme include:
- The Kingsford Street Footbridge alignment – MMSJV have amended the layout of the footbridge to reduce the span of the bridge.
 - Increased the width of the proposed footways / cycleway along the Scheme from 2m (in the Modified Scheme) to 3m (this is excluding the Kingsford Street footway which remains at 2m).
 - Minor improvements to the Barrey Road junction including a new safe crossing point and an additional left turn lane into Barrey Road from the old A2070 (there were no changes proposed to this junction in the Modified Scheme).
 - A new three-armed A2070 link road roundabout – the incorporation of a roundabout in the design allows for a more free flowing traffic movement, with fewer delays on the network at peak times and improved journey time reliability (the Modified Scheme proposed a signalised junction with Non-Motorised User (NMU) crossing points).
 - Additional improvement works to Swatfield Bridge (this was not included in the Modified Scheme).
- 3.4.21 For a full description of the MMSJV Main Scheme design refer to Chapter 2 The Proposed Scheme, Volume 6.1.
- 3.4.22 In late 2015 the Alternative Scheme was created which is as per the Main Scheme but with the addition of a roundabout. For further information on why the Alternative Scheme is required refer to Chapter 1 Introduction.
- 3.4.23 The differences between the URS Scott Wilson Modified Scheme and the MMSJV Alternative Scheme are as per the differences between the Modified Scheme and the Main Scheme above, with the addition of a roundabout for access to the Stour Park development. The incorporation of a roundabout in the design allows for a more free flowing traffic movement.
- 3.4.24 For a full description of the MMSJV Alternative Scheme design refer to Chapter 2 The Proposed Scheme, Volume 6.1.