

M3 Junction 9 Improvement

Scheme Number: TR010055

6.1 Environmental Statement Chapter 3 Assessment of Alternatives

APFP Regulation 5(2)(a)

Planning Act 2008

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

Volume 6

November 2022

Infrastructure Planning

Planning Act 2008

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

M3 Junction 9 Improvement
Development Consent Order 202[x]

6.1 ENVIRONMENTAL STATEMENT - CHAPTER 3: ASSESSMENT OF ALTERNATIVES

Regulation Number:	Regulation 5(2)(a)
Planning Inspectorate Scheme Reference:	TR010055
Application Document Reference:	6.1
BIM Document Reference:	HE551511-VFK-EGN-X_XXXX_XX-RP-LE-0003
Author:	M3 Junction 9 Improvement Project Team, National Highways

Version	Date	Status of Version
Rev 0	November 2022	Application Submission

Contents

3	Assessment of Alternatives	1
3.1	Introduction.....	1
3.2	Alternatives assessment approach.....	1
3.3	Identification of the need case.....	4
3.4	Initial options identification and assessment (2013).....	4
3.5	Options development, shortlisting and assessment (2015-2016).....	12
3.6	Non-statutory consultation (2018).....	17
3.7	Option selection and development following non-statutory consultation (2018).....	20
3.8	Preferred route announcement (2018).....	21
3.9	Design changes following non-statutory consultation (2018).....	22
3.10	Statutory consultation (2019).....	22
3.11	Design changes following statutory consultation leading to the preliminary design (2019 -2020).....	23
3.12	Changes to the preferred option in 2020.....	31
3.13	Construction compounds options.....	32
3.14	Walking, cycling and horse-riding route optioneering (2021).....	40
3.15	Design evolution in 2020/2021.....	48
3.16	Design changes following statutory consultation (2021).....	49
3.17	Design changes following ministerial announcement January 2022 ...	50

Inserts

Insert 3.1	– Option 11.....	7
Insert 3.2	– Option 14.....	8
Insert 3.3	– Option 16A.....	9
Insert 3.4	– Option 16B.....	10
Insert 3.5	– Option 18.....	11
Insert 3.6	– Scheme proposal drawing for Option 14 for the 2018 non-statutory consultation.....	19
Insert 3.7	– Option 16C.....	21
Insert 3.8	– Revised Option 14C Layout.....	25
Insert 3.9	– Potential Main Construction Compound Options.....	34
Insert 3.10	– Revised Boundary of the Main Construction Compound Post Consultation.....	40
Insert 3.11	– Existing WCH route through the gyratory.....	42
Insert 3.12	– Option 1.....	43
Insert 3.13	– Option 2A.....	44
Insert 3.14	– Option 2B.....	44
Insert 3.15	– Option 2C.....	45

Tables

Table 3.1: Potential construction environmental effects	13
Table 3.2: Potential operational environmental effects	15
Table 3.3: Solutions Summary Report Assessment Matrix.....	29
Table 3.4: Comparison of further main construction compound areas	37
Table 3.5: Matrix scoring for western WCH route options	47

Document Reference 6.3 – Environmental Statement Appendices

- Appendix 3.1 – Stage 1 Technical Appraisal Report
- Appendix 3.2 – Scheme Assessment Report
- Appendix 3.3 – Non-Motorised Users Route Options

3 Assessment of Alternatives

3.1 Introduction

3.1.1 The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (as amended) (the EIA Regulations) require that an Environmental Statement (ES) should include a description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) that have been studied by the developer which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of environmental effects.

3.1.2 Planning Inspectorate Advice Note 7 (2020) identifies that a good ES is one that (inter alia):

'...explains the reasonable alternatives considered and the reasons for the chosen option taking into account the effects of the Proposed Development on the environment'

3.1.3 This chapter presents a summary of the alternative options considered and reports the Scheme evolution which has resulted in the Scheme as presented within **Chapter 2 (The Scheme and its Surroundings)** of the **ES (Document Reference 6.1)**.

3.2 Alternatives assessment approach

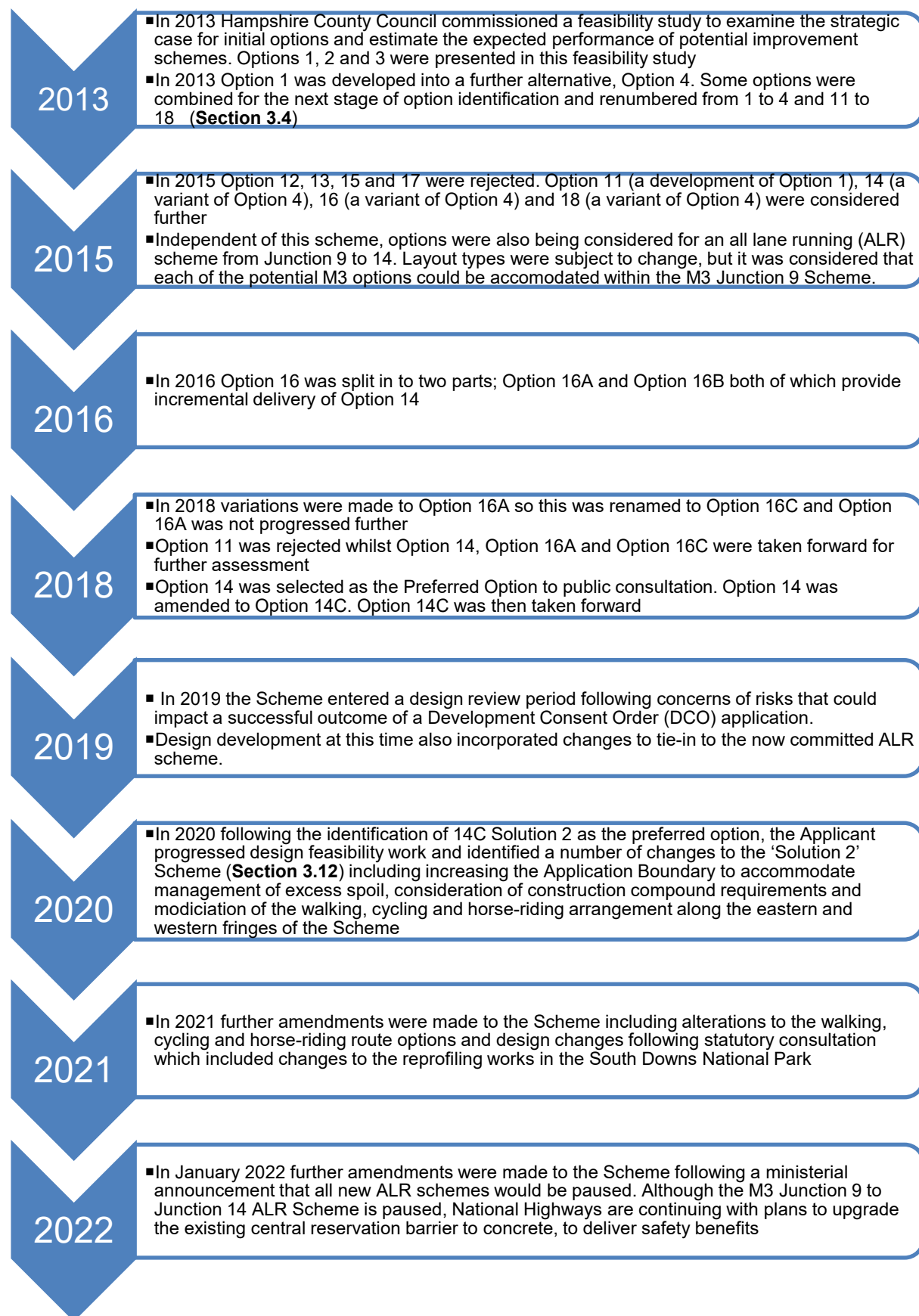
3.2.1 The assessment of alternatives has been considered in accordance with the guidance in Design Manual for Roads and Bridges (DMRB) LA 104 Environmental Assessment and Monitoring (Highways England, 2020).

3.2.2 In evaluating the relative advantages and disadvantages of each, not all alternatives have been explored to an equal level of detail. For example, some options have been appraised and eliminated from further consideration early in the design-development process, whereas other options have been retained to a much later stage in the process, having been subject to repeated analysis and refinement.

3.2.3 The Scheme has been subject to a process of staged development following identification of the need case in 2013. This has involved the identification, appraisal and evaluation of different options throughout the Applicant's Project Control Framework (PCF) process, as follows:

- Identification of the need case (2013)
- Initial options identification and assessment (2013)
- Options development, shortlisting and assessment (2015-2016)

- Non-statutory consultation (2018)
 - Option selection and development following non-statutory consultation (2018)
 - Preferred route announcement (2018)
 - Statutory consultation (2019)
 - Design changes following statutory consultation incorporating changes to tie-in to the committed ALR scheme, and leading to the preliminary design (2020)
 - Statutory consultation (2021)
 - Design changes following statutory consultation (2021)
 - Design changes following a ministerial announcement on 12 January 2022, announcing a pause to ALR schemes not yet constructed.
- 3.2.4 Owing to the length of time that the Scheme has evolved (circa eight years), there have been a number of modifications to the Scheme Strategic Objectives to reflect the focus of National Highways at various points in time and also the potential extent of the Scheme beyond the highway boundary. During the evaluation of the alternatives at the different project stages there has been reference made to performance against these Scheme Strategic Objectives. Whilst they are subtly different, they remain focused on the same principle matters e.g. supporting economic growth, ensuring a more free-flowing network but they have become more specific regarding certain environmental matters.
- 3.2.5 This chapter provides a chronology of the options considered to meet the key objectives outlined in **Section 2.3** of this ES, which is summarised as follows:



3.3 Identification of the need case

3.3.1 Further information on the need case for the Scheme is provided in **Section 2.2 Chapter 2 (The Scheme and its Surroundings)** of the **ES (Document Reference 6.1)**.

3.4 Initial options identification and assessment (2013)

3.4.1 Paragraph 4.27 of the National Policy Statement for National Networks (NPS NN) (2014) sets out that all projects should be subject to an options appraisal, which should consider viable modal alternatives and may also consider other options. However, as stated in the NPS NN *'where projects have been subject to a full options appraisal in achieving their status within Road or Rail Investment Strategies or other appropriate policies or investment plans, option testing need not be considered by the examining authority or the decision maker'*.

3.4.2 In 2013, Hampshire County Council commissioned a feasibility study to examine the strategic case for initial options and estimate the expected performance of potential improvement schemes (Atkins 2013). The report proposed and assessed nine 'packages' that were grouped into three themes, as follows:

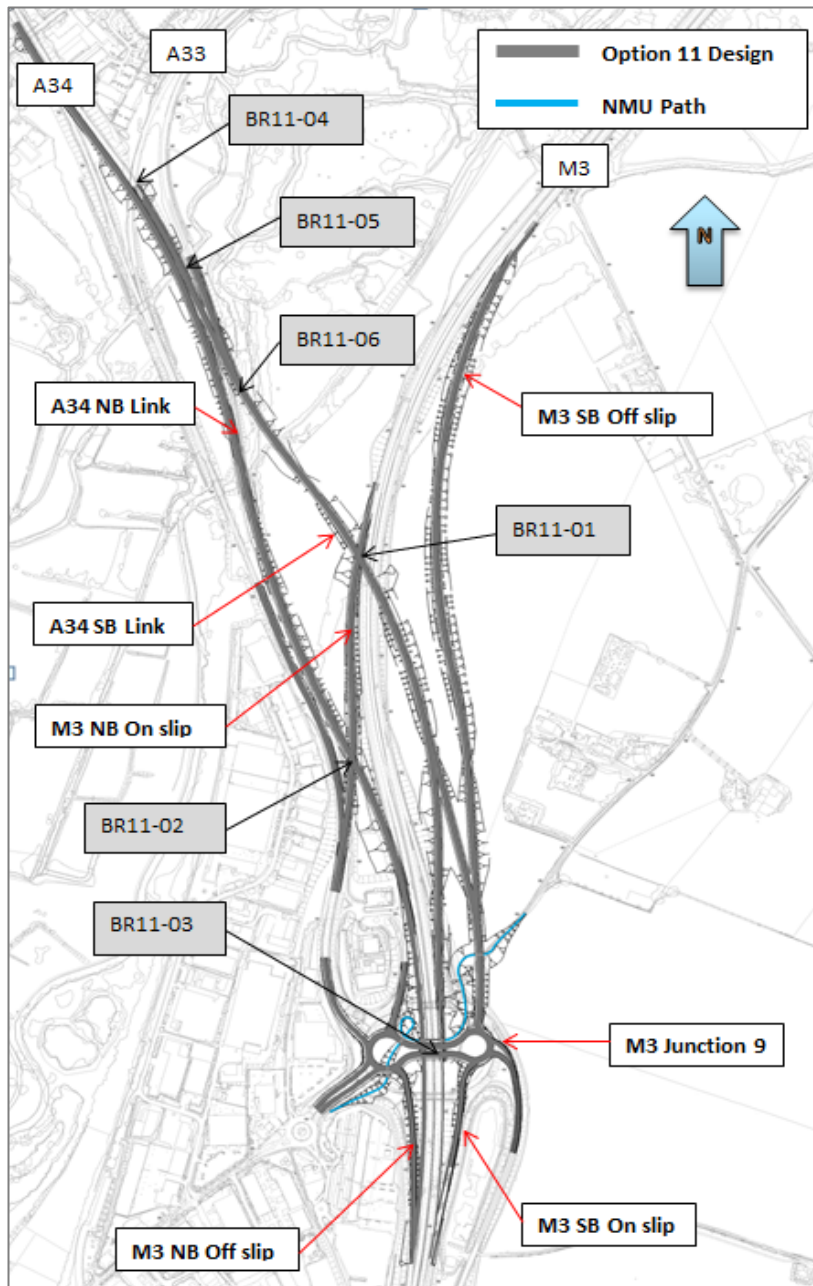
- Direct links between A34 and M3 (or A272)
 - Package 1 - Free-flow links with a loop from the A34 joining M3 north of Junction 9
 - Package 2 – Free-flow links with a loop from the A34 joining M3 north of Junction 9 with alternative north facing slip roads
 - Package 3 – Direct free-flow links from M3 to A34 and Junction 9 remodelled
 - Package 4 – Direct free-flow links from A34 to M3 south of Junction 9
 - Package 5 – Direct A34 link to A272/A31
- Improvements to M3 J9 Roundabout
 - Package 6 – Improvements to the M3 J9 roundabout
 - Package 7 – A34 link through Junction 9 (Hamburger)
- Modified access to Winchester
 - Package 8 – New access for Winchester
 - Package 9 – Revised access for Winchester

- 3.4.3 The feasibility study recommended that Package 3 which provided direct free-flow links from M3 to A34 and remodelling Junction 9 would most likely ease congestion while reducing land take.
- 3.4.4 In 2013, the Asset Support Contractor (Kier) for the area reviewed package 3 in more detail and further developed three free-flow options as below:
- Option 1 – 70mph (120km/h) speed limit (A34 free-flow link below M3, but could also be considered over M3)
 - Option 2 – 50mph (80km/h) speed limit (A34 free-flow link below M3, but could also be considered over M3)
 - Option 3 – 40mph (65km/h) speed limit (A34 free-flow link below M3, but could also be considered over M3)
- 3.4.5 National Highways developed the three options further in **Appendix 3.1 (Technical Appraisal Report)** of the **ES (Document Reference 6.3)**.
- 3.4.6 Option 1 in the report, which proposed free flow links with 70mph (120kph) design speed (A34 free-flow link below or above M3), had the potential to deliver significant journey time benefits, while relieving congestion at the junction itself. Following discussions with National Highways, it was agreed that Option 3 would not be considered further as both the 70mph (120kph) and 50 mph (80kph) speed limit options were more likely to maintain the current speed profile on existing links.
- 3.4.7 During the strategy, shaping and prioritisation stages, Option 1 70mph (120km/h) speed limit (A34 free-flow link below M3, but could also be considered over M3) was developed into a further alternative, Option 4. Option 4 made more use of existing infrastructure, such as retaining, rather than demolishing the National Highways depot, while delivering broadly similar journey time benefits.
- 3.4.8 Some options were combined for the next stage of option identification. As such, National Highways decided that the options should be renumbered to provide more clarity. As the original options were numbered 1 to 4, it was decided to renumber subsequent options 11 to 18.
- 3.4.9 The rejected options within Options 11-18 are first described below (12, 13, 15, 17) followed by Options for further consideration (11, 14, 16 and 18). The following options were rejected for further consideration due to land take, visual impact, cost issues and environmental issues:
- Option 12 – This option provided free-flow links between A34 and M3 with the A34 southbound link passing under the M3 with a 70mph (120km/h) design speed and a two-step relaxation on horizontal geometry. The A34 northbound link had a 70mph (120km/h) design speed

- Option 13 – This option provided free-flow links between A34 and M3 with the A34 southbound link passing over the M3 with a 70mph (120km/h) design speed. The A34 northbound link had a 70mph (120km/h) design speed
- Option 15 – This option provided free-flow links between A34 and M3 with the A34 southbound link passing over the M3 with an 53mph (85km/h) design speed and a two-step relaxation on horizontal geometry. The A34 northbound link had a 70mph (120km/h) design speed
- Option 17 – This option provided free-flowing links with a 75m loop for the A34 southbound link under the M3. The A34 northbound link had a 70mph (120km/h) design speed

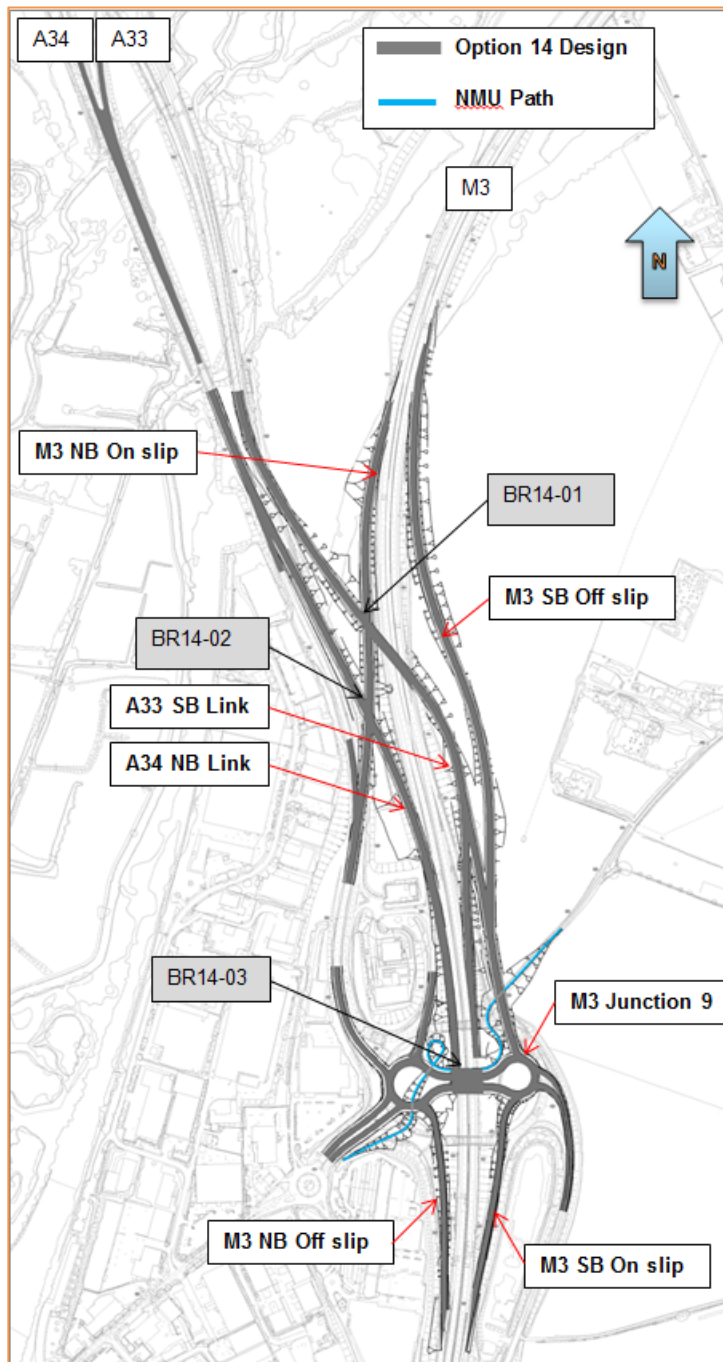
3.4.10 The developing Scheme was then progressed into the option identification stage. During the early part of the option identification stage, five options were short listed for further consideration:

- Option 11 (Insert 3.1 – note SB is southbound, NB is northbound and BR is bridge) – A development of Option 1 to include south-facing Junction 9 slip roads, retain National Highways depot and remove sweeping A33 southbound link to retain existing merge. This option provided free-flow links between A34 and M3 with the A34 southbound link passing under the M3 with a 70mph (120km/h) design speed. The A34 northbound link also had a 70mph (120km/h) design speed. Junction 9 was proposed to be rebuilt with a dumbbell roundabout layout.



Insert 3.1 – Option 11

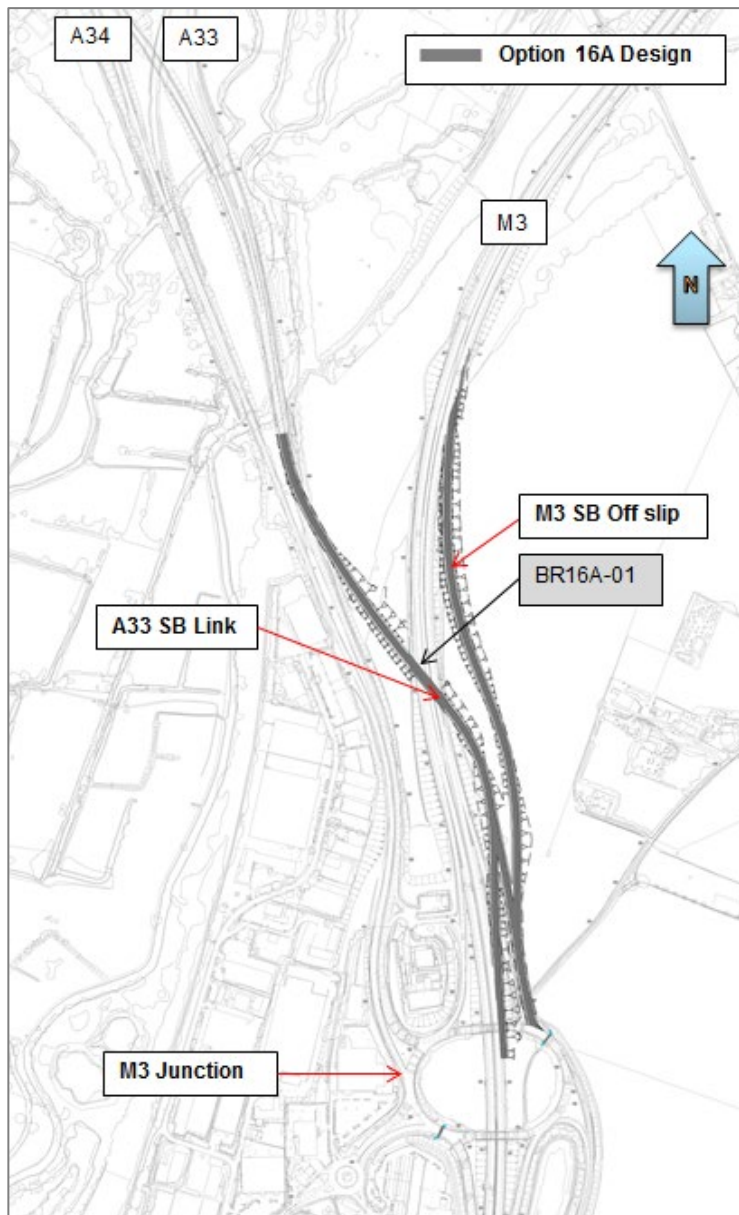
- Option 14 (**Insert 3.2**) – A variant of Option 4 (as set out in **Paragraph 3.4.7**) provided free-flow links between A34 and M3 with the A34 southbound link passing under the M3, a 60mph (100km/h) design speed and a three-step relaxation on horizontal geometry. The A34 northbound link had a 70mph (120km/h) design speed. Junction 9 was proposed to be rebuilt with a dumbbell roundabout layout.



Insert 3.2 – Option 14

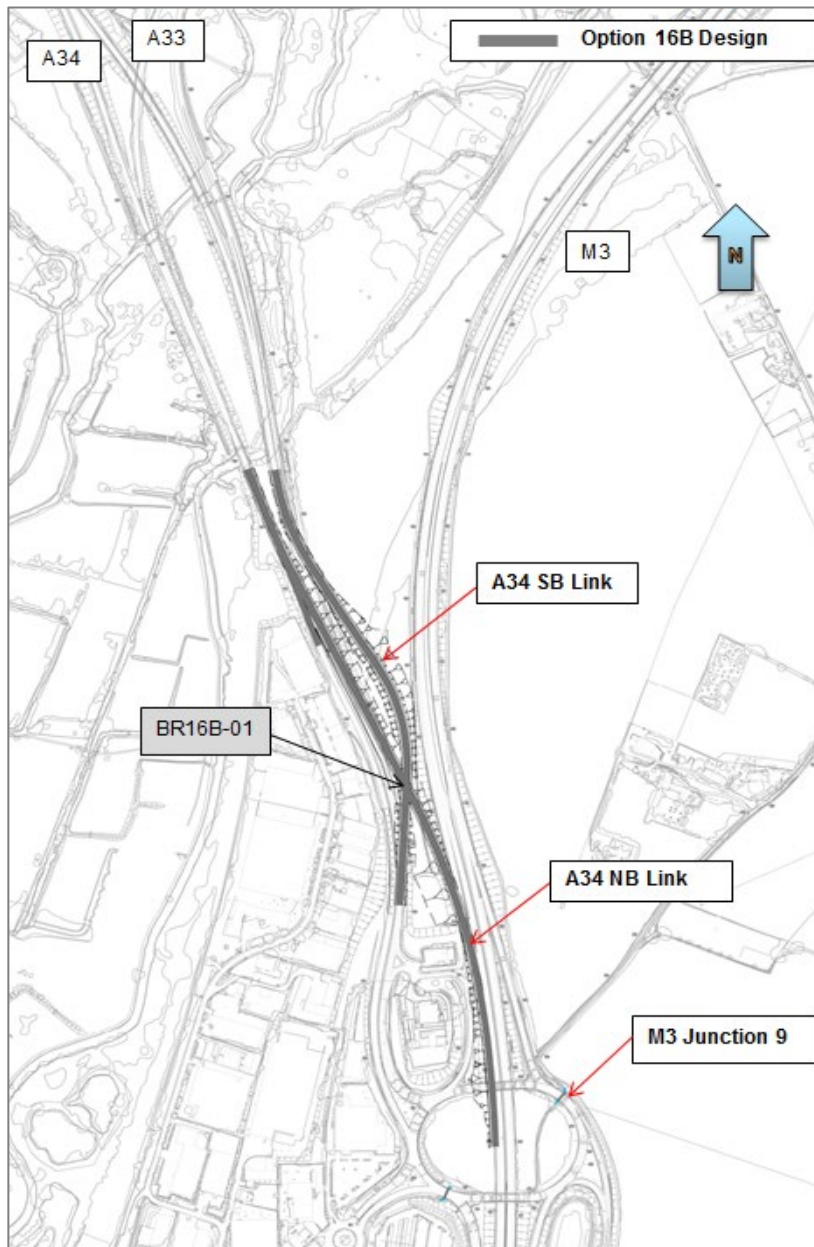
- Option 16A (**Insert 3.3**) – A variant of Option 4 (as set out in **Paragraph 3.4.7**) provided incremental delivery of Option 14. This provided a free-flow for the A34 southbound with a 60mph (100km/h) design speed and a three-step relaxation on horizontal geometry. The northbound A34 was still proposed to use the existing A34 through the Junction 9 roundabout. This option was considered to facilitate potential Scheme capital costs within the affordable budgets of the Road Investment Strategy (RIS) (2015-2020). Option 16A was produced as a possible first stage of the incremental delivery of Option 14, which would then theoretically be

followed by a second stage to complete the construction of a scheme comparable to Option 14.



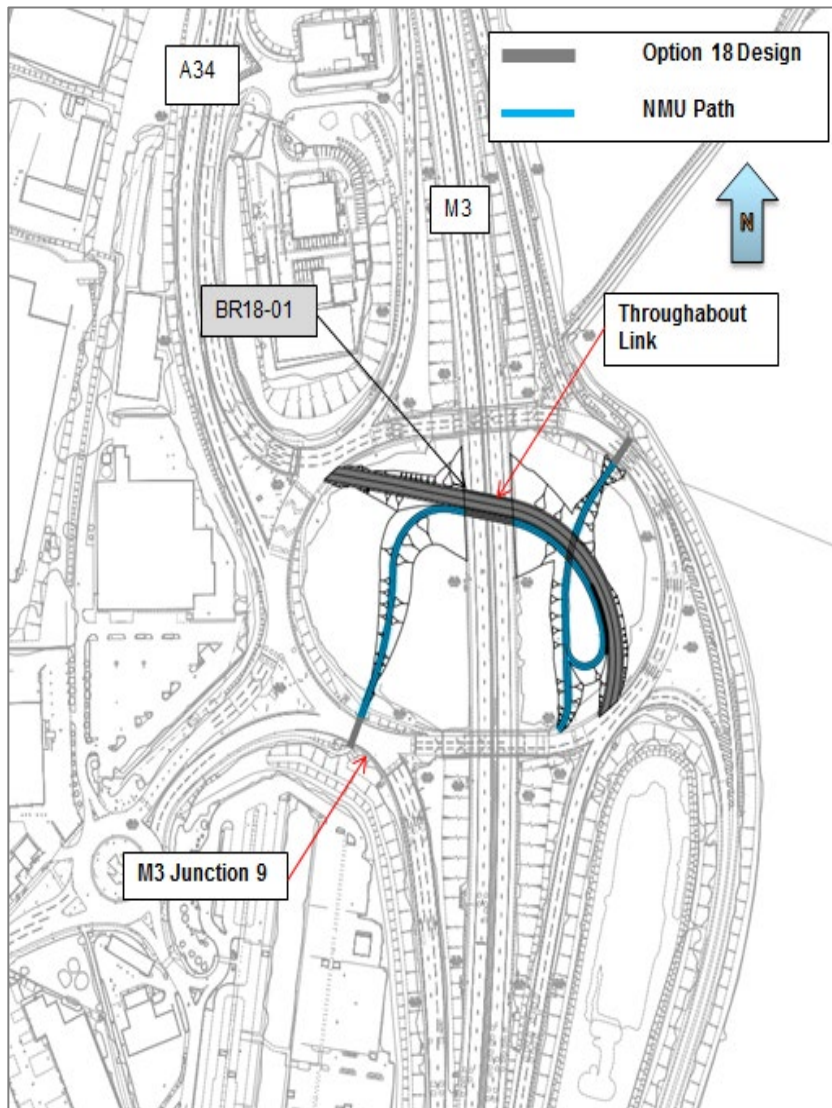
Insert 3.3 – Option 16A

- Option 16B (**Insert 3.4**) – A variant of Option 4 (as set out in **Paragraph 3.4.7**) providing incremental delivery of Option 14. This provided a free-flow for the A34 northbound, which had a 70mph (120km/h) design speed. The southbound A34 was still proposed to use the existing A34 through the Junction 9 roundabout. This option was considered to facilitate potential scheme capital costs within the budgets of the RIS2. Option 16B was also produced as a possible first stage of the incremental delivery of Option 14 which would then theoretically be followed by a second stage to complete the construction of a scheme comparable to Option 14.



Insert 3.4 – Option 16B

- Option 18 (**Insert 3.5**) – Originally derived from Option 1 (as set out in **Paragraph 3.4.7**) provided a ‘throughabout’ (a type of road junction where a major road passes through a roundabout) at M3 Junction 9 (do-minimum design) with a 40mph (70km/h) design speed. This option was developed to consider a reduced cost option of converting the current Junction 9 roundabout to a throughabout. This option was considered to facilitate potential scheme capital costs within the affordable budgets of the RIS (2015-2020) and had no impact on the South Downs National Park.



Insert 3.5 – Option 18

3.4.11 Option 12, 13, 15 and 17 were considered during the strategy, shaping and prioritisation stages but ultimately rejected for further consideration due to land take, visual impact, cost inefficiencies and environmental issues.

3.4.12 Further detail is provided on the rejected Options 12, 13, 15 and 17 in **Appendix 3.1 (Technical Appraisal Report)** of the **ES (Document Reference 6.3)**. Option 12 was rejected because the alignment of the A34 southbound to M3 link still diverged from its current alignment before the River Itchen as in Option 11, meaning a new bridge would still be required. Therefore, it did not reduce structural and land take costs, still impacted the River Itchen flood plain and the visual impact remained similar to Option 11.

3.4.13 Similarly, Option 13 required a new bridge which would span the M3 (rather than being routed underneath) which would require a 22m high viaduct. This was considered to result in significant landscape and visual impacts, buildability issues and increased land take requirements; therefore, Option 13 was rejected.

3.4.14 Option 15 followed the same general alignment as Option 14 but spanned the M3 (rather than being routed underneath) which would also require a 22m high viaduct. It was considered to result in significant visual impacts, buildability issues and increased land take requirements. It also required the southbound link to take a wider curve alignment than Option 14, therefore increasing land take and increasing landscape and visual impacts compared with Option 14 and was therefore rejected.

3.4.15 Option 17 was rejected due to large visual impact and land take costs as well as requiring significant land take within the South Downs National Park compared with Option 11, 12, 13, 14 and 15.

3.5 Options development, shortlisting and assessment (2015-2016)

3.5.1 **Appendix 3.1 (Technical Appraisal Report)** of the **ES (Document Reference 6.3)** outlined five options which were considered and assessed in further detail in relation to planning factors, traffic analysis, economic assessment, safety assessment and environmental assessment (Options 11, 14, 16A, 16B and 18, as identified in **Paragraph 3.4.10** above).

3.5.2 **Appendix 3.1 (Technical Appraisal Report)** of the **ES (Document Reference 6.3)** summarised the effects identified within the Environmental Study Report (ESR) (WSP, 2016). The ESR was prepared to inform the selection and development of scheme options and provide an overview of the environmental constraints for the Scheme, and the potential environmental benefits associated with the Scheme options. The report presented the findings of the high-level environmental assessment and provided a comparison of each of the options related to air quality, cultural heritage, landscape (and arboriculture), nature conservation, geology and soils, materials, noise and vibration, people and communities and road drainage and the environment. A summary of the conclusions of the ESR and the TAR (**Appendix 3.1 (Technical Appraisal Report)** of the **ES (Document Reference 6.3)**) are set out below.

Consideration of environmental effects from options 11, 14, 16A, 16B and 18

3.5.3 The receptors and the environmental effects of the options not rejected above are summarised in **Appendix 3.1 (Technical Appraisal Report)** of the **ES (Document Reference 6.3)** for both construction and operation within each topic section of the report. **Table 3.1** and **Table 3.2** (taken from the TAR) summarise the most significant effects for each topic. Further detail on the methodology for these effects is set out in **Appendix 3.1 (Technical Appraisal Report)** of the **ES (Document Reference 6.3)**.

Table 3.1: Potential construction environmental effects

DMRB Topic	Option 11	Option 14	Option 16A	Option 16B	Option 18
Air Quality	Slight Adverse	Slight Adverse	Slight Adverse	Slight Adverse	Slight Adverse
Cultural Heritage	Very Large Adverse	Moderate Adverse	Moderate Adverse	Moderate Adverse	Neutral
Landscape	Slight Adverse	Slight Adverse	Slight Adverse	Slight Adverse	Slight Adverse
Nature Conservation	Large Adverse	Moderate Adverse	Moderate Adverse	Moderate Adverse	Slight Adverse
Geology and Soils	Large Adverse	Moderate Adverse	Moderate Adverse	Moderate Adverse	Slight Adverse
Materials	Large Adverse	Moderate Adverse	Moderate Adverse	Moderate Adverse	Slight Adverse
Noise and Vibration	Slight Adverse	Slight Adverse	Slight Adverse	Slight Adverse	Slight Adverse
People and Communities	Slight Adverse	Slight Adverse	Slight Adverse	Slight Adverse	Slight Adverse
Road Drainage and Water Environment	Large Adverse	Large Adverse	Large Adverse	Large Adverse	Large Adverse

3.5.4 The most significant construction effects were associated with Option 11 due to its larger construction footprint and crossing of the River Itchen. This option had the potential to have large (or very large) adverse construction effects in relation to the following topics:

- Cultural Heritage - due to the potential for a significant effect on nationally significant water meadows as well as direct physical effects on known and previously unrecorded buried archaeology and earthworks
- Nature Conservation - which would require the removal of semi-natural habitat, is in close proximity to (and hydraulically connected to) the River Itchen Special Area of Conservation (SAC) and Site of Special Scientific Interest (SSSI) and include land take from Easton Down Site of Importance for Nature Conservation (SINC) and Easton Lane Road Verges of Ecological Importance (RVEI)

- Geology and Soils - due to the extent of the earthworks and the requirement for works within the River Itchen
- Materials - due to the extent of the works required
- Road Drainage and the Water Environment (for all options) - as there was potential to increase the risk of surface water and groundwater pollution as well as increasing flood risk. This was particularly the case for Option 11 due to the scale of works and the crossing of the River Itchen in three locations

3.5.5 It was considered that there was the potential for Option 14, 16A and 16B to have a moderate adverse or large adverse construction effect in relation to the following topics:

- Cultural Heritage due to the potential for direct physical effects on known and previously unrecorded buried archaeology and earthworks
- Nature Conservation which would require the removal of semi-natural habitat; in close proximity to the River Itchen SAC and SSSI and includes land take from Easton Lane RVEI for Option 14 and 16A
- Geology and Soils due to their reduced scale in comparison with Option 11. However, they still had the potential to affect groundwater in relation to soils from elevated concentrations of contaminants based on current and historic land use and the potential for the mobilisation of soil/sediment, both natural and potentially contaminated which could affect surface waters
- Road Drainage and the Water Environment. The other options did not cross the river; however, Option 14 was anticipated to have the next greatest potential for adverse effects after Option 11 as it would involve the next greatest extent of works, followed by Options 16A, 16B and 18 due to their respective sizes
- Materials due to a reduced scale in comparison with Option 11 but still of significant extent

3.5.6 Potential construction effects were not considered to differ significantly between the five options for several topics, namely: Air Quality; Landscape; Noise and Vibration; and People and Communities as it was considered that there was marginal difference between the effects of each option in relation to these topics.

3.5.7 **Table 3.2** sets out the potential operational environmental effects associated with each option. The receptors and the environmental effects of the options not rejected above were summarised in **Appendix 3.1 (Technical Appraisal Report)** of the **ES (Document Reference 6.3)** for operation within each topic section.

Table 3.2: Potential operational environmental effects

DMRB Topic	Option 11	Option 14	Option 16A	Option 16B	Option 18
Air Quality	Slight Beneficial	Slight Beneficial	Slight Beneficial	Slight Beneficial	Slight Beneficial
Cultural Heritage	Neutral	Neutral	Neutral	Neutral	Neutral
Landscape	Slight Adverse	Slight Adverse	Slight Adverse	Slight Adverse	Neutral
Nature Conservation	Very Large Adverse	Slight Adverse	Slight Adverse	Slight Adverse	Slight Adverse
Geology and Soils	Moderate Adverse	Moderate Adverse	Moderate Adverse	Moderate Adverse	Moderate Adverse
Materials	Neutral	Neutral	Neutral	Neutral	Neutral
Noise and Vibration	Slight Adverse	Slight Adverse	Slight Adverse	Neutral	Neutral
People and Communities	Slight Adverse	Slight Adverse	Slight Adverse	Slight Adverse	Slight Adverse
Road Drainage and Water Environment	Very Large Adverse	Very Large Adverse	Very Large Adverse	Very Large Adverse	Large Adverse

3.5.8 Option 11 was considered to have the potential to have a very large adverse operational effect on Nature Conservation which would require land take from Easton Down SINC and bring traffic closer to the SINC.

3.5.9 There was also potential for very large adverse operational effects on Road Drainage and the Water Environment for all options due to the potential for an increase in the deposition of pollutants that may be transferred to the water environment via the highway drainage system. In addition, works for Option 11 would be in areas of fluvial flood risk and would potentially include works that may impact on the flow of the River Itchen.

3.5.10 There was the potential to have a moderate adverse operational effect for all options on Geology and Soils for groundwater in relation to soils from elevated concentrations of contaminants based on current and historic land use.

3.5.11 Potential operational effects were not expected to differ significantly between the five options for several topics, namely: Air Quality; Cultural Heritage; Materials; and People and Communities as there would likely be a marginal difference between the effects of each option in relation to these topics.

3.5.12 In consideration of all environmental topics, Option 18 was considered likely to have the least adverse effect overall during both construction and operation followed by 16B, 16A, 14 and 11 due to the extent of each option and the proximity of sensitive receptors. However, it should be noted that Options 16B, 16A, and 14 were ranked very similarly in the environmental appraisal given the similarities in their design.

3.5.13 In terms of buildability, which factored into the option selection process, the options were all designed to maximise offline construction thereby improving the safety to construction workers and reducing the complexity of the interfaces with traffic under traffic management. Examples of this include:

- Option 11 and 14 – the A34 alignments were designed to allow the bridges to be built offline as well as a majority of the proposed new link roads. The design of the proposed Junction 9 dumbbell roundabout allowed construction mostly offline allowing the existing roundabout to remain unaffected for a majority of the construction period
- Option 16A – the A34 southbound meets the M3 as a one lane merge and one lane gain to allow this option to be built without effecting the existing Junction 9 bridges and roundabout. This therefore reduced the need for Temporary Traffic Management during construction at the existing Junction 9 roundabout
- Option 16B – the A34 northbound diverges from the M3 as a one lane diverge and one lane drop to allow this option to be built without effecting the existing Junction 9 bridges and roundabout. This therefore reduced the need for temporary traffic measures during construction at the existing Junction 9
- Option 18 - The design of the proposed Junction 9 throughabout allowed construction mostly offline thereby reduced construction effects on the existing roundabout

3.5.14 **Appendix 3.1 (Technical Appraisal Report)** of the **ES (Document Reference 6.3)** summarised that of the two options that fully met the Scheme objectives (see Chapter 3 of the Technical Appraisal Report) (Options 11 and 14), Option 14 should be taken forward for further development as it was the option that had lower environmental effects, lower costs and higher benefit-to-cost ratio (BCR) in comparison to Option 11. It was also considered likely to be safer than Option 11 as the proposed horizontal curve and speed limit was similar to the existing A34 approach to Junction 9 and was of a similar standard to other motorway to motorway links on the local network.

3.5.15 **Appendix 3.1 (Technical Appraisal Report)** of the **ES (Document Reference 6.3)** also recommended that both Option 16A and 16B should be taken forward for further development, having achieved a 'Medium' and 'High' Value for Money (VfM) category respectively and due to the high likelihood of the BCR, and therefore VfM, increasing even more with further design and cost refinement. These options individually were financially viable, however did not fully comply

with the Scheme objectives. Option 16A and Option 16B were considered only partially compatible with the Scheme objectives as they each only provided free flowing links in one direction. However, they were taken forward to facilitate the incremental delivery of Option 14 in two or more phases in a financially viable way.

3.5.16 Option 11 was discounted due to its significant adverse environmental effects (particularly on the River Itchen), high cost and a low BCR compared to other options. Option 18 was discounted as it was not compliant with the RIS1 objectives for providing free-flowing links from the A34 to the M3. Option 18 had the second highest BCR but was also unlikely to have a significant effect on congestion and queueing traffic on the A34 and M3 which was a key Scheme objective. It was also considered likely to make queueing worse on the A272 Spitfire Link and Easton Lane. Therefore, Options 11 and 18 were not taken forward to public consultation or further detailed design.

3.6 Non-statutory consultation (2018)

3.6.1 In January to February 2018 non-statutory consultation was undertaken which presented the proposed option (Option 14). This was because there was clear evidence that Option 14 was more efficient and cost effective to build in one phase rather than the two phases of Option 16B. Views were sought on the preferred Option 14. The 2018 Consultation Brochure is included in the **Consultation Report (Document Reference 5.1)**.

3.6.2 The rejected options presented in the consultation brochure (Highways England, 2018) alongside Option 14 were Option 11, Option 18 and Option 16, as stated above. Option 16, a variation of Option 14 which would involve incremental delivery in two phases, was rejected on the grounds that it would not significantly reduce the identified construction impacts.

3.6.3 During this consultation a number of environmental and design constraints were considered including South Downs National Park, localised Flood Zones, listed buildings, heritage assets, SSSIs, noise important areas, historic landfills, public rights of way, Air Quality Management Areas (AQMAs) and SACs.

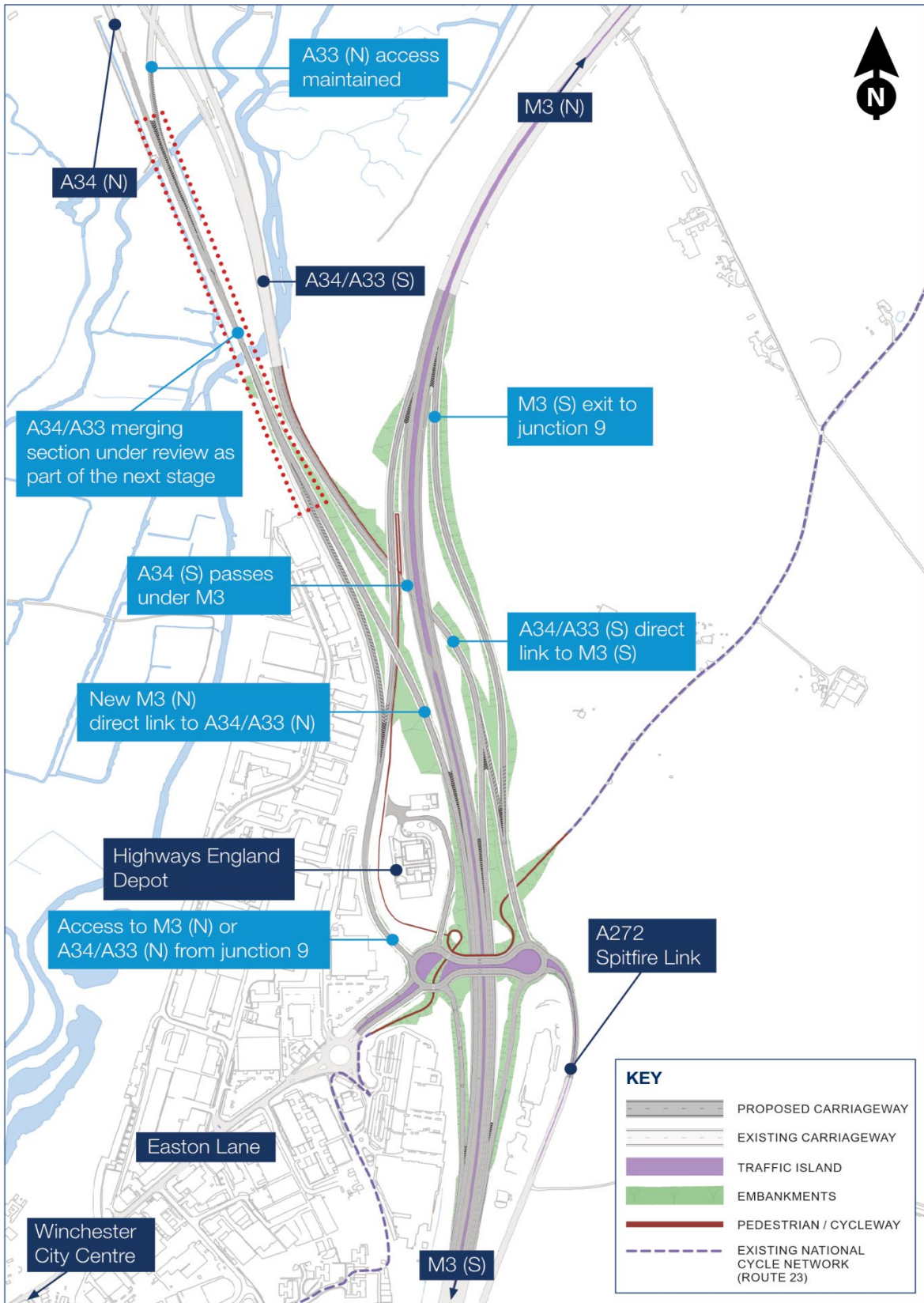
3.6.4 The following receptors were considered in the consultation brochure:

- Residents and community
- Landscape
- Geology and soils
- Cultural heritage
- Water environment and flooding
- Safety and effects on travellers

- Nature conservation

3.6.5 Key findings and feedback from the non-statutory options consultation (WSP, 2018) were as follows:

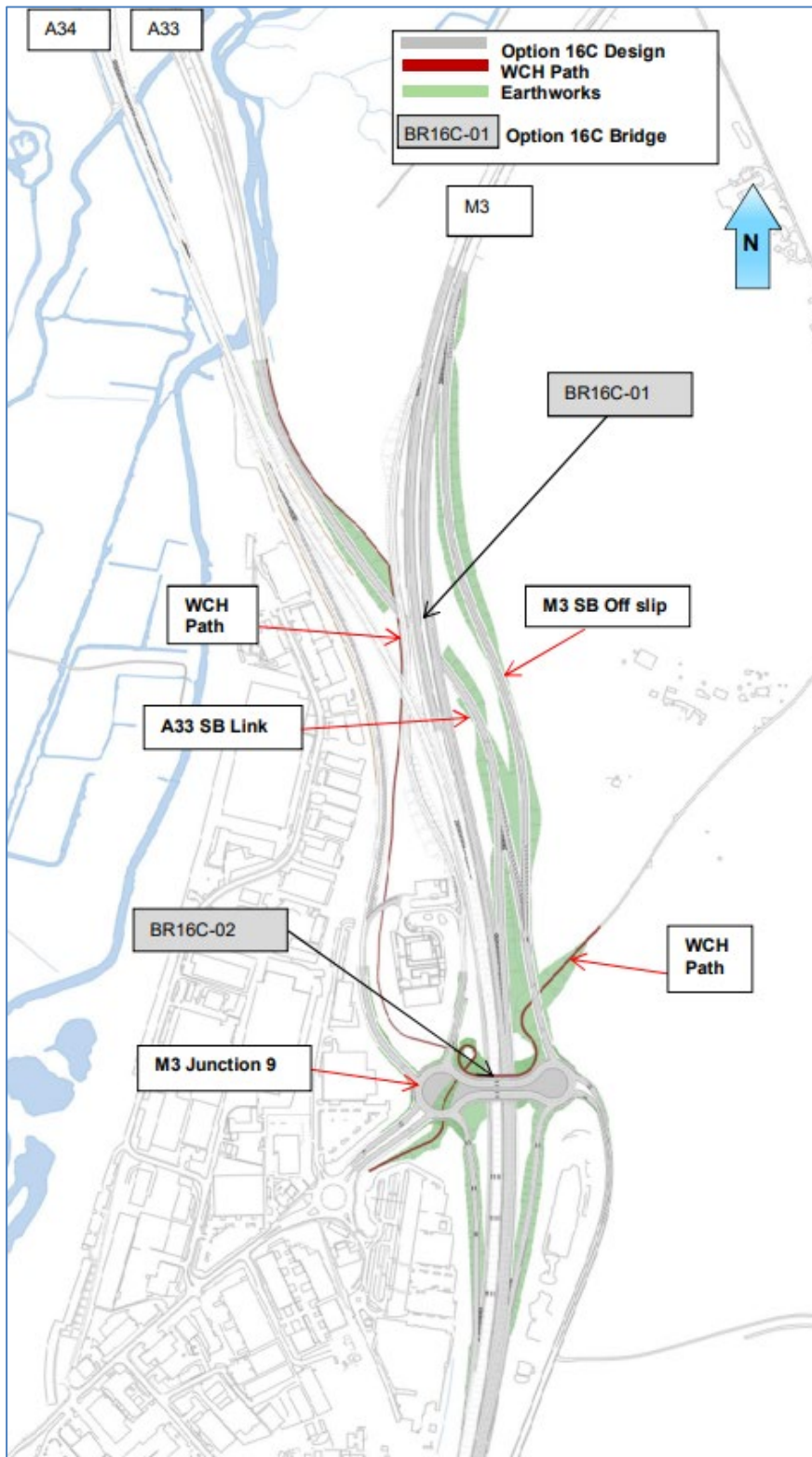
- Access from junction 9 to the A33 – Residents were concerned about the short distance available for them to merge onto the A34 and the safety associated with moving across a lane in order to use the offside diverge to the A33
- A34 southbound – the weaving between the access from the A34 southbound to junction 9 and the M3 southbound off-slip was perceived to be short and should be increased
- Easton Lane to the A34/M3 northbound slip road – Several members of the public suggested a dedicated free flow lane from Easton Lane to the A34/M3 northbound slip road due to the high proportion of HGV's accessing the trading estates on Easton Lane from the M3 and A34
- A34/A33 merging concerns (see red highlighted box on the proposal drawing (**Insert 3.6**)) – The weaving between the access from the A34/A33 northbound from junction 9 and the A34/A33 traffic from the new M3 northbound off-slip was perceived to be a major safety concern for road users travelling between junction 9 and the A33
- Junction 9 Walking Cycling and Horse-riding path – A 4m wide path was preferred to allow for future growth in numbers of cyclists. The path was considered to be segregated from the junction 9 carriageway. A hard barrier was considered to be required between the WCH path and road traffic
- Junction 9 to River Itchen footpath – The footpath, although an improvement on the existing, was recommended to be made cycleway compliant and extended to the Cart and Horses junction on the A33. The design was recommended as needing to accommodate cyclists, providing sufficient visibility of on-coming cyclists and pedestrians



Insert 3.6 – Scheme proposal drawing for Option 14 for the 2018 non-statutory consultation

3.7 Option selection and development following non-statutory consultation (2018)

- 3.7.1 The developing Scheme (Option 14) then progressed into the next stages of design, which included assessing options in more detail, referred to herein as the 'option selection stage' and 'option selection assessment'. An Environmental Assessment Report (EAR) (WSP, 2018) was drafted at this stage. The EAR was prepared to inform the selection and development of Scheme options. It provided an overview of the environmental constraints in the Scheme area and the potential environmental benefits associated with the Scheme options. The sections below detail the findings of the EAR.
- 3.7.2 It was assumed that Option 16A could potentially be built before Option 16B. The variation to Option 16A was named Option 16C to distinguish from the original Option 16A. Option 16C (**Insert 3.7**) was instead progressed and Option 16A was not progressed further. A comparison of environmental effects is provided within each topic chapter of the EAR in relation to Option 14, 16B and 16C for Air Quality, Cultural Heritage, Landscape, Biodiversity, Geology and Soils, Materials and Waste, Noise and Vibration, People and Communities, Road Drainage and the Water Environment and Climate.
- 3.7.3 Highway England's Investment Decision Committee decided that Option 14 should progress to the option selection assessment stage because it fully met the Scheme objectives and whilst it had similar adverse effects to the other options, it provided walking, cycling and horse-riding benefits sooner.



Insert 3.7 – Option 16C

3.8 Preferred route announcement (2018)

3.8.1 After non-statutory consultation was undertaken in 2018, the PRA was made in July 2018. Option 14 was selected as the Preferred Route. In general, during

the consultation there was agreement that there was a need to improve the junction and the reasons for rejecting the other options was understood. The non-statutory consultation highlighted the need for further design development to be carried out to address the A34/A33 merging concerns.

3.8.2 As a result of the consultation process undertaken in 2018, further concerns were raised which resulted in the requirement to reconsider the design of the Proposed Development. Concerns related to:

- Disruption during construction, both for motorists and cyclists
- Local stakeholder perception
- Environmental impacts
- Traffic capacity
- Operational safety
- Land take from the South Downs National Park

3.9 Design changes following non-statutory consultation (2018)

3.9.1 A Scheme Assessment Report (SAR) (WSP, 2018) was prepared subsequent to the non-statutory consultation (**Appendix 3.2 (Scheme Assessment Report) of the ES (Document Reference 6.3)**). The purpose of the SAR was to provide a recommended route to be progressed to Preliminary Design by providing a consolidated summary to date of the planning factors, do nothing consequences, alternative schemes, traffic, economics and cost, operational assessment, technology and maintenance assessment, environmental assessment and environmental design and public consultation. The report focused on Option 14 with comparisons to Option 16B and Option 16C as the delivery of Option 14 requires the incremental delivery of Option 16B and Option 16C. No other options were reviewed in this report.

3.9.2 Appendix H of the SAR provides three individual summary tables for Option 14, Option 16B and Option 16C, which summarise the findings of the EAR. The findings of the EAR have been provided in **Section 3.7 of the ES (Document Reference 6.1)**.

3.9.3 The SAR concluded that Option 14 was the recommended route as although it had the same land take as Option 16B and Option 16C it had a shorter construction duration, lower costs and a higher BCR. Option 14 also fully met the Scheme objectives whereas Option 16B and Option 16C only partially met the Scheme objectives.

3.10 Statutory consultation (2019)

3.10.1 The Public Consultation Summary Report (Jacobs 2020) summarised that some respondents were supportive of the Scheme on the grounds that improvements

to the junction would reduce congestion, thereby helping to address existing environmental issues at the junction, especially air pollution, noise and carbon emissions. Concerns were also expressed that increasing the capacity of the junction and the M3 would increase the speed and volume of traffic through the junction, which would worsen these impacts.

3.10.2 The issues highlighted by the non-statutory consultation helped shape the objectives for the next stage of design and ongoing engagement. Preliminary design focused on addressing the safety of the Scheme with specific focus on the safety concerns around the A34/A33 weaving length.

3.10.3 The purpose of the consultation was to present Option 14 to, and receive feedback from, stakeholders and the local community, including the changes and updates to the design developed since the PRA and the three main areas for improvement that were identified, as follows:

- Safety concerns in relation to merging the A34 and A33, particularly the weaving length (the time drivers have in which to change lanes) when travelling from junction 9 to the A33
- The width of the shared surface path across the junction for walkers and cyclists and the need for this to be separated from the road by a security barrier
- Junction 9 to River Itchen footpath to be made cycleway compliant and extended to the Cart and Horses junction on the A33

3.10.4 A series of workshops and meetings were held with statutory environmental bodies (including local authorities, the Environment Agency, South Downs National Park Authority (South Downs National Park Authority), Historic England and Natural England) to gather feedback and discuss the potential environmental impacts of the Scheme and how best to reduce them.

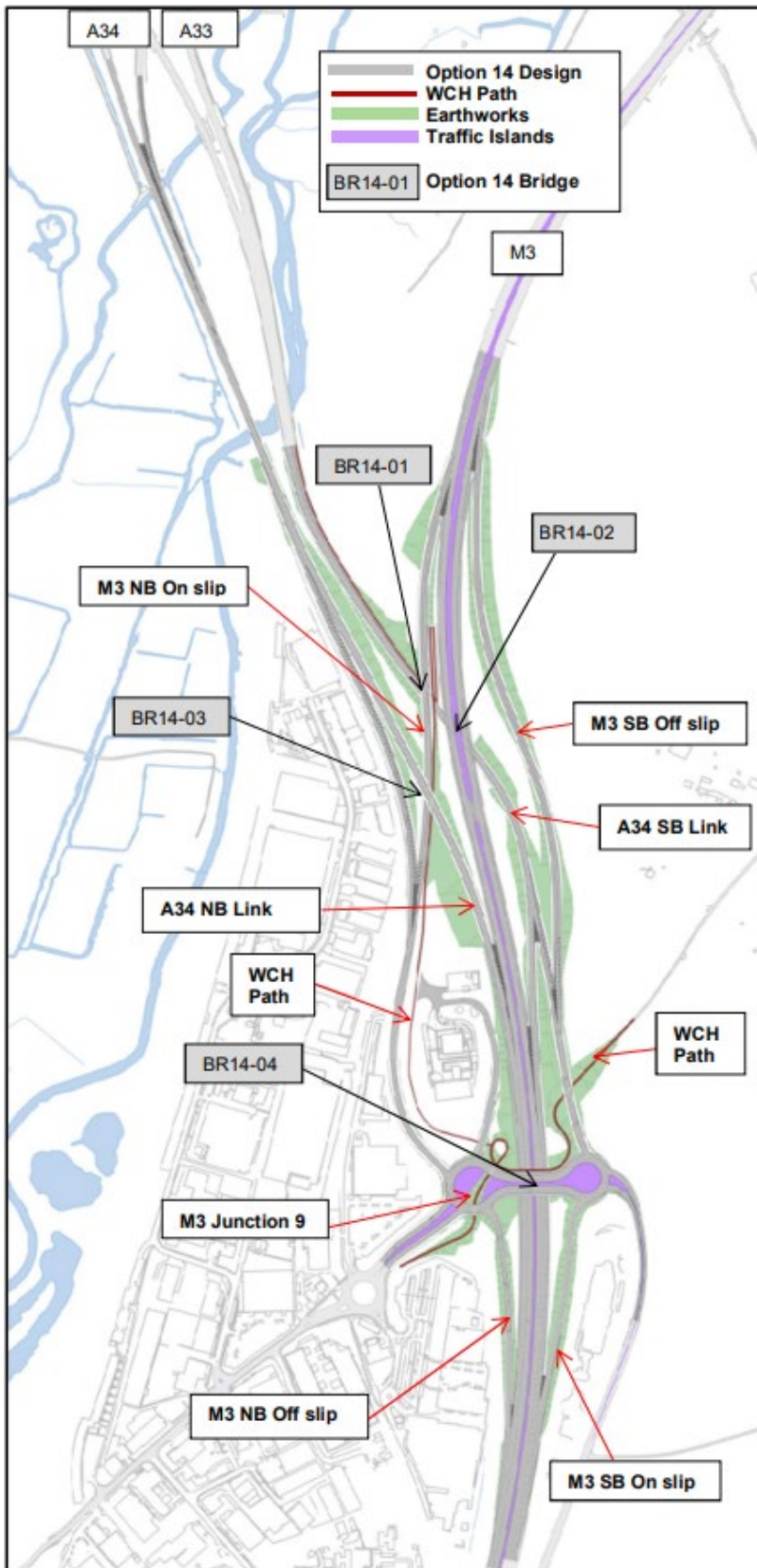
3.10.5 The comments received during the consultation and the Applicant's regard to the responses at that time are summarised in **Section 9** and **Appendix K** of the **Consultation Report (Document Reference 5.1)**.

3.11 Design changes following statutory consultation leading to the preliminary design (2019 -2020)

3.11.1 In August 2019 the Scheme entered a design review period following concerns of risks that could impact a successful outcome of a Development Consent Order (DCO) application. The key issues impacting the Scheme were local stakeholder safety perception concerns, traffic capacity and operational safety. This report provided consideration as to how the option presented at consultation could be refined. During this time design development also considered changes to accommodate (or tie-in to) the M3 Junction 9 to Junction 14 all lane running (ALR) scheme.

3.11.2 A report considering 'solutions' to the concerns raised was prepared by Jacobs in May 2020. Following on from the PRA the design was based on the preferred option from option selection (Option 14). Of all the options considered at this stage, Option 14 had the best VfM.

3.11.3 The PRA Option, Option 14 had a number of buildability concerns primarily due to the large embankment that was proposed to be located directly over the existing A34 with no viable alternative route for north bound A34 traffic. The embankment was proposed to be up to 10m high, requiring approximately 80,000m³ of fill material and would require significant temporary works, traffic management and earthworks operation, all of which extended the construction programme. In addition to this, Bridge number 3 (BRI14-03) would first require the completion of Bridge number 2 (BRI14-02) (as shown on Insert 3.8) in order to allow diversion of south bound A34 traffic, which also leads to extended construction phasing.



Insert 3.8 – Revised Option 14C Layout

3.11.4 The creation of Option 14C during this stage removed these buildability issues by introducing the following changes to the Scheme:

- The north bound A34 and Bridge number 3 (BR14-03) were re-aligned further north and were located offline which provides flexibility in the programme and removes these works from the critical path as well as reducing the amount of temporary works and online working
- Bridge number 3 (BR14-03) was inverted so that the M3 north bound on-slip went over the proposed north bound A34. By inverting the bridge, the large amount of fill required for the embankment works is replaced with a small cut which reduces the amount of cut and fill required to facilitate the Scheme
- By inverting Bridge number 3 (BR14-03) it was anticipated that a closure of the M3 north bound on-slip would be required. However, the traffic flows are relatively low on this on-slip and a suitable diversion is available
- The M3 north bound on-slip is re-aligned closer to the M3 reducing the length of Bridge number 2 (BR14-02)
- The south bound A34 and Bridge number 2 (BR14-02) are also slightly re-aligned to accommodate the new A34 north bound alignment

3.11.5 Three areas of concern were identified; compliance with the NN NPS, perceived severance and issues raised during consultation. Option 14C provided the following modifications to address NN NPS, capacity and safety concerns raised:

- Traffic between the M3 to/from Southampton and the A33/A34 to/from Basingstoke and Newbury to be taken out of the roundabout junction by providing free-flow grade separated links
- Widening of the M3 from Dual 2 Lane Motorway (D2M) to Dual 4 Lane Motorway (D4M) between the south-facing roundabout slips and the new free-flow links
- A smaller grade-separated dumbbell roundabout arrangement within the footprint of the existing roundabout, incorporating a new bridge connection over the M3 including WCH facilities
- New WCH subways through the junction providing a continuous grade-separated route between the South Downs National Park, Winnall and Abbots Worthy
- Connector roads from the new free-flow links to the new dumbbell roundabout
- Improved slips to/from M3 and new dumbbell roundabout

3.11.6 Four 'solutions', all of which were variations of Option 14C, were assessed against criteria aligned with the Department for Transport's Early Assessment and Sifting Tool (EAST) (Jacobs 2020).

Solution 1

3.11.7 Solution 1 was developed with three alterations to Option 14C consulted on in 2019, as follows:

- Single two-lane carriageway between the M3 J9 and the proposed A33 roundabout, where the road changes to one-way traffic from the proposed A33 roundabout to the M3 northbound merge
- Extension of the weaving distance by 35m from 235m to 270m to increase safety
- The M3 southbound diverge was shortened by 100m to reduce the volume of associated earthworks within South Downs National Park

3.11.8 However, Solution 1 was discounted early in the assessment process because primary traffic results indicated that the solution would not resolve the key issue identified in relation to traffic capacity (relating to insufficient capacity on the approach to the junction 9 roundabout and the capacity of the roundabout itself) which would be likely to impact the operational safety of the junction

Solution 2

3.11.9 Solution 2 was developed with four alterations to the option consulted on in 2019, including a single two-lane carriageway between M3 junction 9 and the proposed A33 roundabout, an extension of the weaving distance between A34 southbound diverge and M3J9 southbound diverge, a proposed oval roundabout at M3 junction 9 and a shortened M3 junction 9 southbound diverge slip road.

3.11.10 The proposal for Solution 2 also included a new walking and cycling footbridge over the River Itchen, thereby taking into consideration the NPS NN in that it addressed 'helping pedestrians and cyclists (paragraph 3.17)'. The preferred location of the footbridge was to the east of the existing southbound A34 bridge due to the space available for construction.

3.11.11 It was identified that Solution 2 would support economic growth (by providing required capacity for forecast traffic flows and encouraging a safe and serviceable network). It would also encourage a freer, better flowing network whilst also reducing severance impacts and improving access for non-road users to Kings Worthy. It had the potential to encourage greater active travel whilst also encouraging access to the South Downs National Park aligning with objective 5 of the South Downs Local Plan ('to protect and provide opportunities for everyone to discover, enjoy, understand and value the National Park and its special qualities') and paragraph 5.184 of the NPS NN (PRoWs, National Trails and other rights of access to land (e.g. open access land) are important

recreational facilities for walkers, cyclists and equestrians and that appropriate mitigation measures should be taken to address adverse effects and consider opportunities there may be to improve access).

Solution 3

3.11.12 Solution 3 was developed with four alterations to the option consulted on in 2019, along with two WCH routes, as follows:

- Single two-lane carriageway between the M3 J9 and the proposed A33 roundabout, where the road changes to one-way traffic from the proposed A33 roundabout to the M3 northbound merge
- Extension of the weaving distance by 35m from 235m to 270m to increase safety
- A proposed oval roundabout would be constructed at the M3 J9 in place of the dumbbell roundabout
- the M3 southbound diverge slip road was shortened by 100m to reduce the volume of associated earthworks within South Downs National Park

3.11.13 Solution 3 was identified as providing the capacity required for forecast traffic flows and provide a direct free-flow connection between the A34 and M3, however, some queuing would remain. This separation of local and Strategic Road Network traffic was considered to contribute towards improving the tranquillity of the Itchen Valley, an important aspect for the South Downs National Park.

3.11.14 The solution was considered to reduce severance impacts and reduce delays compared with the option consulted on as it would provide a safer pedestrian and cycle route to and from Kings Worthy. However, the operation of the M3 northbound diverge slip road would still be substandard and there would be queuing, therefore establishing that Solution 3 would be non-compliant when compared with the overall reliability of the road network.

Solution 4

3.11.15 Solution 4 is based on the principles of the option consulted on in 2019 with an additional change. The existing A34 northbound offside diverge to the A33 would be stopped up and a nearside diverge would be provided further north to accommodate traffic movements into Kings Worthy. A loop connector road approximately 890m in length would tie-in to Springvale Road at a priority junction. It was determined that Solution 4 did not align with Scheme objectives in that it would not support economic growth (as it did not provide sufficient capacity at the junction 9 roundabout) nor would it provide a safe and serviceable network (while removing delays for strategic road network traffic, it would generate queues elsewhere and lead to safety concerns and increased risk of accidents affecting vulnerable groups disproportionately). Whilst providing a free-flowing connection between the A34 and M3, it would remove

easy connections between the M3 and A33. Furthermore, it would not align with providing a more accessible and integrated network (as despite improving access to the South Downs National Park and aligning with the policies identified against Solution 2, it would also reduce accessibility of surrounding villages and increased severance of local residents from local facilities). A proposed loop slip road was considered to adversely affect landscape character, could increase traffic in Kings Worthy and Headbourne Worthy (with associated potential adverse air quality and noise effects to local receptors) as well as crossing flood zones 2 and 3.

Solutions summary report conclusions

3.11.16 Solutions 2, 3 and 4 (which were all variations of Option 14C) were assessed and scored against the EAST aligned criteria (set out in Table 2 of the Solutions Summary Report (Jacobs 2020)). An Assessment Matrix was produced to weight and score the solutions and highlight the key differentiating factors between the solutions. The methodology used in the report is set out in Section 7 of the Solutions Summary Report (Jacobs 2020). The key outcomes of the Assessment Matrix are reproduced in **Table 3.3**.

Table 3.3: Solutions Summary Report Assessment Matrix

Assessment Criteria	Solution 2	Solution 3	Solution 4
Scale of Impact	Performed best in terms of traffic results, NPS NN compliance* and operational safety.	Performed better than Solution 4 but worse than Solution 2 in terms of traffic results, NPS NN compliance* and operational safety.	Performed worst in terms of traffic results, NPS NN compliance* and operational safety.
Fit with Other Objectives	Performed best against the Scheme Objectives.	Performed better than Solution 4 but worse than Solution 2 against the scheme Objectives.	Performed worst against the Scheme Objectives
Local Environment	Performed best or the same against the following environmental assessment criteria: <ul style="list-style-type: none"> Air Quality 	Performed best or the same against the following environmental assessment criteria: <ul style="list-style-type: none"> Air quality 	Performed against the following environmental assessment criteria: <ul style="list-style-type: none"> Air Quality

Assessment Criteria	Solution 2	Solution 3	Solution 4
	<ul style="list-style-type: none"> Noise and vibration Landscape Cultural heritage Biodiversity Geology and Soils Road Drainage and the water environment 	<ul style="list-style-type: none"> Noise and Vibration Cultural heritage Geology and Soils 	<ul style="list-style-type: none"> Noise and Vibration Landscape Cultural Heritage Biodiversity Geology and Soils Road drainage and the water environment
Wellbeing	Performed the same as Solution 3 in relation to wellbeing, including promoting physical activity, enabling access to local places and services and no severance issues identified.	Performed the same as Solution 2 in relation to wellbeing, including promoting physical activity, enabling access to local places and services and no severance issues identified.	Performed worst in relation to wellbeing. Although solution promotes physical activity. Severance issues identified.
Implementation Timetable	Performed marginally worse in relation to impact on construction programme	Performed best in relation to impact on construction programme	Performed best in relation to impact on construction programme.
Public Acceptability	Performed best in relation to public acceptability	Performed better than Solution 4 but worse than Solution 2 in relation to public acceptability	Performed worst in relation to public acceptability.
Practical Feasibility	Performed best or the same against the following practical feasibility	Performed best or the same against practical feasibility assessment criteria:	Performed best or the same against the following practical feasibility

Assessment Criteria	Solution 2	Solution 3	Solution 4
	assessment criteria: <ul style="list-style-type: none"> • Traffic Management • Utilities • Drainage 	<ul style="list-style-type: none"> • Buildability • Traffic Management • Utilities 	assessment criteria: <ul style="list-style-type: none"> • Buildability • Geotechnics • Traffic Management
*the Jacobs Solutions Summary Report originally states 'DCO' but this has been amended to NPS NN compliance for clarity.			

3.11.17 Accordingly, Solution 2 was considered the preferred option because it was the best performing solution overall and it was recommended that it be taken forward as the preferred option for the Scheme.

3.12 Changes to the preferred option in 2020

3.12.1 Following the identification of Solution 2 as the preferred option, the Applicant progressed design feasibility work and identified a number of changes to the 'Solution 2' Scheme. Each of the following elements underwent an optioneering exercise to consider reasonable alternatives in relation to location or alignment:

- The Application Boundary was increased to accommodate additional areas for the management of excess spoil generated from the construction phase. The locations for excess spoil management were considered in the Preliminary Environmental Information Report (PEIR) prepared as part of the statutory consultation between May and July 2021. In reviewing the consultation responses National Highways was alerted to concerns from the South Downs National Park Authority about extending the boundary to accommodate spoil deposition areas. As a result of their concerns, alternative solutions for spoil deposition were investigated and one was found which should allow the excess spoil to be used without the need for additional disposal areas. The solution created a sensitively designed re-profiling of land immediately to the east of the M3 (see **Figure 2.3 (Environmental Masterplan)** of the **ES (Document Reference 6.2)**) which also responded to concerns raised by the South Downs National Park Authority regarding the impact to the special qualities of the South Downs National Park. Accordingly, the areas of search for excess spoil management are not considered further within this chapter
- The Application Boundary was reviewed regarding further consideration of construction compound requirements including the location of the main construction compound
- Optioneering work was undertaken to identify modifications to the WCH arrangement along the eastern and western fringes of the Scheme

3.12.2 Each element identified above underwent an optioneering exercise to consider the reasonable alternative locations or alignments for each element as summarised below although note that the spoil deposition areas are not considered any further in this chapter as they have been removed from the Scheme as a result of considering the South Downs National Park Authority's response to statutory consultation.

3.13 Construction compounds options

3.13.1 The construction of the Scheme would require ancillary compounds needed to construct specific aspects of the Scheme and a main construction compound comprising welfare facilities including office cabins, storage of materials, plant and equipment, vehicle parking, training facilities (classroom and plant/equipment) (refer to **Figure 2.1 (The Scheme Preliminary Construction Plan)** of the **ES (Document Reference 6.2)** for the location of compounds).

Ancillary construction compounds

3.13.2 The ancillary compounds comprise:

- Two small compounds located adjacent to the gyratory to allow the existing gyratory to be demolished. The work site would be between a live motorway and the adjacent gyratory roundabout. As such these locations would ensure safe working practices can be maintained
- A compound adjacent to the A33/A34 would be positioned in an area that would become part of the permanent Scheme footprint and would allow the new structures in the area to be constructed efficiently with plant and workforce close to these work areas thereby reducing travel time, construction costs and carbon emissions. Alternative locations that do not utilise land that would be later required for the permanent scheme, and are at a greater distance, would be less advantageous potentially requiring new land, greater travel times and construction costs and causing additional carbon emissions

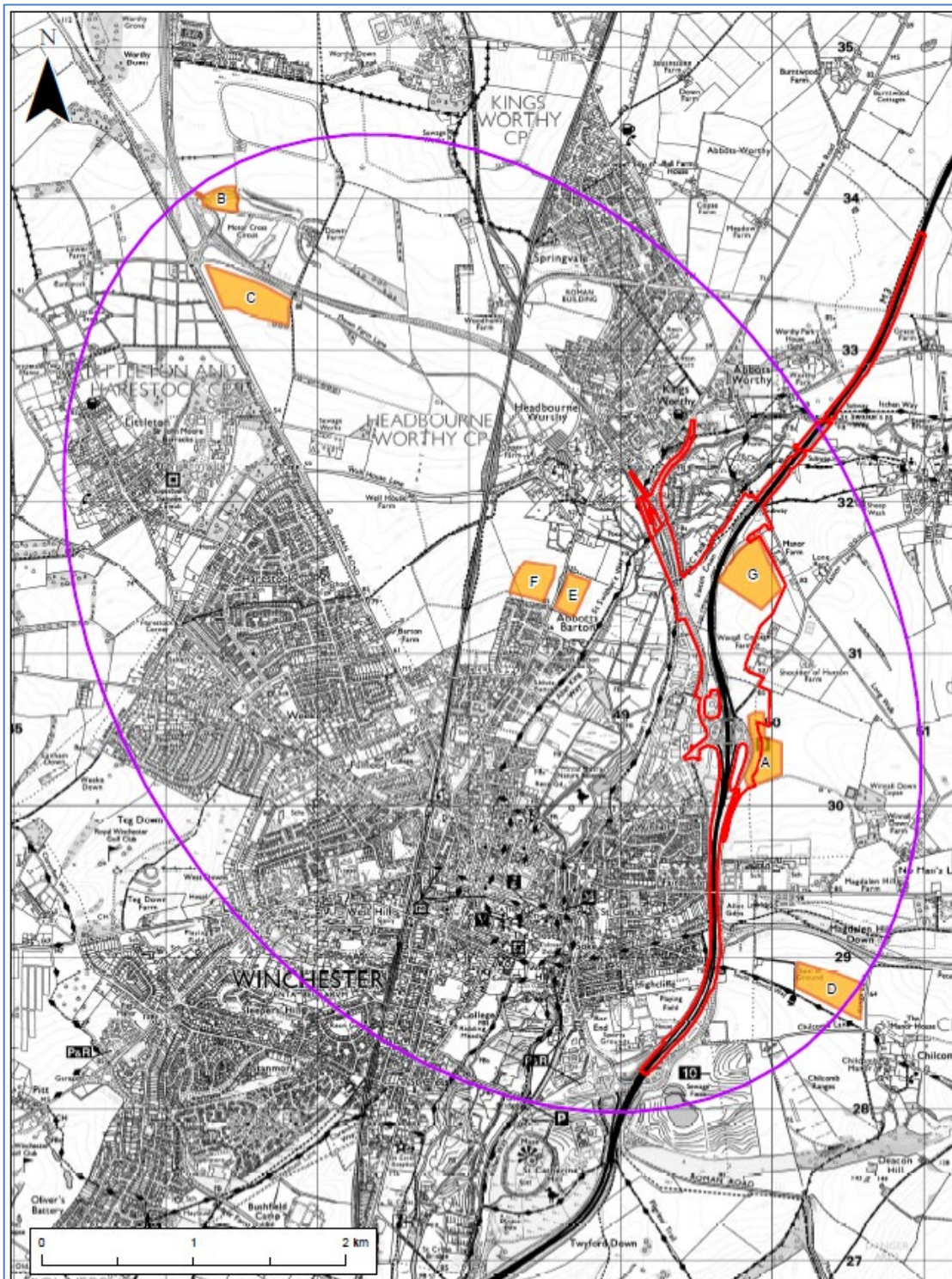
3.13.3 There was optionality about where the main construction compound could be sited. A compound to the north of the Scheme at Christmas Hill (located outside of the South Downs National Park) was considered in earlier iterations of the Scheme but this was reconsidered when all aspects of the Scheme were reviewed by the newly appointed contractor.




Main construction compounds

3.13.4 An initial desk-based exercise was undertaken in summer 2020 to identify areas potentially suitable for a main construction compound. The desk-study was initially based on the search area shown in **Insert 3.9**. The search area was selected for reasons of accessibility and proximity to the construction site as well as good ease of access to the highway network to ensure the safe passage of equipment and staff to and from the site. Within the search area land parcels

of approximately five hectares or more were identified with five hectares being of a sufficient size to enable cabins, car parking and storage areas to be accommodated. The search area was not widened as a review of the wider context identified that the landscape was very similar to that within the search boundary and increasing the search area would only increase the number of vehicle movements between the main construction compound and the site and therefore result in a greater impact of the construction works on the local road network, the local community and result in a greater carbon impact.

- 3.13.5 After defining the search area, a first sift of suitable parcels was carried out. The first sift identified several potential locations for a main construction compound. Some parcels were discounted through a second sift of the options where parcels were adjacent to other more advantageous parcels. Areas B and C for example, shown in **Insert 3.9**, were selected in preference to other nearby parcels options owing to their proximity to the road network thereby limiting the need for further construction works to provide a viable construction to the highway network. Following the second sift seven suitable land parcels (Areas A-G shown in **Insert 3.9**) were identified within the search area to take forwards for further assessment.



- Legend
-  Application Boundary
 -  Search Area
 -  Potential Compound

Insert 3.9 – Potential Main Construction Compound Options

3.13.6 The seven main construction compound options selected as most suitable options following the second sift were then compared against the following headline criteria for a third sift. These criteria were considered to be fundamental factors for the compound siting:

- Location of areas in relation to internationally and nationally important ecological designations i.e. the need to avoid siting within these sites reflecting key legislative tests that need to be met
- Location of areas in relation to nationally important cultural heritage assets (Scheduled Monuments, Listed Buildings (Grade 1 and II*) and Registered Parks and Gardens
- Viability of access with a key focus on safe movement of people and plant and reduced impact on the highways network, the wider community and adjacent land

Ecological designations

All main construction compound options (Areas A – G) were located outside of the River Itchen SSSI and SAC.

Landscape designations

3.13.7 Direct impact on the South Downs National Park was not a headline criterion in the third sift of sites although the M3 Junction 9 Improvement Scheme is sited partially within the National Park and there could potentially be a requirement for compounds within the National Park. It was considered that impacts on the South Downs National Park should be addressed for the fourth sift when assessment of potential impacts in relation to the National Park could be undertaken with more information available for the remaining construction compound options, such as potential layouts, existing topography and ability to screen.

Cultural Heritage designations

3.13.8 All main construction compound options (Areas A – G) do not directly physically impact nationally designated heritage assets. However, Area D is sited in close proximity to a group of Grade II Listed Buildings. Areas E and F are also sited in close proximity to the site of St Gertrude's Chapel Scheduled Monument (Area E circa 50m from the Scheduled Monument at its closest point and Area F circa 220m).

Viability of access

The review of viable access routes resulted in Areas E, F and G being discounted as access would be required along unsuitable narrow country lanes. The lanes were deemed unsuitable as there would be insufficient passing places to accommodate the volumes of traffic, including heavy goods vehicles, using them. To be considered, extensive upgrade works to the access routes

would be required with associated environmental impacts e.g. vegetation removal. Areas A, B, C and D all had viable access routes along the main highway network.

3.13.9 Therefore, based on the above application of headline criteria, areas A, B, C and D were all retained for further consideration owing to their accessibility benefits and areas E, F and G were discounted, with the potential cultural heritage impacts of area E also being a reason for discounting.

Further main construction compound evaluation criteria

3.13.10 The remaining areas (A, B, C and D) were then subject to a fourth sift using the using the criteria below:

- Impact on the South Downs National Park (recognising that the M3 Junction 9 is sited partially within the National Park and therefore some options may potentially affect the National Park including its setting) and particularly its statutory purposes which are:
 - To conserve and enhance the natural beauty, wildlife and cultural heritage of the National Parks
 - To promote opportunities for the public understanding and enjoyment of the special qualities of the Parks
- Proximity to the construction site
- Existing utility connections that could be optimised and avoiding key utility diversions and associated environmental impacts
- Avoiding areas of floodplain

South Downs National Park

3.13.11 Areas A and D are both within the South Downs National Park with Area D also lying immediately adjacent to the South Downs Way, a well-used National Trail. Areas B and C both lie outside of the National Park.

3.13.12 Whilst Areas A and D would have a direct impact on the nationally important asset i.e. the South Downs National Park, the impacts would be temporary for the three-year construction period and the land would be reinstated thereafter. Area A is also sited immediately adjacent to the M3 Junction 9.

Proximity to the construction site

3.13.13 Area A adjoins the construction working area and therefore, staff and construction plant would be able to access the construction working area without reliance on using the public highway network thereby minimising impacts on road users.

3.13.14 In relation to areas B, C and D, they are located at a greater distance from the construction working area and would require construction vehicle movements along the highway network to facilitate the movement of plant and staff to the construction works. Area B would be 5.6km from the M3 gyratory, area C is 6km away and area D is 1.5km away. The accessibility of Areas B, C and D is also more restricted as at all of these sites there would be a need to move certain construction equipment e.g. mobile plant onto low loaders to move it to the main construction area. Greater distances from the working area and the need to transport mobile plant would be less beneficial due to factors including additional travel time and cost, more interaction with traffic (potential safety and congestion issues) and additional environmental impacts (e.g. carbon, noise and air quality).

Utilities connections

3.13.15 From the perspective of utilities connections Area A has good connections for potable water, telecommunications and electricity, but no sewerage connections are readily available. Areas B and D have no suitable connections for potable water, sewerage, telecommunications or electricity. Area C has no suitable connections for potable water, sewerage or telecommunications.

3.13.16 Based on connectivity to utilities, Area A was most suitable as this would avoid the need for extensive construction works (including associated environmental impacts such as additional vegetation removal / landscape impact) to provide those connections into the temporary construction compound with reduced cost and programme implications.

Floodplain impact

3.13.17 None of the options are sited within the floodplain.

3.13.18 **Table 3.4** presents a summary of the results of the assessment for each main construction compound area against the further compound evaluation criteria undertaken for the fourth sift. Impacts on floodplains are excluded from the table as all areas perform equally.

Table 3.4: Comparison of further main construction compound areas

Criteria	Area A	Area B	Area C	Area D
Proximity to the Construction Site and Accessibility	Performed well against the criteria as immediately adjacent to the site resulting in very short distance to stored	Performed poorly against the criteria as although accessible from the A34 it is 5.6km from the central	Performed poorly against the criteria as although accessible from the A34 it is 6km from the central section of the	Performed fairly poorly against the criteria as although accessible from the A31 it is 2km from the central section of the

Criteria	Area A	Area B	Area C	Area D
	materials and with workforce having pedestrian access.	section of the site. This would require the transportation of certain construction equipment to the construction area using low loaders.	site. This would require the transportation of certain construction equipment to the construction area using low loaders.	site. This would require the transportation of certain construction equipment to the construction area using low loaders.
Utility Connections	Performed well against the criteria. Potable water, telecoms and electricity available	Performed fairly poorly against the criteria with only electricity connections.	Performed fairly poorly against the criteria with no suitable connections nearby.	Performed fairly poorly against the criteria with no suitable connections nearby
South Downs National Park	Performed fairly poorly against the criteria as within the National Park but there is the ability to minimise impact by retaining vegetation where possible and screening of the site.	Performed well against the criteria as outside of the National Park.	Performed well against the criteria outside of the National Park.	Performed poorly against the criteria as within the National Park and adjacent to the South Downs Way with reduced ability to minimise the impact.

3.13.19 Based on the above analysis it was decided that Area D would not be taken forwards as it offered no benefits over Area A which also lies within the National Park as Area D is located at a greater distance from the site, has no utilities connections and would also impact on users of the South Downs Way. Although Area A would be sited within the National Park it has a number of other benefits including very good access and utility connections. Therefore, this option was retained for further consideration.

3.13.20 Areas B and C both lie outside of the National Park but Area C does not have any suitable utilities connections. Areas B and C would also require the use of low-loaders to distribute plant from the compound to site via the public highway. For this reason, Area C had no advantages over Area B and so was discounted.

3.13.21 Therefore, Areas A and B were included as options for consideration for the main construction compound within the Scheme's Second Scoping Opinion.

Statutory public consultation 2021

3.13.22 Both the remaining options for the main construction compound (Areas A and B), and the ancillary compound locations were included within the statutory consultation undertaken in 2021 (see the **Consultation Report (Document Reference 5.1)**) for further information) and reported within the PEIR (National Highways, 2021).

3.13.23 Following the statutory consultation, further work was undertaken to consider the potential impacts of Areas A and B (i.e. the best performing two options) for the main construction compound. This review also took into consideration the comments from statutory consultees including the South Downs National Park Authority.

3.13.24 The further work was predominantly in relation to carbon emissions given the heightened focus over time in relation to climate change. The further work predicted CO₂ emissions over the construction period associated with travelling to the site from the main construction compound locations of 0.6 tonnes with Area A compared with 135 tonnes of CO₂ emissions with Area B. The lesser distance also reduces congestion on the surrounding local road network and the local communities and has associated cost and time savings. The further work contributed to confirming a preferred main construction compound at Area A.

3.13.25 In terms of considering comments from statutory consultees including the South Downs National Park Authority further work was undertaken after statutory consultation to reduce the impact of the main construction compound at Area A through examining location, size and configuration options. The exercise was principally landscape led and resulted in:

- The footprint being reduced within the South Downs National Park through more detailed work to understand the main construction compound requirements
- Further considering the visibility of the compound which included moving the compound north of a tree line and retaining the majority of that tree line to aid screening
- The addition of advanced planting to screen the haul road to the main construction compound from the Spitfire Link from the wider South Downs National Park thereby enhancing the area during construction and in the longer term.

3.13.26 The result of the above exercise is presented in **Insert 3.10** which shows the extent and location of the revised site compound. The revised position also allows planting, including advanced planting, to take place between the main site compound area and the gyratory.



Legend
 Application Boundary
 Revised Extent for the Main Construction Compound
 Original Area A Main Compound Extent

Insert 3.10 – Revised Boundary of the Main Construction Compound Post Consultation

3.14 Walking, cycling and horse-riding route optioneering (2021)

3.14.1 A number of optioneering exercises were undertaken for three separate proposed WCH routes as part of the Scheme:

- Through the gyratory from Easton Lane (west) to Easton Lane (east)
- From the A33/B3047 junction to NCN Route 23
- A new route to the west of the Scheme parallel to the M3

3.14.2 Such optioneering was undertaken to determine the best performing options to meet the Scheme objective to make improvements for walkers and cyclists including connecting the NCN Route 23 which is severed by the current junction

layout. This section of the ES summarises the optioneering work undertaken to identify the preferred routes for each of the three new proposed WCH routes.

WCH route options through the gyratory

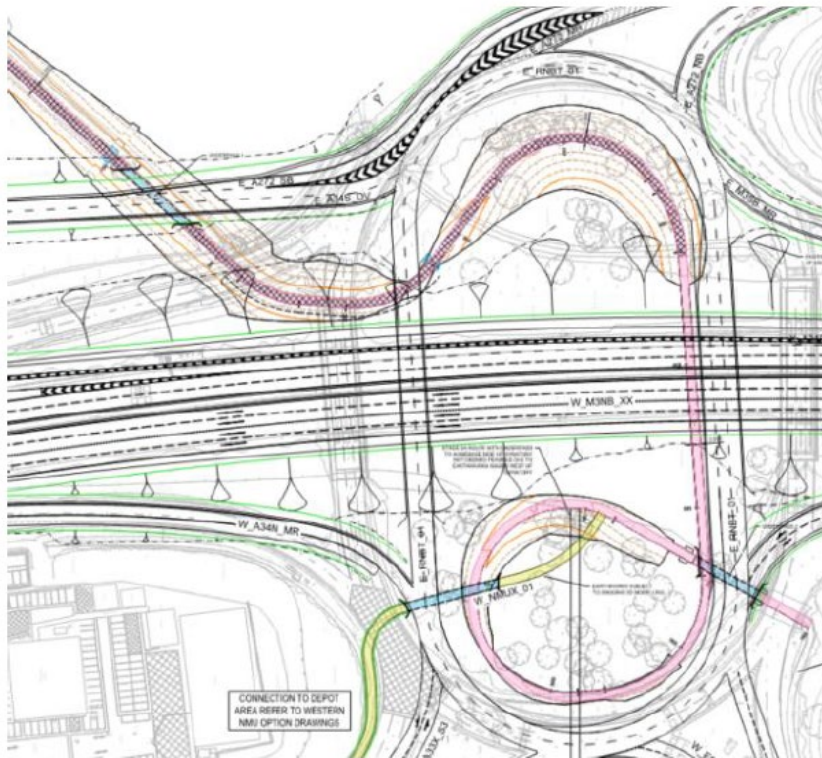
3.14.3 This route was intended to re-provide the link of the existing NCN Route 23 at the subway on the south-west quadrant of junction 9 with Easton Lane to the north-east of the junction, by providing a shared unsegregated route for pedestrians and cyclists for the whole of this route and include provision for horse-riders for the section defined as bridleway. This section summarises **Appendix 3.3 (Non-Motorised User Route Options)** of the **ES (Document Reference 6.3)** The existing route, when compared to standards (CD 143 Designing for walking, cycling and horse-riding, CD 353 Design criteria for footbridges, DfT Inclusive Mobility (2005), DfT LTN 2-04 Adjacent and Shared Use Facilities for Pedestrians and Cyclists, BHS Mounting Blocks (2018) and BHS Dimensions (2020)), was compromised in width, horizontal geometry, vertical gradients and low headroom subways. **Insert 3.11** shows the existing route.



Insert 3.11 – Existing WCH route through the gyratory

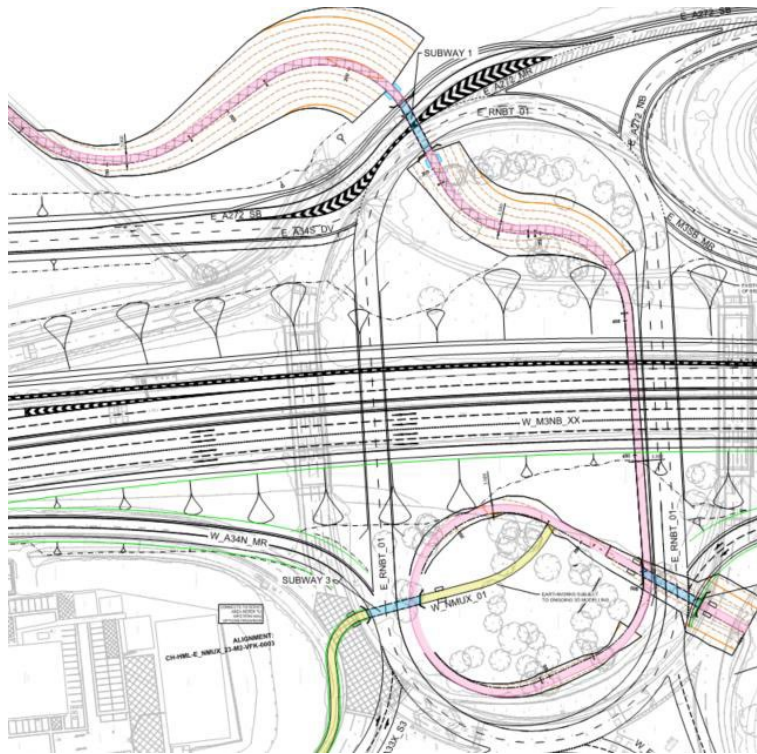
3.14.4 **Insert 3.12** identifies the routing of Option 1, which starts at the north-east end of Easton Lane and ends at the south-west side of the gyratory. It was designed to accommodate pedestrians and cyclists and include futureproof measures such that the route might be enhanced for horse-riders in the future.

3.14.5 The route connects to the existing NCN Route 23 near the existing subway location adjacent to Tesco and passes under the new gyratory as a subway, spirals upwards to the left to connect to the new M3 southern overbridge, after which crossing above the M3 it performs a large S-bend to descend close to the M3 mainline southbound carriageway to pass under the new M3 northern overbridge and via a new subway orientated to the bearing of Easton Lane and under the new M3/A34 southbound diverge off slip to the junction.

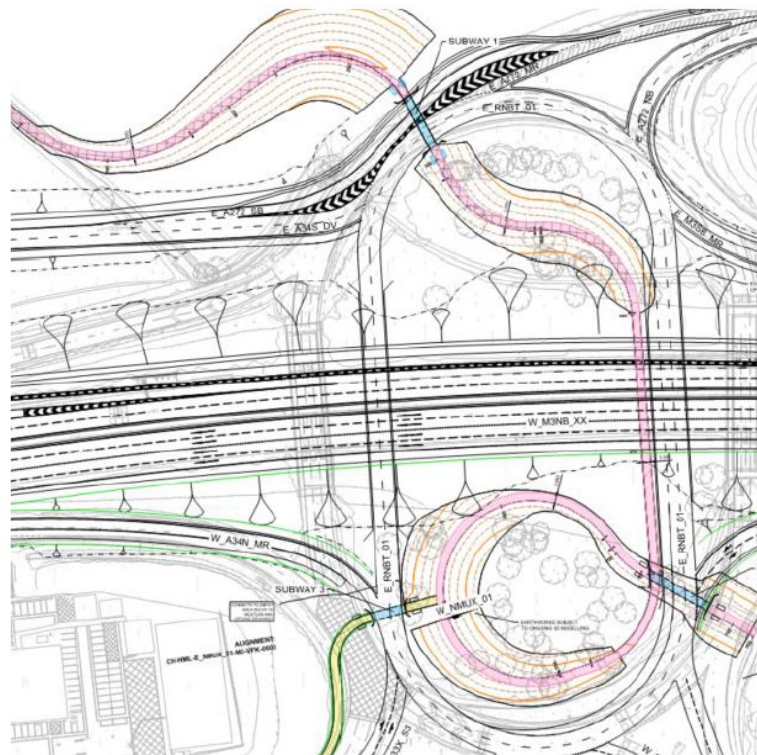


Insert 3.12 – Option 1

3.14.6 Option 2 incorporated one main difference from Option 1. Rather than descending under the new M3 northbound overbridge (as with Option 1), the route would pass under the gyratory near the A272 after which it joins with Easton Lane. With Option 2 there were three subvariants (Option 2A, 2B and 2C) which are different interconnections with the western side of the inner gyratory as identified in **Insert 3.13, 3.14 and 3.15**.



Insert 3.13 – Option 2A



Insert 3.14 – Option 2B



Insert 3.15 – Option 2C

3.14.7 The four options identified above were considered by the Scheme contractor and environmental specialists with comments collated, summarised as follows:

- Landscape and Visual Impact Assessment - Option 1 connection to Easton Lane was preferred due to lower loss of trees and reduced scheme visibility from South Downs National Park. The effects of west side connection variants A, B and C are considered similar to each other
- Cultural Heritage - neither option was identified to directly impact upon nationally designated heritage assets. For option 2's eastern route after the subway, the intrusive ground works have a potentially larger impact upon buried archaeological remains in undisturbed ground. The effects of west side connection variants A, B and C were considered similar in terms of intrusive groundworks as such no preference determinable
- Road drainage and the water environment – no preference was identified between the options due to lack of potential for flooding at this location
- Geology and soils - there was no discernible difference in terms of alignment and there was very little difference in environmental effect between the options. However, it was identified that a historic landfill is recorded across the eastern part of the gyratory and all options required to cross the landfill site. Therefore, any associated 'cut' risks encountering 'waste' materials

- Population and health – no discernible difference between options 2A, B and C which were all considered to offer improvement above the current arrangement
- In relation to construction, Option 2A was considered to result in a simpler build leading to efficiencies in cost, time and disruption

3.14.8 Overall, environmental effects from the options were largely comparable with the exception of landscape and visual impact which noted Option 1 as having reduced tree loss compared to Option 2. However, Option 2A was considered to provide more advantages in comparison to the other options (relating to engineering reasons of built cost, time and disruption) and was therefore taken forward as the preferred route.

Walking and cycling route options from A33/B3047 junction to NCN Route 23

3.14.9 The Scheme sought to provide a link from the A33/B3047 junction to NCN Route 23 along the western flank of the Scheme. This section summarises **Appendix 3.3 (Non-Motorised Users Route Options)** of the **ES (Document Reference 6.3)**.

3.14.10 An existing route exists between the A33/B3047 and NCN Route 23, which is substandard due to width, unmade sections in close proximity to the depot and uncontrolled crossing points with safety concerns. The existing links are available for viewing within **Appendix 3.3 (Non-Motorised Users Route Options)** of the **ES (Document Reference 6.3)**.

3.14.11 To improve this route, three options were considered which are represented visually in **Appendix 3.3 (Non-Motorised Users Route Options)** of the **ES (Document Reference 6.3)**:

- Option 1 commenced at the A33/B3047 junction, running parallel to the east of the A33, requiring a new crossing of the River Itchen and then continuing along the western extent of the proposed realigned A33 and Easton Lane where it met the existing Tesco Roundabout and connected to the existing NCN Route 23
- Option 2 commenced at the A33/B3047 junction, running parallel to the west of the A33, then utilising the existing A33 carriageway (proposed to be abandoned), requiring a new crossing of the River Itchen and then merging with the A34 northbound carriageway (proposed to be abandoned) before it then met the existing Tesco Roundabout and connected to the existing NCN Route 23
- Option 3 commenced at the A33/B3047 junction, running parallel to the west of the A33 routed within the existing verge, utilising the existing A33 carriageway (proposed to be abandoned), connecting to existing PRowS and using two existing subways beneath the A34 north and southbound carriageways. Option 3 then ran west of the A34 requiring two new

crossings of the River Itchen, before and then merging with the A34 northbound carriageway (proposed to be abandoned) before it then met the existing Tesco Roundabout and connected to the existing NCN Route 23

3.14.12A scoring matrix was established against key topics (scheme objectives, environmental considerations, highway design, structures, safety, accessibility for construction, temporary diversion routes and relative cost), using the following scoring methodology:

- 3 = substantial benefits
- 2 = moderate benefits
- 1 = minor benefit
- 0 = neutral impact
- -1 = small impact to constraints
- -2 = moderate impact to constraints
- -3 = substantial negative impacts

3.14.13The results identified Option 2 as the most favourable, as shown in **Table 3.5**.

Table 3.5: Matrix scoring for western WCH route options

Option	Matrix Score
Option 1	1
Option 2	22
Option 3	-29

3.14.14Option 2 was therefore identified as the preference after consideration of all factors due to its utilisation of existing carriageways to be abandoned which provided greater scope/flexibility in design approach and avoidance of most constraints (for further detail see **Appendix 3.3 (Non-Motorised Users Route Options)** of the **ES (Document Reference 6.3)**).

3.14.15Further consideration (through ongoing design work) was then available in relation to Option 2, resulting in a re-design of the new footbridge and adjoining path to reduce interaction with flood extents. Additionally, a signalised (Toucan) crossing was introduced across the A33. Further detail relating to these refinements are included within **Appendix 3.3 (Non-Motorised Users Route Options)** of the **ES (Document Reference 6.3)**. Subsequent to Option 2 being identified as the most favourable, a commercial review of the Proposed Scheme was undertaken which identified commercial challenges within the project. A consequence was that the scope of Option 2 was reduced to accommodate

pedestrians only, removing the need for a link between the western section of the gyratory and the depot.

3.14.16 At this point, the PEIR was issued as part of the 2021 statutory consultation exercise and comments on the Scheme were invited. Some comments received focussed on a request to re-implement the cycleway provision along the western link. Upon consideration and further dialogue with relevant parties, the cycleway provision along the western link was re-introduced, which in turn re-integrated the requirement for a link between the depot and the gyratory. This was re-integrated as it was considered there was insufficient space for a cycleway between the road network and Homebase, immediately north-west of the gyratory.

3.15 Design evolution in 2020/2021

3.15.1 Notwithstanding the alternative Scheme elements detailed above, the Scheme continued to undergo minor design evolution changes to reflect a review of Scheme against prevailing standards. These items are considered to be standard design measures and do not constitute 'reasonable alternatives' to the Scheme or its design, therefore no comparison of environmental effects is required. A summary of these design elements is provided below:

- Proposed northbound M3 / A34 northbound diverge - A proposed level difference of approx. 6.5m was identified across the proposed chevron road markings between the northbound mainline M3 and the proposed A34 northbound diverge. The section of carriageway across the chevrons should be at a constant shallow fall to allow for potential late exit vehicle manoeuvres and for emergency vehicles. An attempt was made to provide a consistent grade across the chevron road markings prior to the A34 northbound diverge levels lowering to meet the location of the proposed underpass (beneath the A33). This resulted in a steep longitudinal fall which was below current design standards. As a result, the A34 northbound diverge was reconfigured to pass over (instead of below) the realigned A33
- The proposed northbound and southbound M3 merge and diverge layouts (to and from the proposed M3 Junction 9 gyratory) were reviewed and revised in accordance with current design standards, resulting in the lengths being increased
- The proposed M3/A33 roundabout was repositioned based upon a review of existing and proposed ground levels. This resulted in a reduced length of retaining wall originally proposed
- The M3 Junction 9 gyratory has reduced in size (following a vehicle tracking exercise) and all entry and exit tie ins have been revised
- The proposed A33 bi-directional layout, leading to the Cart and Horses Junction (Kings Worthy)

- The preliminary drainage design has progressed, and the proposed surface water attenuation ponds and associated maintenance tracks
- A general review of design levels has taken place across the Scheme extents and proposed retaining walls required
- The proposed earthwork embankments have been developed across the Scheme extents

3.16 Design changes following statutory consultation (2021)

3.16.1 The Applicant undertook reviews of relevant responses received through the 2021 statutory consultation process to determine if comments resulted in the requirement to reconsider the design of the preferred option.

3.16.2 While comments were noted and have been responded to (see the **Consultation Report (Document Reference 5.1)**), comments received from South Downs National Park Authority and Natural England were considered to result in the need to revisit key aspects of the design of the Scheme.

3.16.3 Comments from the South Downs National Park Authority related to concerns regarding (at the time of the PEIR (Stantec, 2021)), the proposed reprofiled earthworks and undulating chalk grassland screening feature along the eastern flank of the M3 between Easton Lane and Long Walk. The South Downs National Park Authority considered that the design would interrupt and truncate views to the higher ground to the east, and Natural England considered that the Scheme could be much more ambitious in providing landscape enhancements.

3.16.4 Accordingly, the design of the earthworks between Easton Lane and Long Walk was revisited and redesigned to create a more sympathetic feature and reinforce the existing characteristics of the South Downs National Park whilst balancing visual screening requirements. This design was progressed in consultation with South Downs National Park Authority who confirmed they were generally content with the progress the design was showing to respond to some of the concerns, specifically changes to landform and topography.

3.16.5 In re-profiling the landform in this area, it was calculated that the excess spoil predicted to be raised during the construction phase would be sufficient to construct the new earthworks. This, in turn, prevented the need for the areas of search for excess spoil deposition which resulted in a reduction in the Application Boundary, reduced visual and acoustic intrusion into the South Downs National Park as well as the need to affect less best and most versatile (BMV) agricultural land.

3.16.6 The re-profiled landform is acknowledged to affect a larger area in the immediate vicinity of the M3 corridor, however on balance this is still considered to result in more environmental benefits as identified above and fewer negative environmental impacts as a result of the removal of deposition areas. It would also require spoil to be transported over a shorter distance, resulting in lower

carbon emissions and less vegetation affected by fewer entry points through vegetated field boundaries.

3.16.7 The changes made to the main construction compound design and position have already been considered in **Section 3.13**.

3.17 Design changes following ministerial announcement in January 2022

3.17.1 Following a ministerial announcement on 12 January 2022, all lane running (ALR) schemes not yet constructed were paused, which included the M3 Junction 9 to Junction 14 ALR Scheme. Although the ALR scheme is being paused, National Highways is progressing with plans to upgrade the existing central reservation barrier to concrete to deliver safety benefits, which were originally included in the ALR scheme. This work will be completed prior to the M3 Junction 9 Improvement Scheme starting.

3.17.2 The M3 Junction 9 to Junction 14 ALR scheme is independent from the M3 Junction 9 Improvement Scheme, however there is an interface where the schemes diverge, and therefore the Scheme has continued to undergo minor design changes to reflect this.

3.17.3 The traffic model has been re-run to assimilate a revised situation to tie-in to the existing strategic road network south of Junction 9. This has shown that the Scheme continues to meet the key project objectives.

3.17.4 The minor design changes are as follows:

Southbound amendments

- M3 Junction 9 Southbound on-slip arrangement amended from a lane gain perspective to a merge arrangement, which ties into the existing 3 No. southbound lanes
- Localised widening required into the existing southbound verge which requires a low level (max. 1.2m high) retaining wall.

Northbound amendments

- Proposed alignment was amended so it ties into the existing 4 No. northbound lanes on the approach to Junction 9.
- 1 Mile Verge Mounted Advance Direction Sign to be erected on the approach to Junction 9.
- ½ Mile Verge Mounted Advance Direction Sign to be erected on the approach to Junction 9.
- MS4 Digital Variable Message Sign to be erected between the proposed ½ mile Advance Direction Sign and the off-slip road to Winchester.

- Portal gantry to be erected across both carriageways to provide Final Direction Signage to Junction 9.
- The emergency refuge area (ERA) originally proposed on the M3 Junction 9 Northbound off-slip is now omitted.

3.17.5 The design changes set out above do not result in any change to the Application Boundary. The Applicant provided a Scheme update in September 2022 to provide further information about the minor design amendments and proposed timescales following the ALR pause. The Applicant also used the Scheme update to notify stakeholders about the design changes following the responses received from the 2021 statutory consultation.

3.17.6 The update was disseminated to stakeholders through various methods, including public information events, an online information portal and stakeholder briefings.

3.17.7 During the period of the Scheme update, engagement with prescribed bodies, relevant local authorities and landowners, as detailed in **Chapter 14** of the **Consultation Report (Document Reference 5.1)** was ongoing.