



West Winch Housing Access Road

Environmental Statement Chapter 4: Reasonable Alternatives Considered

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Glossary of Abbreviations and Defined Terms

Abbreviations

Abbreviation	Explanation
BCKLWN	Borough Council of King’s Lynn and West Norfolk
NCC	Norfolk County Council
OAR	Options Assessment Report
OBC	Outline Business Case
SADMP	Site Allocations and Development Management Policies Plan

1 Introduction

1.1.1 This chapter outlines the main reasonable alternatives that the Applicant has considered for meeting the Proposed Scheme objectives, together with the principal reasons for selecting and proceeding with the route alignment and design solution now proposed.

1.1.2 For the purpose of this chapter, the Proposed Scheme has been split into sections: northern, central and southern. Within these sections, there are a number of different areas, each with their own design alternatives. These areas have been outlined in **Section 4.6**.

1.2 Requirement for Alternatives

1.2.1 Schedule 4(2) of the EIA Regulations 2017 (**Ref. 4.1**) states that an Environmental Statement (ES) should include:

1.2.2 *“A description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) 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 the environmental effects”*



1.2.3 To accord with Schedule 4(2) of the EIA Regulations 2017, the following alternatives have been considered:

- Alternative Development - Do Nothing Scenario;
- Scheme Alternatives; and
- Route Alignment Alternatives.

1.3 Alternative Development

Do-Nothing Scenario

- 1.3.1 The Proposed Scheme is required to facilitate the development of a strategic growth area at West Winch. The adopted Borough Council of King's Lynn and West Norfolk (BCKLWN) Core Strategy (2011) (**Ref. 4.2**) and the adopted Site Allocations and Development Management Policies Plan (2016) (SADMP) (**Ref 4.3**) allocate land to the east of West Winch as a 'strategic urban expansion area' under Policy CS03 and E2.1 respectively.
- 1.3.2 Policy E2.1 of the SADMP makes provision for the development of up to 1,600 dwellings by the end of the plan period (2026), whilst recognising the potential for further growth in the longer term. The SADMP specifically includes as part of the allocation, a new road linking the A10 with the A47 and an indicative alignment for this road is shown in the Plan. The SADMP envisages that the link road would be constructed in stages and completed before the end of the plan period. The need for the proposed new housing and an access road, linking the A47 with the A10, have therefore been established through the statutory adopted Local Plan process. and neither the principle of the strategic growth allocation nor the requirement for a new road, have been further tested as part of the EIA process.
- 1.3.3 More recently, the BCKLWN's Emerging Local Plan, covering the period up to 2036, proposes a further 2,400 dwellings at West Winch (bringing the total number of new homes proposed at West Winch to 4,000). Whilst this level of growth remains under consideration as part of the Plan's Examination, it too is contingent upon the provision of the WWHAR.



- 1.3.4 As the level of growth allocated in the adopted SADMP (and in the Emerging Local Plan Review) cannot be realised without the WWHAR being delivered and given the critical importance of the strategic growth allocation for meeting the future housing needs of the Borough and sub-region, a 'do-nothing' scenario (that is not building the WWHAR) does not offer a reasonable alternative for the Proposed Scheme. For this reason, a 'do-nothing' scenario has not been tested and considered as an alternative in this Environmental Statement.
- 1.3.5 A 'do-nothing' scenario, representing the likely conditions without the Proposed Scheme being built, would therefore be largely consistent with the future baseline situation, the details of which are set out within technical chapters 6 to 16 of this ES.
- 1.3.6 Similarly, an interim solution, such as limiting the scope of works only to that part of the Proposed Scheme connecting the northern part of the housing allocation with the A47, has also been ruled out for further consideration in this EIA process. The BCKLWN has confirmed that such a solution would provide capacity for approximately 800 new homes but would not be sufficient to support the full scale of growth allocated in the adopted local plan. On this basis, such an interim solution would not offer a reasonable alternative to the Proposed Scheme. Further information about the planning context and the need for the Proposed Scheme to serve as an access road for housing growth at West Winch and to link the A47 with the A10 is provided in **Chapter 3: The Proposed Scheme** and the **Planning Statement**.

1.4 Scheme Alternatives

- 1.4.1 The design evolution of the Proposed Scheme including its nature, scale, proposed location, and junction arrangements have been informed by the existing environmental constraints and opportunities within and surrounding the Site.
- 1.4.2 The context of relevant national and local planning policies, best practice guidance and development standards, baseline studies, as well as feedback



obtained from key stakeholders during consultations have been considered throughout design development.

- 1.4.3 Several alternative junction arrangement options have been considered as presented in the Options Assessment Report (OAR) produced in July 2023. The OAR has been prepared for NCC to support the Outline Business Case (OBC), submitted in September 2023. A staged option generation and assessment process was undertaken which forms a Multi-Criteria Assessment Framework (MCAF), used to assess the scheme options.
- 1.4.4 The requirement for road infrastructure to support delivery of the housing site is set out in the BCKLWN Core Strategy (**Ref. 4.2**) and the adopted SADMP (**Ref 4.3**). This set out the general access road alignment. The first stage of the option development process considered whether reduced scale options would support delivery of the objectives. The following options were considered:
- Do Minimum: 350 homes proposed with no housing access road provided (**Figure 1-1**);
 - Reduced Option: 1,100 homes proposed with an access road provided from the A47 solely to the site (**Figure 1-2**); and
 - Full Option: 4,000 homes proposed with the full Proposed Scheme, which will also provide access to the site (**Figure 1-3**)



Figure 1-1 – Do Minimum

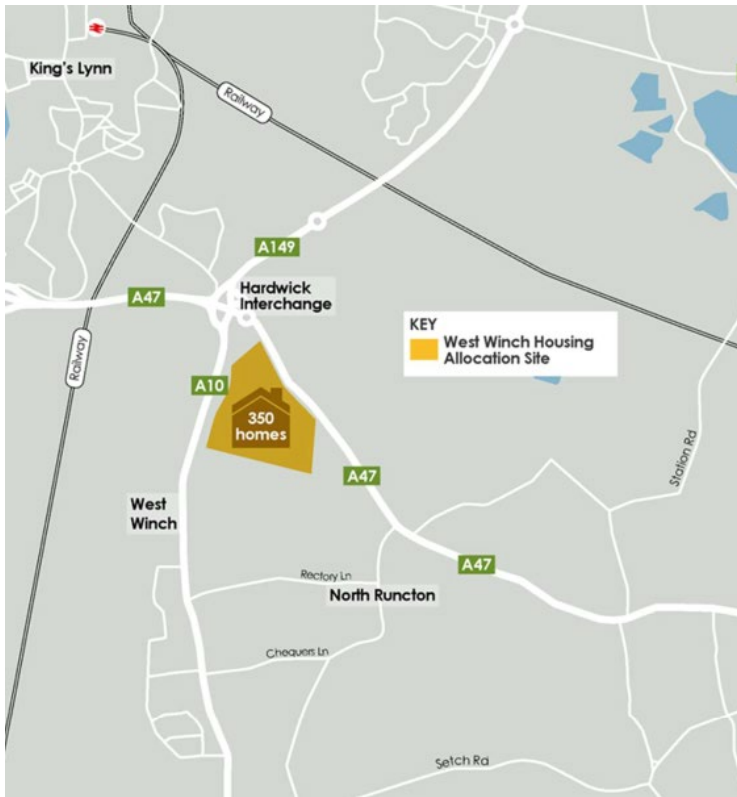




Figure 1-2 – Reduced option

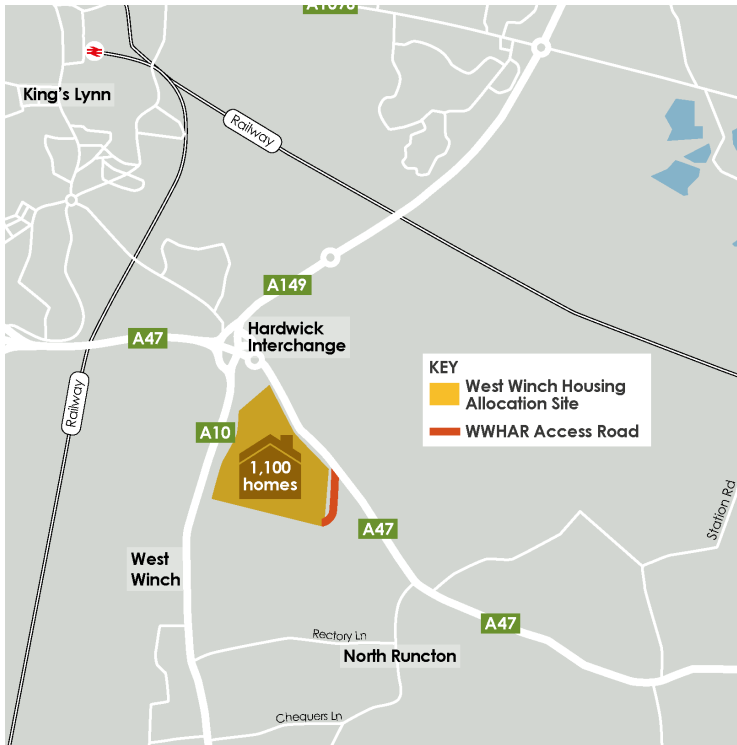
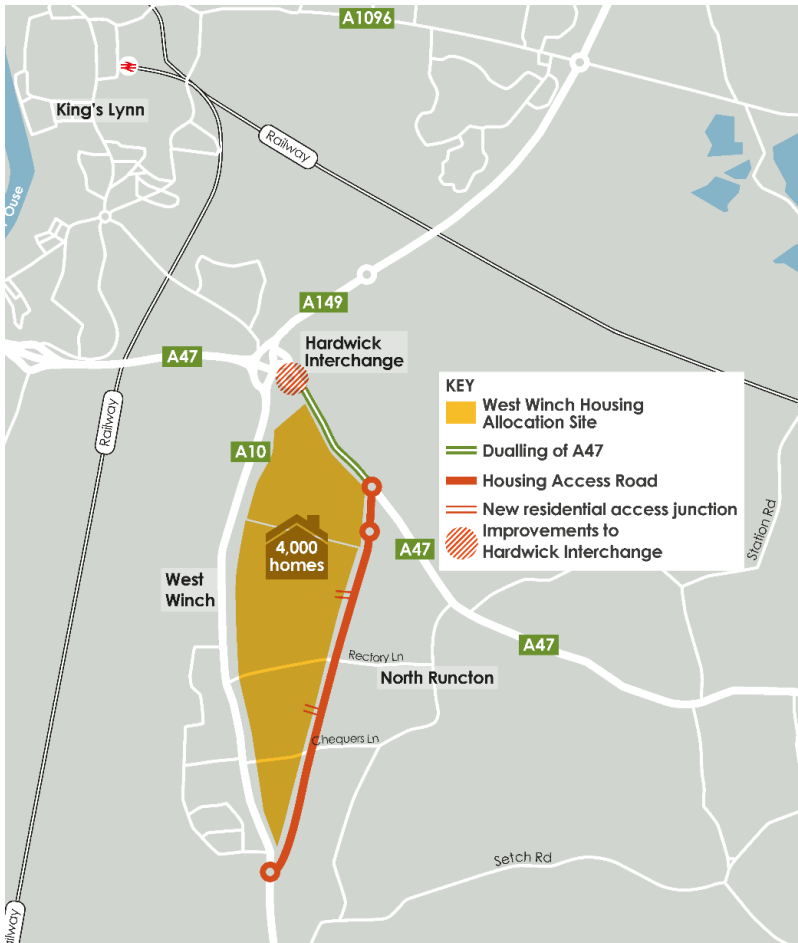


Figure 1-3 – Full option



1.4.5 This process established that both the Do Minimum and Reduced Options fall short of meeting the scheme’s objectives. Neither of these options provide a full bypass of West Winch, and therefore do not meet the objectives associated with removing through traffic and reducing congestion and improving journey reliability. These options would not deliver the potential scale of housing that the site offers, which could constrain potential growth and limit the extent to which the local labour and regional labour pools are increased.

1.4.6 After a thorough assessment of the options, the full option has emerged as the preferred scheme moving forward. This choice is based on its alignment with the scheme objectives and its compliance with national, regional, and local policy priorities, as well as the results of assessments included within **Chapter 16: Traffic and Transport**. The full option will also divert traffic from



the existing A10, onto the Proposed Scheme, effectively bypassing West Winch village and leaving the existing A10 for local access. The Proposed Scheme will therefore significantly reduce the adverse effects created by the A10 on West Winch. Therefore, the suitability analysis has shown that the full scheme is necessary to achieve the desired objectives, leading to the decision to set aside the Do Minimum and Reduced Options.

1.5 Route Alignment Alternatives

1.5.1 Having established that the Full Option is required to support delivery of the scheme objectives, more detailed optioneering was undertaken on the alignment of the housing access road (divided into northern, central, and southern sections of the housing access road), and of the Hardwick Interchange / A47.

1.5.2 The following options have been considered:

- Different alignments at the northern end of the new housing access road between the A10 and A47;
- A number of options for junction alterations at the Hardwick A10/A47/A149 junction to suit the rest of the scheme and satisfy National Highways;
- Different alignments in the central section of the new housing access road, including side roads; and
- Different alignments at the southern end of the new housing access road between the A10 and A47. The options within each section have been assessed qualitatively to compare their feasibility and suitability.

Northern Section

1.5.3 In December 2018, an optioneering study was undertaken focussing specifically on the route alignment options at the northern end of the Proposed Scheme, the tie-in to the A47 and the integration with the emerging proposals for housing in the north-west quadrant of the study area.



Hardwick Interchange

- 1.5.4 At present the primary movement along the A10 is into King's Lynn in the AM peak period, and out of King's Lynn in the PM peak period. These traffic flows on the A10 exceed the east-west flows on the A47. Therefore, the main movement through Hardwick Interchange is north-south on the A10.
- 1.5.5 With the Proposed Scheme in place, a large proportion of the existing A10 trips and new residential trips will join the interchange from the east. Modification of the existing interchange's layout is required to provide the capacity to accommodate these trips. The extent of the modifications required has been established through close collaboration with National Highways.
- 1.5.6 National Highways has agreed that the appropriate modification of the Hardwick Interchange should comprise:
- Removal of the Constitution Hill satellite roundabout;
 - Provision of new east-facing slip-roads connecting the main A47 carriageway with the interchange's circulatory carriageway below; and
 - Minor re-configuration of the southern part of the circulatory carriageway together with re-timing of the interchange's traffic signals.
- 1.5.7 The provision of new slip roads for the Hardwick Interchange requires that the existing dismantled railway will need to be bridged over. The Proposed Scheme therefore extends an existing culvert to deal with the widening of the road infrastructure in this area.
- 1.5.8 The National Highways position is for the approach to be a two-laned priority controlled approach.

A47 Options Study

- 1.5.9 With the Proposed Scheme in place, a large proportion of the existing A10 trips and new residential trips will join the Hardwick Interchange from the east. Modification of the existing interchange's layout is required to provide the



capacity to accommodate these trips. The extent of the modifications required has been established through close collaboration with National Highways.

1.5.10 In 2019, a more detailed study was commissioned by NCC and National Highways to consider options for the treatment of the A47 (including the Hardwick Interchange) which could be provided as part of the Proposed Scheme. This study built on the optioneering undertaken as part of the 2018 Study discussed above.

1.5.11 The options considered for the A47 / Hardwick Interchange within the 2019 study included 7 options, detailed below.

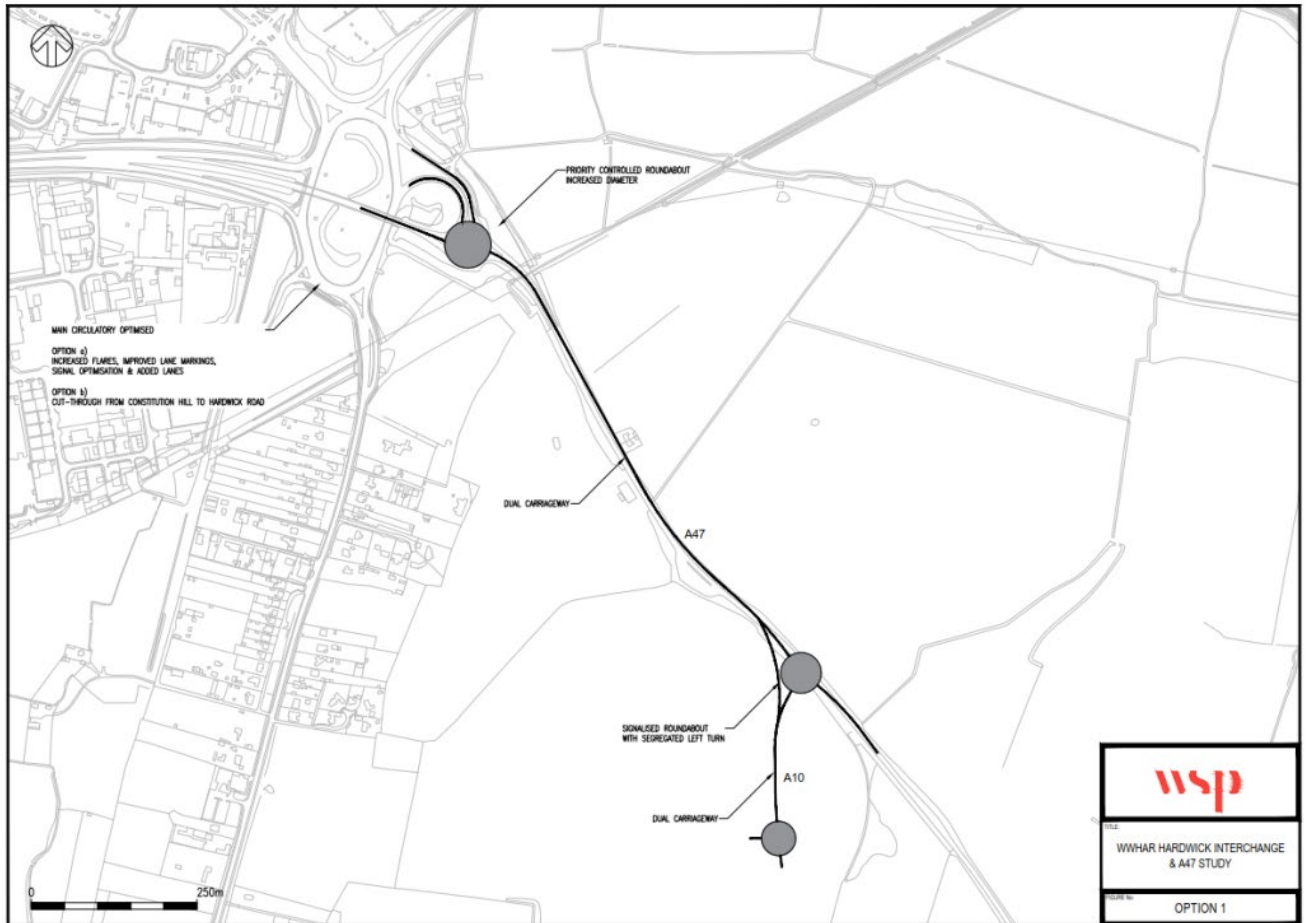
Option 1

1.5.12 Option 1 (**Figure 1-4**) includes a new signalised roundabout with a south-west left turn bypass at the intersection of the WWHAR and the A47. This will tie in a dualled A47 (to the north) between the new roundabout and the existing Constitution Hill roundabout. The Constitution Hill roundabout will remain as priority controlled but the diameter will be increased with the aim of avoiding the need for additional traffic signals.

1.5.13 The A47 dualling would be undertaken offline to the north to minimise construction impact. This option requires online works at Constitution Hill. Optimisation of the main Hardwick Interchange circulatory will be needed to accommodate additional traffic flows.



Figure 1-4 – A47 Option 1

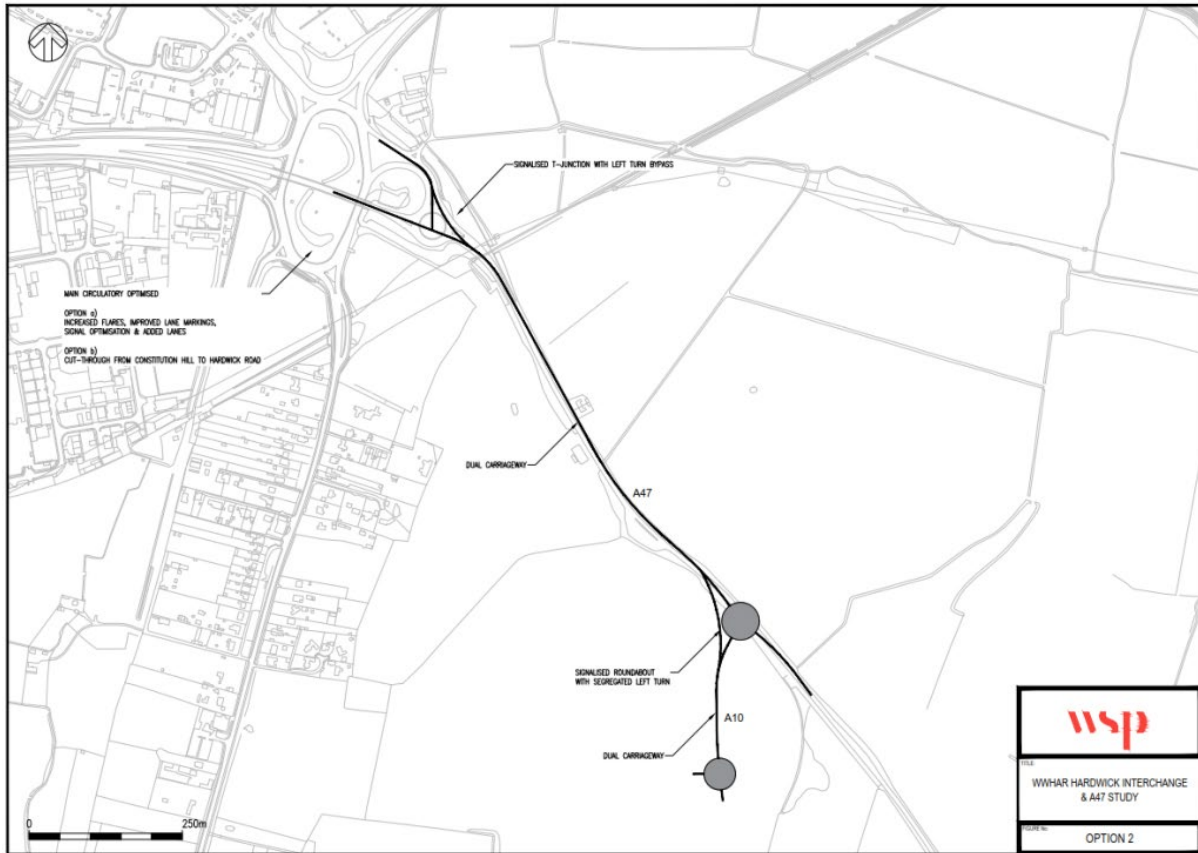


Option 2

1.5.14 Option 2 (Figure 1-5) is identical to Option 1 except at Constitution Hill where the satellite roundabout is replaced by a signalised T-Junction with a north to east left turn bypass.



Figure 1-5 – A47 Option 2



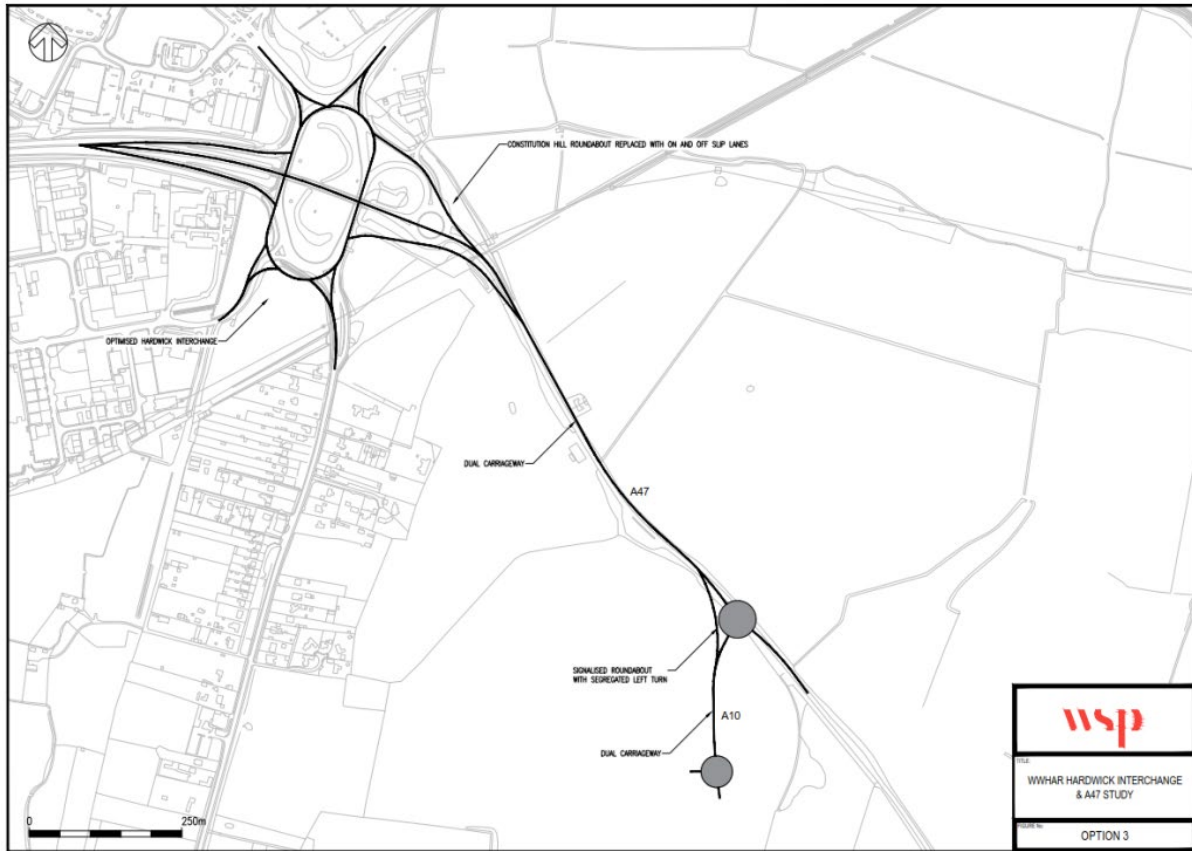
Option 3

1.5.15 Option 3 (Figure 1-6) removes the Constitution Hill roundabout of Hardwick Interchange and replaces it with on and off slips on the eastern side. To accommodate the change in traffic flow movements at Hardwick Interchange associated with the new on-slip, the circulatory has been expanded to the south and traffic signal timings and phasing changed.

1.5.16 As with the previous two options, Option 3 includes a dualling to the north of the A47 between Hardwick Interchange and the WWHAR roundabout. The southern arm of the roundabout will need to be signalised with a south to west left turn bypass once all 4,000 homes are built out and occupied.



Figure 1-6 – A47 Option 3

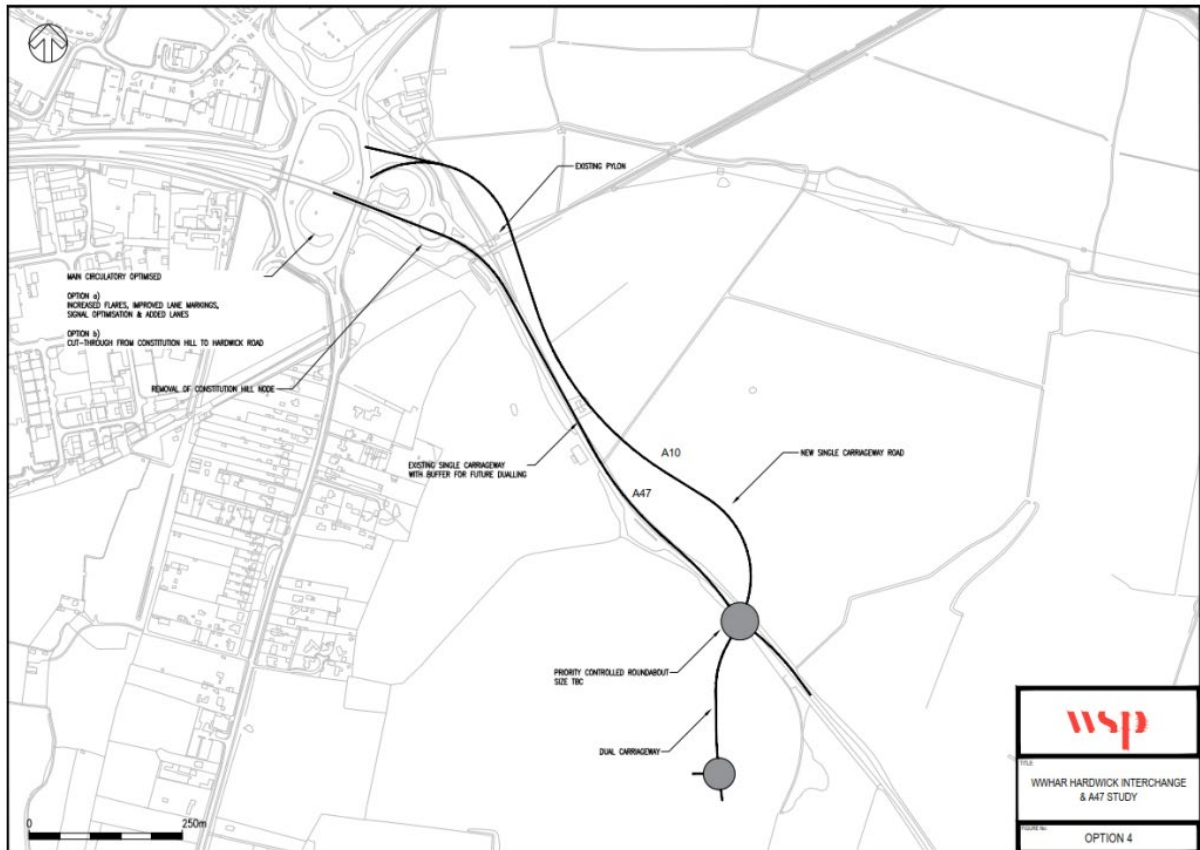


Option 4

1.5.17 The intention of Option 4 (Figure 1-7) is to keep both strategic east-west A47 traffic and north-south A10 traffic separate from each other to remove any potential issues which could arise from lane switching in a short length of road. The option includes a parallel road arrangement between the WWHAR and Hardwick Interchange, the removal of the Constitution Hill roundabout and a new four-arm priority-controlled roundabout at the intersection of the A10 and A47. Option 4 does not require the A47 to be dualled.



Figure 1-7 – A47 Option 4

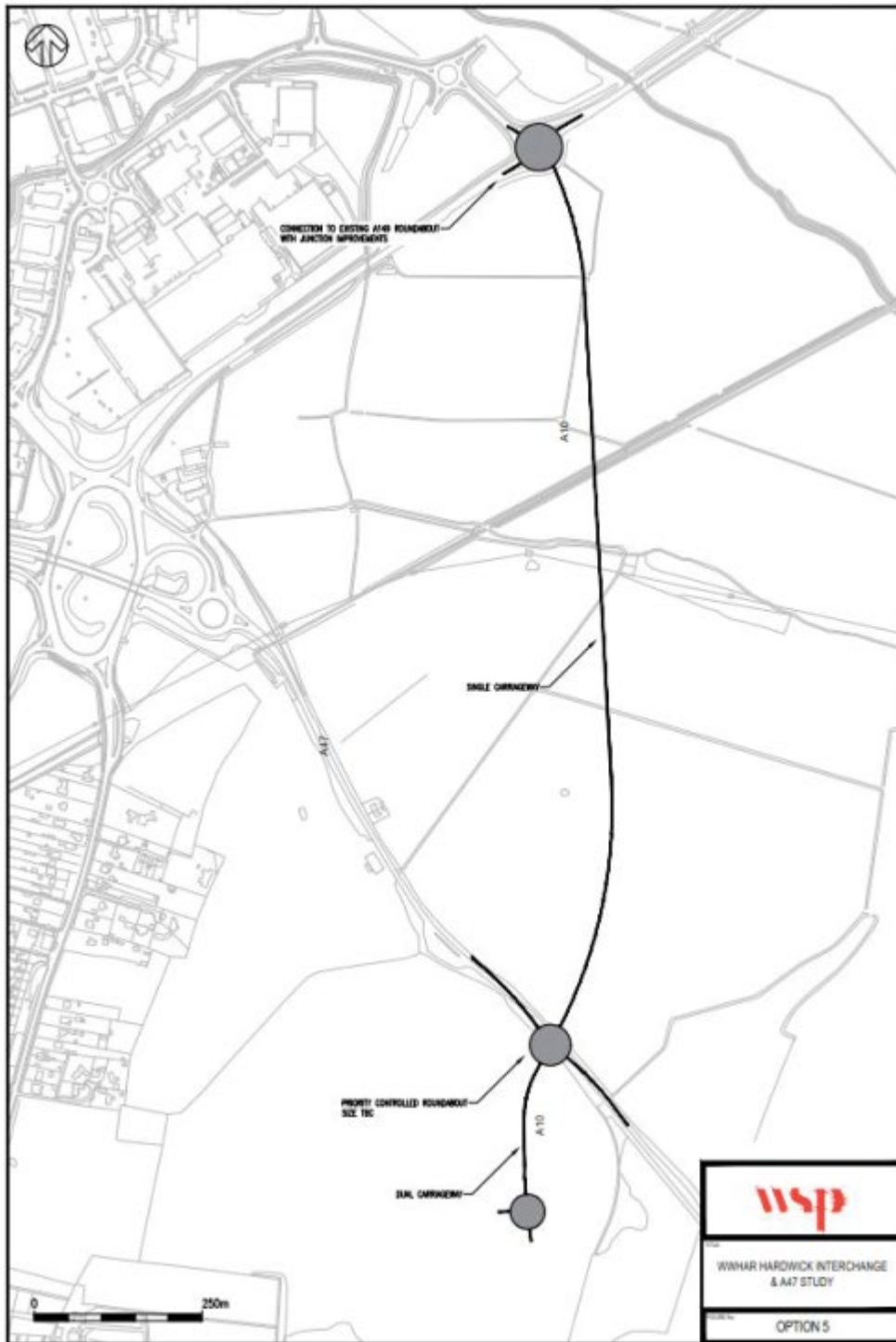


Option 5

1.5.18 Option 5 (Figure 1-8) bypasses the A47 and Hardwick Interchange, limiting the impact of the scheme on the strategic road network and potentially providing wider traffic relief. The option includes a new single carriageway link road between a four-arm priority-controlled roundabout at the WWHAR and A47 intersection and the existing roundabout on the A149 immediately to the north. This option does not include dualling of the A47 or any other change to Hardwick Interchange.



Figure 1-8 – A47 Option 5

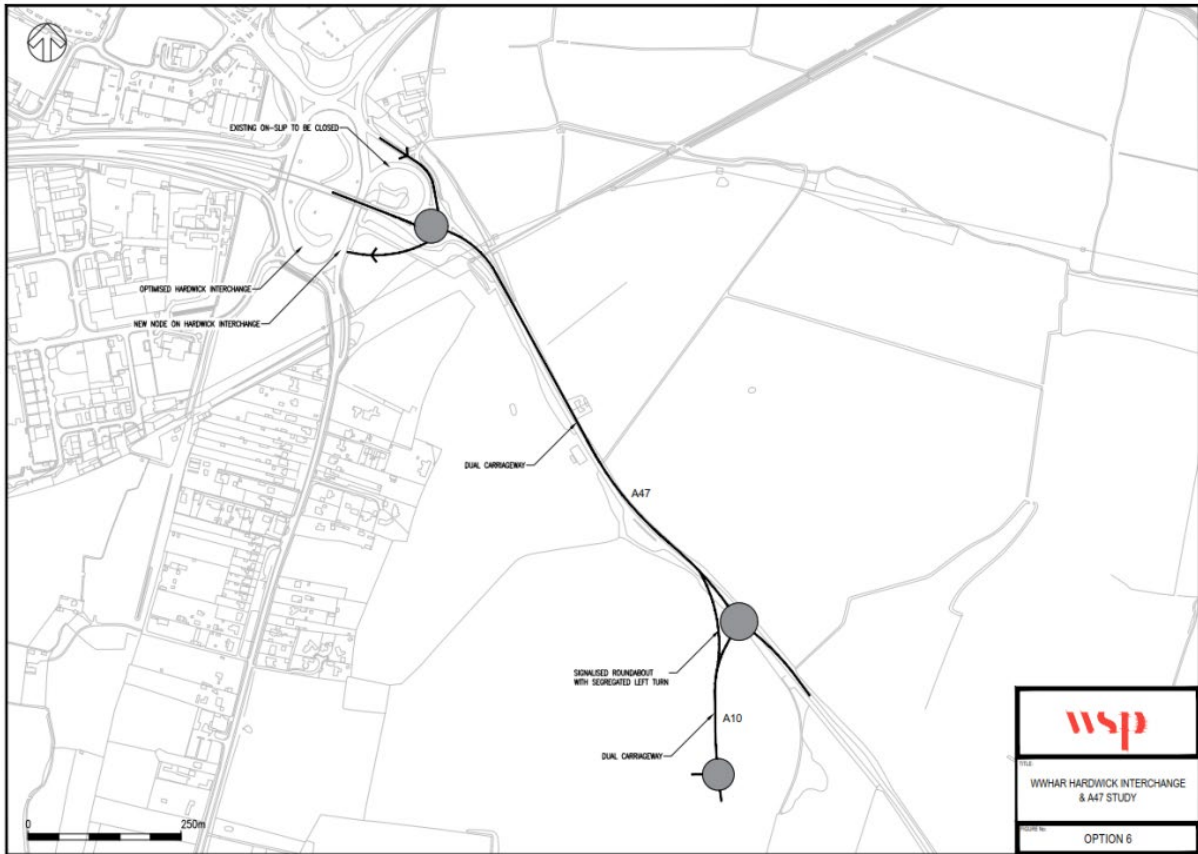


1.5.19 Option 6 (Figure 1-9) is similar to Option 3 as it also provides eastern on and off slip lanes for Hardwick Interchange. However, this option retains the Constitution Hill as a priority-controlled roundabout to allow for more flexible route choices, particularly from Hardwick Road to the A47 west.



1.5.20 As with Option 3, the A47 would be dualled to the north and a signalised roundabout would be placed at the WWHAR intersection with the A47.

Figure 1-9 – A47 Option 6



Option 7

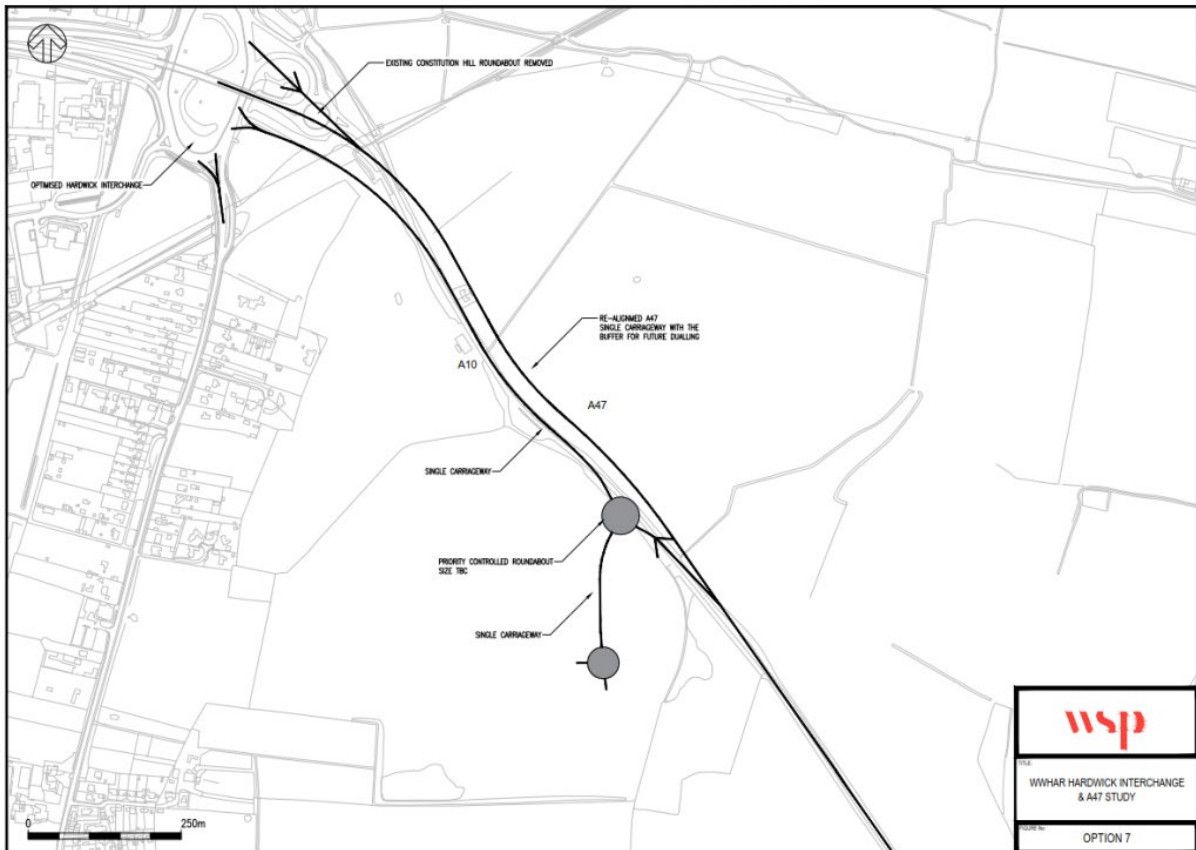
1.5.21 Option 7 (Figure 1-10) is the second parallel road option. In this proposal the existing A47 would become a continuation of the WWHAR (becoming the new A10 route) and would join Hardwick interchange at a new node, providing an uninterrupted journey between Hardwick and a new priority-controlled roundabout.

1.5.22 The A47 would be diverted to take the form of a new single carriageway road north of the new A10 which would be uninterrupted within the study area with all accesses taking the form of merges and diverges.



1.5.23 This option would remove the possibility of turning south to east from the WWHAR to the A47 and traffic wishing to make this movement would need to use the old A10 and turn east at Hardwick Interchange.

Figure 1-10 – A47 Option 7



Options Appraisal

1.5.24 The seven options were tested using a Paramics microsimulation model, considering the overall network performance and journey times. The modelling was conducted for the AM and PM peak hours in 2039.

1.5.25 The results showed that Options 2, 3 and a modified version of Option 6 performed best in the modelling. Option 6 was modified to include a left turn bypass lane, which improved the PM peak period performance, bringing it more in line with that of the AM. These options were taken forward to the second sift, with the remaining options being discounted.

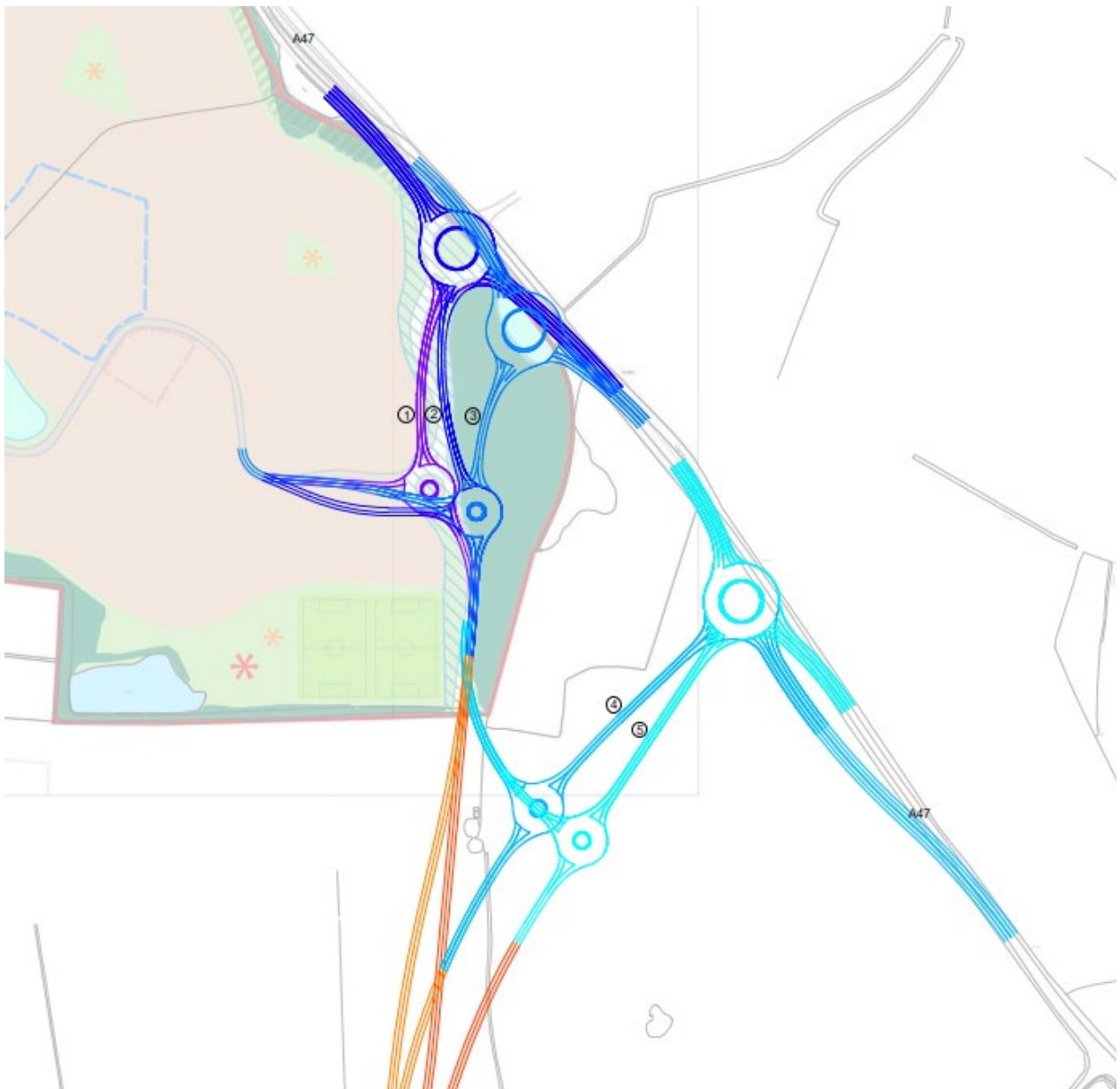


- 1.5.26 For the second sift, the three options (Options 2, 3 and modified 6) were compared in terms of feasibility and environmental impact. The assessment showed that Option 3 is the most feasible and acceptable, largely based on its ability to provide a high level of vehicular capacity and therefore resilience to the local network and strategic journeys in the area. Out of the three shortlisted options, Option 3 can be most easily adapted to suit further enhancements to the A47 and Hardwick Interchange in the future. It is, however, the most expensive option.
- 1.5.27 Option 6 is the next best option in terms of feasibility and acceptability. The primary advantage of this option is that it can be more easily be constructed in a phased manner in line with housing completions. In terms of its vehicular capacity Option 6 is a close second behind Option 3.
- 1.5.28 Compared to the other short-listed options, the performance of Option 2 is poor and although the highway network performance could potentially be further enhanced with additional modifications and changes to traffic signal timings, it is unlikely the performance could improve to a comparable level to Option 3.
- 1.5.29 When comparing options, the construction of Option 2 and Option 3 are both likely to be disruptive to the travelling public. Option 2 requires extensive traffic management, while the construction of Option 3 is all online. However, Option 6 is likely to result in less disruption.
- 1.5.30 Options 3 and 6, however, intersect with an area of habitat located in the south east corner of Hardwick Interchange. With regard to this habitat, Option 2 is considered preferable as it avoids this area of habitat.
- 1.5.31 Despite this, it was therefore recommended that Option 3 was taken forward for inclusion as part of the Proposed Scheme design. Subsequent discussions established that both Options 2 and 6 were not acceptable to National Highways. It has been agreed with National Highways that Option 3 should form part of the Proposed Scheme. In order to mitigate habitat loss from Option 3, habitat compensation has been included within the scheme design.

Northern Section and A47 Tie-in Route Options

1.5.32 Five options were considered for the northern section of the route, shown in **Figure 1-11**. These options are described below.

Figure 1-11 – Northern section route alignment options



Tie-in to the A47

1.5.33 In terms of the tie-in to the A47, that the most suitable form of junction for a new intersection with the A10 is an at-grade roundabout. Other options, including a grade-separated junction or an at-grade priority junction, have



been considered but are not deemed to be commensurate with the likely traffic flows (the former option offering too much capacity at too high a cost, the latter offering too little capacity and having safety implications).

1.5.34 The optioneering study considered five broad options for the location of a new roundabout tie-in on the A47 (shown in **Figure 1-11**):

- The first two options are positioned in the same location as that proposed as part of the Hardwick Green development, and on land owned by Hopkins Homes;
- The third option is to the east of the Hardwick Green option, but within land owned by Hopkins Homes; and
- The fourth and fifth options are positioned to the east of Sheeps Course Wood, in third party land.

Northern Section – Option 1

1.5.35 This option is a simple re-alignment of the link between the two roundabouts proposed as part of the Hardwick Green development, with a tie-in to the remainder of the Proposed Scheme to the south.

Northern Section – Option 2

1.5.36 As with Option 1, but with the access to the Hardwick Green development positioned further east.

Northern Section – Option 3

1.5.37 This option is the same as Option 2 but moves the A47 roundabout further east.

Northern Section – Option 4

1.5.38 This route alignment option is positioned to the east of Sheeps Course Wood, but tight to the property boundary and in third party land.

Northern Section – Option 5

1.5.39 The final route option is the same as Option 4 but is positioned further east to tie-in to an alternative housing access road alignment to the south.



Option Appraisal

- 1.5.40 The five route options presented above were assessed qualitatively to ascertain the relative merits of the different schemes in terms of feasibility and acceptability.
- 1.5.41 The main differentiating factor for the five options is their position relative to Sheeps Course Wood. The disadvantage with Options 1, 2 and 3, which are positioned to the west of the wood, is that the housing access road will effectively create a barrier for the woodland and associated amenity land to the east.
- 1.5.42 Options 4 and 5 by contrast take this new A10 traffic away from the proposed Hardwick Green development rather than through it and in doing so open up new opportunities for further housing. The main disadvantage (and a significant risk) to Options 4 and 5 which are positioned to the east of Sheeps Course Wood is that it will require a significant change of approach to delivery, as these options will require the acquisition of third party land which may or may not be possible or desirable.
- 1.5.43 Due to the risks associated with delivering Options 4 and 5 and the maturity of the Hardwick Green proposals it was felt on balance that, despite the environmental constraints of Sheeps Course Wood, Options 1, 2 or 3 were more deemed more feasible and should be progressed. Discussions with the Hopkins Homes team established that a modification of Option 2 (Option 2A) was to be adopted and agreed. In order to mitigate the segregation of Sheeps Course Wood, a connective corridor of woodland has been included within design, located to the east of the Proposed Scheme.

Northern Section Design Evolution

- 1.5.44 Following the appraisal of Northern Section, further design considerations have been undertaken, resulting in evolution of the design and options, outlined below.



A47

1.5.45 The Proposed Scheme would increase traffic flows on the A47 between the new A47 junction and Hardwick Interchange. Modelling work indicates that this section of the A47 would need to be widened to a dual carriageway to cater for this increased flow. In designing the dualling of the A47, the merits and constraints of widening the road to the north or south were considered. Widening the A47 to the north of the existing road is less likely to impact on the land allocated within the Hardwick Green planning application and the associated green space provision. It would also have less impact on the area of Common Land immediately south of the existing A47. Other land designated as green open space as part of the growth area masterplan will be designated Common Land to offset that which is lost from the A47 verges, if this is deemed necessary.

A47/Housing Access Road Roundabout

1.5.46 A new roundabout on the A47 has been proposed at the junction with the housing access road that links the A10 and A47. The original option (Option 2 in the Northern Section, described above) considered was an offline roundabout to the south with single lane approaches to the south and east. Modelling work has indicated that although this design could cope with the development on the Hardwick Green site, it could not accommodate the traffic when the full 4,000 homes were developed. The primary performance constraint related to insufficient stop line capacity and unbalanced flows at the roundabout (in the AM most movements are south to west, with reverse in PM). The heavy PM movement of traffic turning right from the A47 onto the housing access road that links to the A10 results in significant queuing on the A47 eastern arm. In order to address the imbalanced flow issues, the roundabout design includes traffic signals. To mitigate delays for A47 east-west traffic the design proposes a segregated left-turn bypass lane and the provision of a third lane on the approach to the A47 from the west.



Hardwick Green Access Roundabout

1.5.47 As part of the housing allocation, there are proposals for an access roundabout from the Proposed Scheme. Based on modelling undertaken, it is proposed to dual the northern section of the Proposed Scheme, between the Hardwick Green roundabout's northern arm and the A47 roundabout.

Central and Southern Sections

1.5.48 In December 2018, an optioneering study was undertaken focussing specifically on the route alignment options at the central and southern end of the Proposed Scheme, the tie-in to the A10 and the integration with adjoining side roads.

1.5.49 Four main route alignment options were considered which are described below.

Central Section

1.5.50 Two options were considered for the central section of the Proposed Scheme.

1.5.51 The central options are very similar (shown in **Figure 1-12** and **1-13**) but vary in both horizontal and vertical alignment to avoid constraints. These constraints include veteran trees, public rights of way (PRoW), areas of common land, sites of landscape character value (as identified in the North Runcton and West Winch Neighbourhood Plan (**Ref 4.4**), and a site of sports, recreation and activity value.

1.5.52 The options have slightly different horizontal geometry, with Option 2 presenting a more direct route from the A10 to the A47. Additionally, both central alignment options tie-in to the different alignment options to the north and south.



Figure 1-12 – Central alignment Option 1

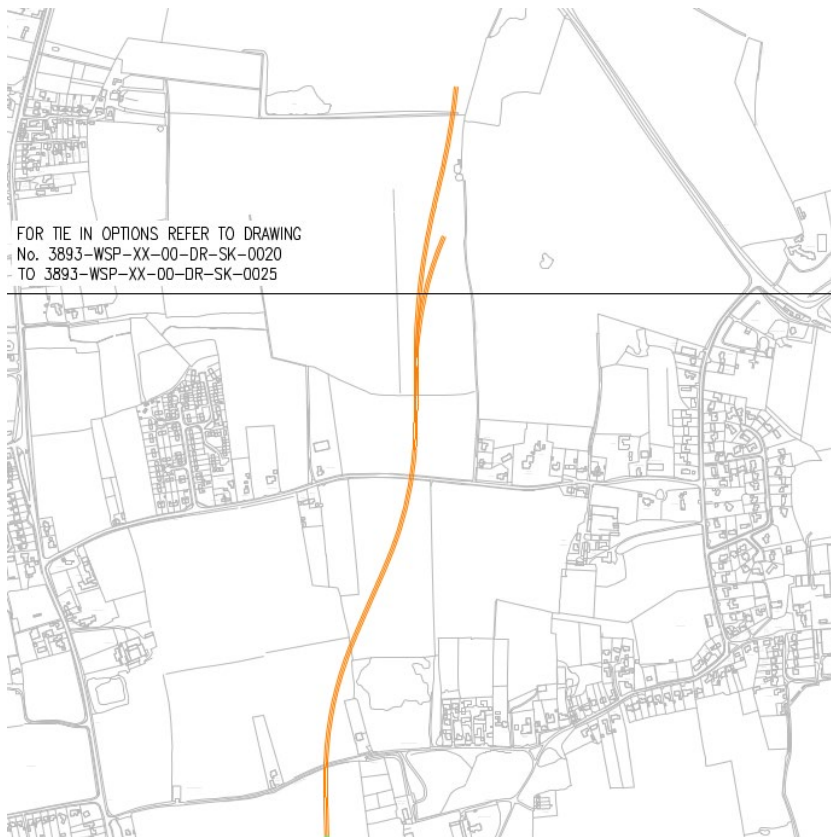
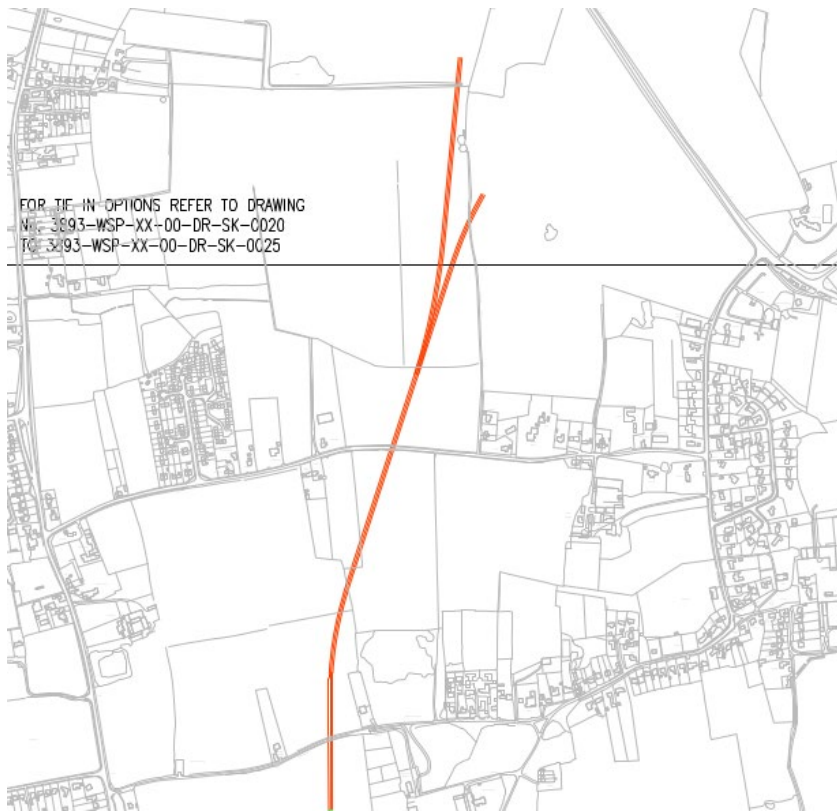




Figure 1-13 – Central alignment Option 2



Options Appraisal

1.5.53 The alignment options presented above were assessed qualitatively to ascertain the relative merits of the different schemes in terms of feasibility and acceptability.

1.5.54 For the central section, Option 2 was considered to be the preferred option. This was determined as Option 2 has better quality horizontal alignment than Option 1. However, the appraisal of options identifies that Option 2 impacts more landowners and does not avoid as many environmental constraints.

1.5.55 When comparing the environmental constraints of both options, Option 1 is located close to veteran trees, and is likely to result in negative effects on this asset. Both Options 1 and 2 intersect a site of sports, recreation and activity value and sites of landscape character value. Option 1 is also located in close proximity to a site of nature conservation value. Therefore, Option 2 is considered preferable as there are fewer negative environmental effects associated with this option.



Central Section Design Evolution

1.5.56 Following this appraisal, further design considerations have been undertaken, resulting in evolution of the design and options. Design evolution have occurred for a multitude of reasons, mainly due to consultation with NCC and National Highways, or environmental constraints (including updated surveys).

1.5.57 Traffic modelling indicates that a single carriageway road is required for the housing access road between the existing A10 and the Hardwick Green access roundabout (located in the northern section of the Proposed Scheme). Between this roundabout and the A47 tie-in there is a short dualled section to allow capacity for vehicles on approach to the A47 roundabout. The alignment of the Proposed Scheme incorporates an overtaking section between the existing A10 and the southern residential access. The key factors influencing the design of the housing access road include:

- Design standards set out in DMRB;
- Site topography;
- Significant utilities;
- Environmental constraints including drainage;
- Land ownership; and
- Related policy e.g. Neighbourhood plans.

1.5.58 The primary constraints which influenced the design are the common land adjacent to the A47, the outstanding Hopkins Homes planning application, woodland, the presence of two nationally important gas mains running east-west through the area and maintaining access to all affected properties.

Existing Side Roads

1.5.59 The housing access road intersects Rectory Lane and Chequers Lane, two existing single carriageway roads which connect the villages of West Winch and North Runcton. The Proposed Scheme design includes an east-west vehicular bridge on Rectory Lane with a shared footway/cycleway on one



side. The bridge would provide a connection for non-motorised users with the housing access road. The purpose of the bridge is to provide high levels of local connectivity between the two villages whilst discouraging rat-running for strategic traffic between the existing A10 and A47. No alternative designs were considered for the bridge at Rectory Lane.

1.5.60 The inclusion of a bridge at Chequers Lane was also considered within the design. Four options were considered:

- Option 1 – Grade separated bridge;
- Option 2a – At-grade crossing (non-signalised);
- Option 2b – At-grade crossing (signalised);
- Option 3 – Diversion to northern roundabout; and
- Option 4 – Diversion to Rectory Lane Bridge.

1.5.61 These options were appraised using LTN120 scoring methodology, with Option 2b being the preferred option. Compared to other options, Option 2b provides dedicated connections to other routes, with no interruptions to journeys, as well as saving 100m of journey distance. Additionally, this option is safer than the other options, and provides a greater level of protection for user safety when compared to other options.

1.5.62 Within the Chequers Lane appraisal, Manor Farm connectivity was also considered, due to their close proximity. For Manor Farm, four options were also considered:

- Option 1 – All movements direct access;
- Option 2a – Left in/out only direct access (physical island at the centre of main carriageway);
- Option 2b – Left in/out only direct access (Physical island at the edge of main carriageway);
- Option 3 – Diversion to Setch Lane; and



- Option 4 – All movement direct access connecting A10 roundabout.

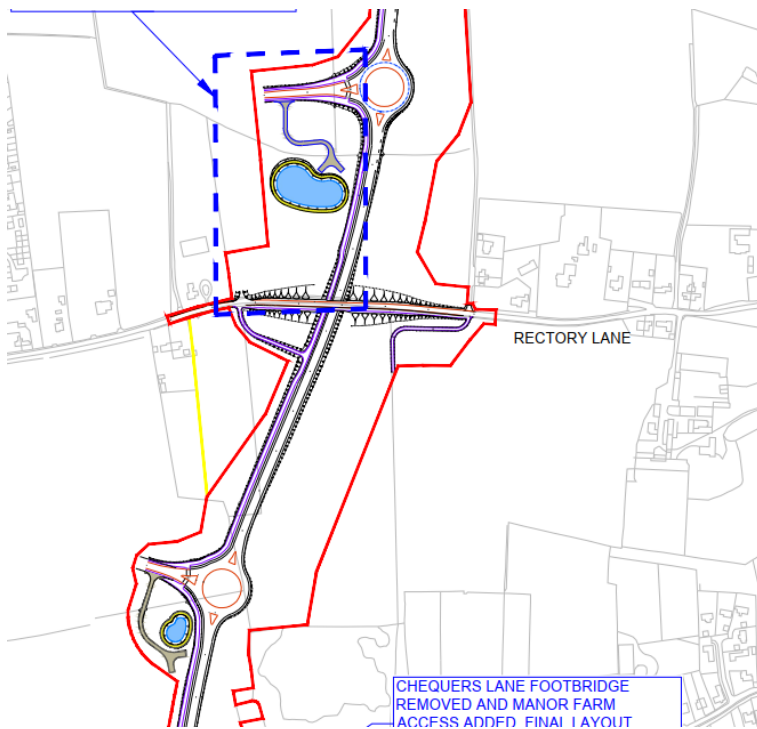
1.5.63 As a result of this appraisal, Option 2a was carried forward within the Proposed Scheme design. The appraisal identified that the option provides direct access to the Proposed Scheme, however this may result in a slightly longer route for accessing the wider area. Option 2a provides a safer option for commuters, however there is reduced safety for the private access to Manor Farm, due to the location of the access within the overtaking section of the Proposed Scheme. The option also does not require additional land take. Overall, Option 2a provides improved safety, particularly when compared to Option 1, and has improved geometric standards when compared to other options.

Residential Access

1.5.64 The Proposed Scheme will facilitate the development of 4,000 new homes; therefore the road must provide appropriate access to this site, but not compromise the new road's function as a major north-south route that is part of the MRN. Analysis suggested that two further junctions were required to serve the dwellings. Therefore, the design proposed two ghost island priority junctions for residential access from the housing access road.

1.5.65 Following the development of the priority junctions, consultation with NCC was undertaken. The outcome of this consultation included changing the priority junctions located within the central section to roundabouts, providing access from the housing access road. As a result of including roundabouts, the speed limit along the Proposed Scheme was reduced in this section accordingly (from 60mph to 40mph) in order to improve user safety. The updated design is shown in **Figure 1-14**.

Figure 1-14 – Central section – design update, roundabout inclusion



Southern Section

1.5.66 It is proposed that the southern tie-in of the WWHAR with the existing A10 is via a roundabout. A priority junction has also been considered for this location, but given the anticipated traffic flows on the WWHAR, modelling suggested it could become difficult for traffic to exit the minor arm.

1.5.67 There were two options presented for the location of the A10 roundabout, detailed below.

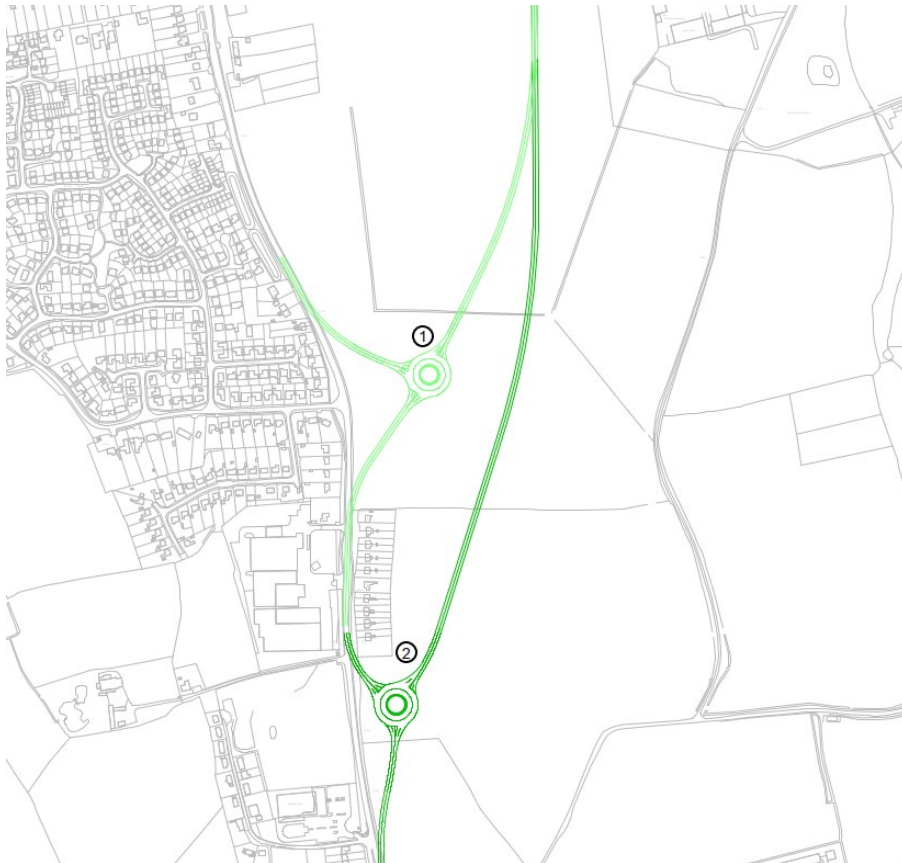
Southern Section – Option 1

1.5.68 This option ties into the existing A10 at the earliest opportunity south of West Winch, but north of a row of 19 residential properties and a commercial unit (shown in **Figure 1-15**). Access to the existing A10 and properties currently fronting the A10 close to the tie-in point will be via a new link to an off-line roundabout.

Southern Section – Option 2

1.5.69 As with Option 1, but tying in further south, thereby bypassing the 19 residential properties and single commercial unit and linking back to the existing A10 via new links to an off-line roundabout (shown in Figure 1-15).

Figure 1-15 – Southern section Options 1 and 2



Options Appraisal

1.5.70 The alignment options presented above were assessed qualitatively to ascertain the relative merits of the different schemes in terms of feasibility and acceptability.

1.5.71 For the southern section, Option 1 was assessed as the preferred option. This option is located within the strategic growth area, requires less land, has a better alignment to the A10, and provides improved value engineering for the route. Additionally, Option 1 has reduced impacts on the 19 residential properties located in close proximity to the Proposed Scheme. Option 1 also



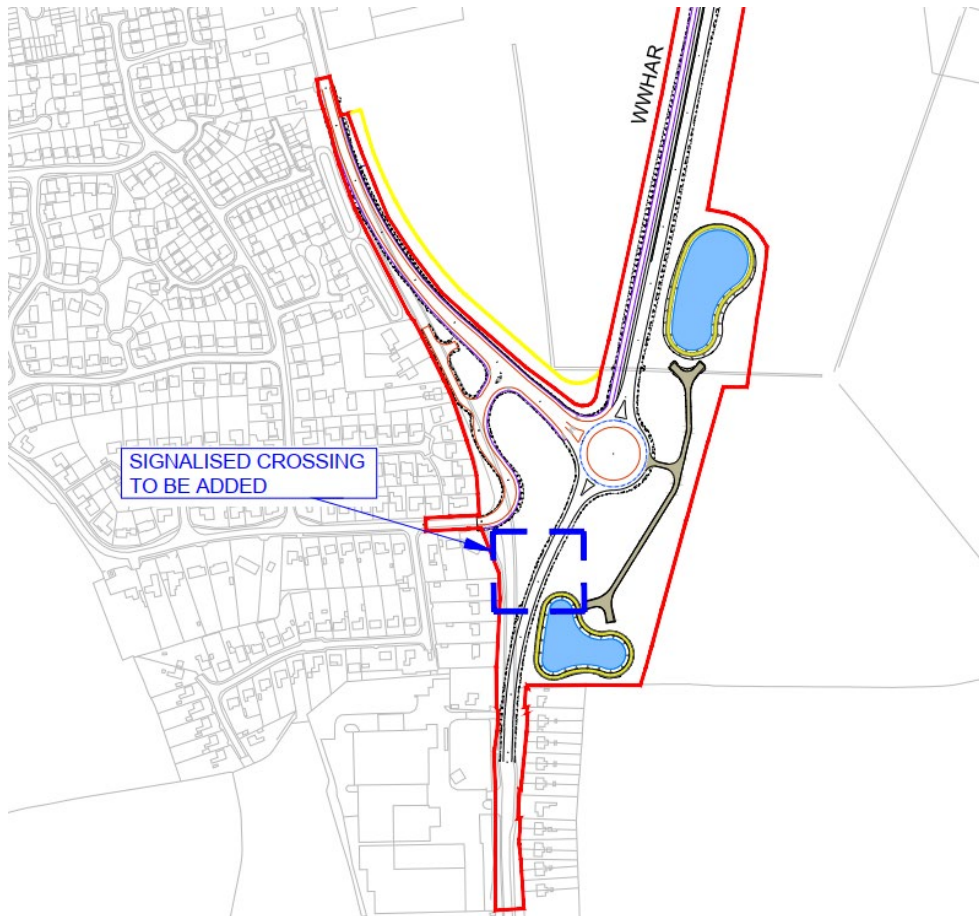
avoids an area of habitat, whereas Option 2 intersects this habitat and would result in loss of habitat. Option 1 is therefore preferable.

Southern Section Design Evolution

Gravelhill Lane

1.5.72 Following the selection of Option 1 for the A10 tie-in, an additional tie-in between Gravelhill Lane and the roundabout was included. However, no alternatives for this tie-in were considered. The Gravelhill Lane tie in is shown in **Figure 1-16**.

Figure 1-16 – Southern section Option 1 – Design evolution





1.6 Summary and Conclusion

1.6.1 This chapter has demonstrated that extensive consideration has been given to potential reasonable alternatives to the Proposed Scheme prior to reaching a preferred option.

1.6.2 The Proposed Scheme has been refined in response to known constraints, including environmental receptors, and there is an evidence base of surveys and background data underpinning the option selection and refinement. Considerable effort has been made to assess the potential environmental effects of the scheme throughout the design process. Relevant surveys and data have been collected holistically to inform the detailing of the design and mitigation measures, so that the Proposed Scheme adequately meets the legislative requirements applicable to protected species and habitats that may be affected by the scheme.

1.6.3 Due regard to applicable policy and environmental legislation has been taken into account so that a sustainable design in the context of the National Planning Policy Framework (NPPF) can be achieved. This is further discussed in the **Planning Statement**.

1.6.4 The reasonable alternatives considered through the iterative design process were:

- Do-Nothing Scenario;
- Scheme Alternatives and
- Route Alignment Alternatives.

1.6.5 The 'Do-Nothing' Scenario is highly unlikely given that the BCKLWN Core Strategy (2011) (**Ref. 4.2**) and the Site Allocations and Development Management Policies Plan (2016) (SADMP) (**Ref 4.3**) require the Proposed Scheme to facilitate the development of the 'strategic urban expansion area' under Policies CS03 and E2.1. The Proposed Scheme is therefore required to support the development of the urban expansion area and housing in the area and associated increased in traffic.



- 1.6.6 There have been a number of alternatives considered for the route alignment of the Proposed Scheme. These options have considered environmental constraints, modelling, safety, and feasibility.
- 1.6.7 For the Southern Section, two options were considered, with Option 1 being carried forward into the scheme design. While for the Central Section, two options were considered, with Option 2 being carried forward. Option 2 also results in fewer negative effects on the local environment, namely veteran trees, when compared with Option 1.
- 1.6.8 For the Northern Section, 5 options were considered. Following appraisal, a modification of Option 2 (Option 2a) was carried forward into the Proposed Scheme. There were also five options considered for the Tie-in to the A47, and three options considered for the integration with Hardwick Green. In terms of the A47 design, 7 options were considered, with Option 3 being carried forward into the Scheme design. These Options are likely to segregate habitats, therefore, mitigation measures including habitat compensation and a connective corridor have been implemented into the Proposed Scheme design.
- 1.6.9 For the Southern, Central, and Northern sections of the route, further evolutions have been developed in response to stakeholder consultation, and additional constraints.
- 1.6.10 The aforementioned decisions have shaped the existing design of the Proposed Scheme, which is presented in **Chapter 3: Description of the Proposed Scheme**.
- 1.6.11 The final design was selected as this will improve both the capacity and cost of the route, providing links between Hardwick Interchange, A47 and A10. The overall scheme includes:
- 3.5km of new single lane access road, with a new roundabout junction between the West Winch Housing Access Road (WWHAR) and the A47 trunk road providing access to the planned Hardwick Green development;



- A new roundabout junction between the WWHAR and the A10 at the southern end of the WWHAR;
- Roundabout Junctions on the WWHAR to provide access to the residential allocation area;
- Treatment of local roads which will be severed by the WWHAR, including a new road over bridge with shared footway and cycleway on Rectory Lane to cross over the proposed WWHAR and the permanent stopping up of Chequers Lane for vehicular traffic;
- A new access to Manor Farm constructed from Chequers Lane;
- Modification and re-orientation of the Hardwick Interchange;
- Dualling of the A47 to the north of the existing highway alignment) between the WWHAR and the A10/A47 Hardwick Interchange junction;
- Temporary working areas for road construction including haul routes and two sets of National Grid gas main diversion works including construction compounds and temporary access and working areas;
- The demolition of two dwellings - Hill Cottages on A47 Constitution Hill;
- The construction of 7 no. drainage basins adjacent to Hardwick roundabout and housing access road;
- The construction of drainage swales along the proposed new housing access road;
- Including reference to bridleway in the description of the Rectory Lane crossing; and
- The construction of maintenance access tracks to the south o A47, Rectory Lane and southern roundabout to serve drainage basin.

1.6.12 All other beneficial effects associated with the Proposed Scheme are set out within technical **Chapters 6 to 16**.



1.7 References

- **Reference 4.1:** Town and Country Planning (Environmental Impact Assessment) Regulations, 2017. Statutory Instrument 2017 No. 571.
- **Reference 4.2:** Borough of King's Lynn & West Norfolk Core Strategy (2011) [online] Available at: [Borough of King's Lynn & West Norfolk Core Strategy](#)
- **Reference 4.3:** Borough of King's Lynn & West Norfolk Site Allocations and Development Management Policies Plan (2016) [online] Available at: [Borough of King's Lynn & West Norfolk Site Allocations and Development Management Policies Plan](#)
- **Reference 4.4:** Borough of King's Lynn & West Norfolk, North Runcton and West Winch Neighbourhood Plan (2016)