

A47/A11 Thickthorn Junction

Scheme Number: TR010037

Volume 6

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

March 2021

Infrastructure Planning

Planning Act 2008

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

The A47/A11 Thickthorn Junction
Development Consent Order 202[x]

**CHAPTER 3
Assessment of Alternatives**

Regulation Number:	Regulation 5(2)(a)
Planning Inspectorate Scheme Reference	TR010037
Application Document Reference	TR010037/APP/6.1
BIM Document Reference	HE551492-GTY-EGN-000-RP-LX-30005
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Version	Date	Status of Version
Rev 0	March 2021	Application Issue

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3. Assessment of alternatives

3.1. Assessment methodology

- 3.1.1. The Proposed Scheme has been subject to a process of staged development and evolution. The main development stages were:
- identification of the need for the project
 - options identification
 - options selection
 - preferred route announcement (PRA)
 - post PRA design development for statutory consultation
 - continued design development post statutory consultation
- 3.1.2. In seeking to resolve the transport problem at the existing Thickthorn Junction, 26 potential options for improvement of the junction were considered during 2016. Initial assessments were undertaken which looked at strategic and economic impacts, deliverability and financial and funding considerations.
- 3.1.3. On completion of the initial assessments, one potential option (the single option) was considered for further review which comprised free flow link roads connecting the A11 and A47 and bypassing the Thickthorn Junction. This option performed well against the Proposed Scheme objectives and was considered to be the only feasible solution for further development.
- 3.1.4. The single option was taken for more detailed assessment to identify its performance against safety, environmental, engineering, transportation and economic criteria.
- 3.1.5. The options assessed can be reviewed in the Scheme Assessment Report (2017) at the following link:
- <https://highwaysengland.citizenspace.com/he/a47-a11-thickthorn-junction-improvement/results/schemeassessmentreport2018.pdf>
- 3.1.6. The assessment has been completed in line with the Design Manual for Roads and Bridges (DMRB).

Non-statutory public consultation

- 3.1.7. In 2017 the single option was presented at a non-statutory public information event (PIE). This was to gather feedback and identify issues prior to a final decision on the PRA.

3.1.8. Key findings from the non-statutory consultation were:

- Generally good support for the scheme from local residents, stakeholders and the travelling public.
- Disapproval of Cantley Lane South being reconnected to Cantley Lane, north of the A47.
- Concerns about the impact during construction period in terms of noise pollution and traffic disruption.
- Requests for provision for walkers, cyclists and horse riders.

3.2. Preferred route announcement (2017)

3.2.1. On completion of the 2017 non-statutory public consultation, the single option was announced as the preferred route announcement (PRA) in August 2017. The PRA was published and set out the proposals for the A47/A11 Thickthorn Junction, document available here:

https://highwaysengland.citizenspace.com/he/a47-a11-thickthorn-junction-improvement/results/25119c-wlea-5-thickthorn_v2.pdf

3.2.2. Subsequently, modifications have been proposed to the single option PRA to improve the Cantley Lane South link road to the B1172 Norwich Road.

3.2.3. The modifications were in response to the feedback received during the 2017 non-statutory public consultation relating to the proposed reconnection of Cantley Lane South to Cantley Lane. The main concerns raised are summarised as follows:

- Increased traffic along Cantley Lane, particularly associated with the recycling centre at Station Lane
- Increased traffic and congestion in Cringleford
- Cantley Lane becoming the main access route from South Norwich to Ketteringham
- Rat running to the A11 via Station Lane
- Underpass being unsafe for walking, cycling and horse riding
- Environmental impact on wildlife and trees
- Increased noise/air pollution
- Impacts upon landscape protection zone adjacent to the new development
- Regular use of the footbridge
- Land severance

3.3. Reasonable alternatives studied

Proposed reconnection of Cantley Lane South to Cantley Lane

- 3.3.1. As a result of the 2017 non-statutory public consultation feedback, seven options were proposed to compensate for the severance of Cantley Lane South.
- 3.3.2. The preliminary option designs which were assessed further are summarised below with full details provided in the *A47 Thickthorn Junction - Highways England Side Road Strategy Options Report (2018)*.

Option 1 - Connection of Cantley Lane South to Round House Roundabout via an Overbridge across the A47

- 3.3.3. The alignment of Option 1 follows the A47 southern boundary as closely as possible in order to reduce severance of the land between Cantley Lane South, the A47, and the Breckland Railway Line; as shown in Figure 3-1
- 3.3.4. The local road link is then routed through the development West of Cringleford, via the estate roads, before connecting to Round House Roundabout. This route avoids the need to route vehicles along Cantley Lane (north).

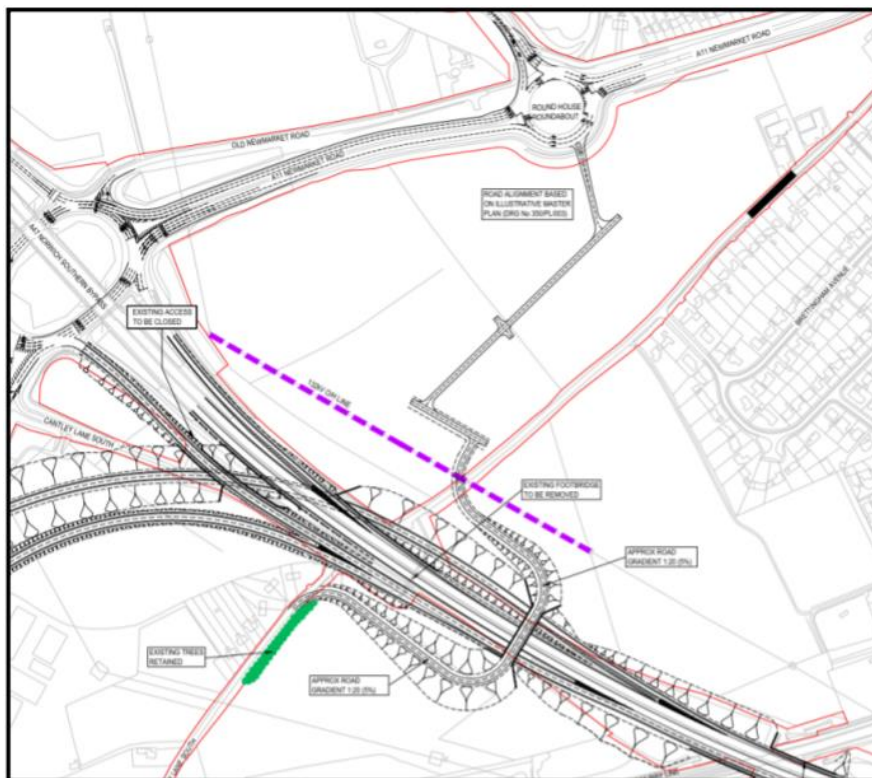


Figure 3-1 Option 1: Connection of Cantley Lane South to Round House Roundabout via an overbridge across the A47

diverted along the edge of the existing trees in order to reduce the severance of the land between Cantley Lane South, the A47, and the Breckland Railway Line.

- 3.3.10. The local link road is then routed through the West of Cringleford development land via the estate roads before connecting with Round House Roundabout.
- 3.3.11. A structure is required under the A47 mainline in order to accommodate the proposed local road link reconnecting Cantley Lane South and Round House Roundabout.

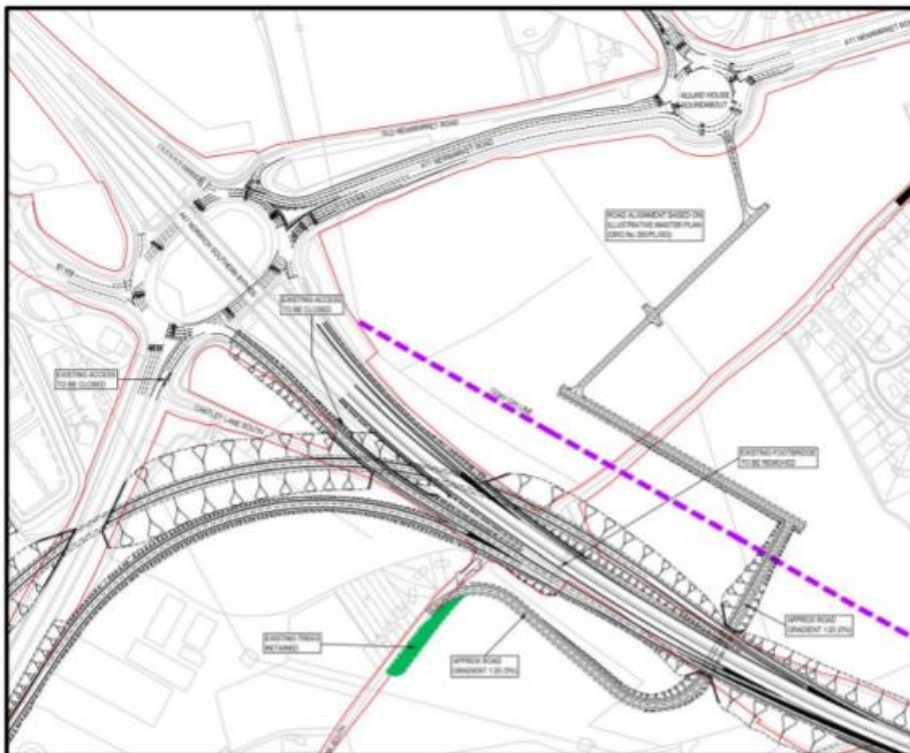


Figure 3-3: Option 3: Connection of Cantley Lane South to Round House Roundabout via an A47 underbridge

Option 4 - Connection of Cantley Lane South to B1172 Norwich Road

- 3.3.12. Option 4 connects Cantley Lane South with the B1172 to the west of the Thickthorn Junction, to restore access to the main highway network for the properties along Cantley Lane South, who otherwise would have their access restricted by the low bridge, when the Cantley Lane (South) links to Thickthorn Junction are removed to implement the scheme. The proposed link passes over the A11 mainline and the A11 south to A47 east bi-directional interchange links, as shown in Figure 3-4.
- 3.3.13. There will be a replacement for the existing footbridge across the A47 between Cantley Lane South and Cantley Lane, which has to be removed to

accommodate the proposed A11 south to A47 east bi-directional Interchange links.

3.3.14. The proposed local road link crosses over:

- The existing A11
- The proposed A11 to A47 link road

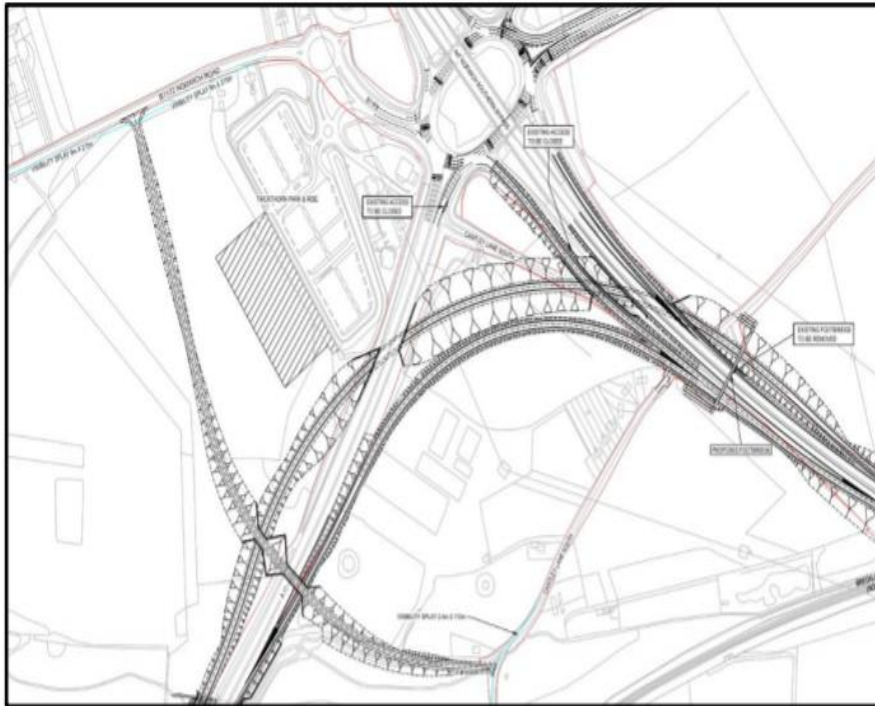


Figure 3-4: Option 4: Connection of Cantley Lane South to B1172 Norwich Road

Option 5 - A11 and Station Lane Compact Grade Separated Junction

3.3.15. Options 5, 6 and 7 were designed to improve the Station Lane junction to facilitate a right turn from Station Lane (south) to A11 northbound.

3.3.16. Option 5 is a compact grade separated junction, which is created by providing a link between Station Lane north and south, which crosses the Breckland Railway Line, and the A11 mainline, as shown in Figure 3-5. This junction provides full turning movements.

3.3.17. There will be a replacement for the existing footbridge across the A47 between Cantley Lane South and Cantley Lane, which has to be removed to accommodate the proposed A11 south to A47 east interchange links.

3.3.18. Both overbridges (one spanning over the A11 and one spanning over the Breckland Railway Line) are roughly square to the abutments.

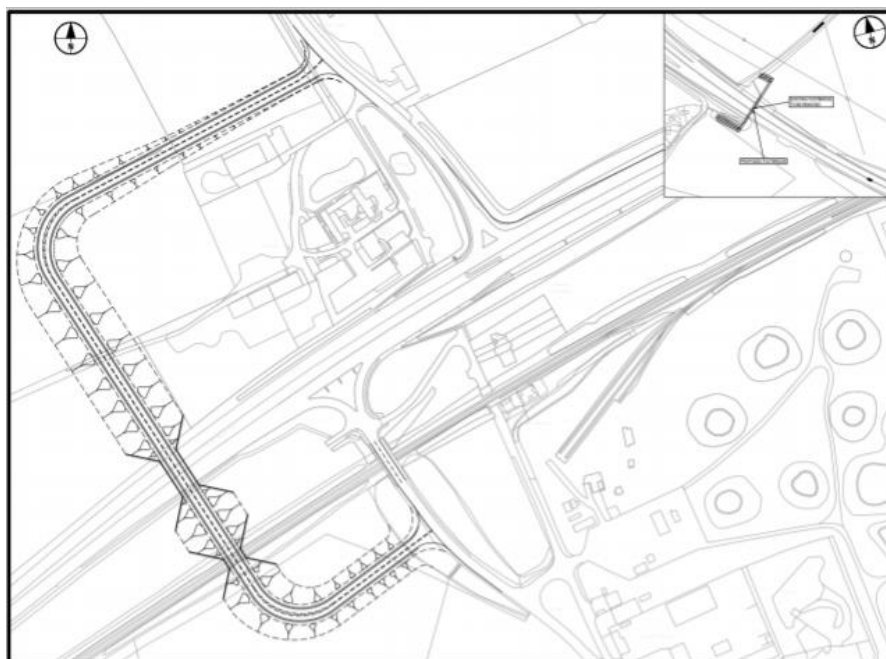


Figure 3-5: Option 5: A11 and Station Lane compact grade separated junction

Option 6 - A11 and Station Lane Roundabout

- 3.3.19. Option 6 is an 'at grade' roundabout, which provides full turning movements between Station Lane (south) and the A11. This will enable traffic returning from the recycling centre to turn right onto the A11 towards Thickthorn Junction, as shown in figure 3-6. The Station Lane (north) junction remains left-in, left out.
- 3.3.20. The new roundabout entry for Station Lane (south) is constrained by the existing access to Station Cottages and the existing railway bridge.
- 3.3.21. There will be a replacement for the existing footbridge across the A47 between Cantley Lane South and Cantley Lane, which has to be removed to accommodate the proposed A11 south to A47 east bi-directional interchange links.

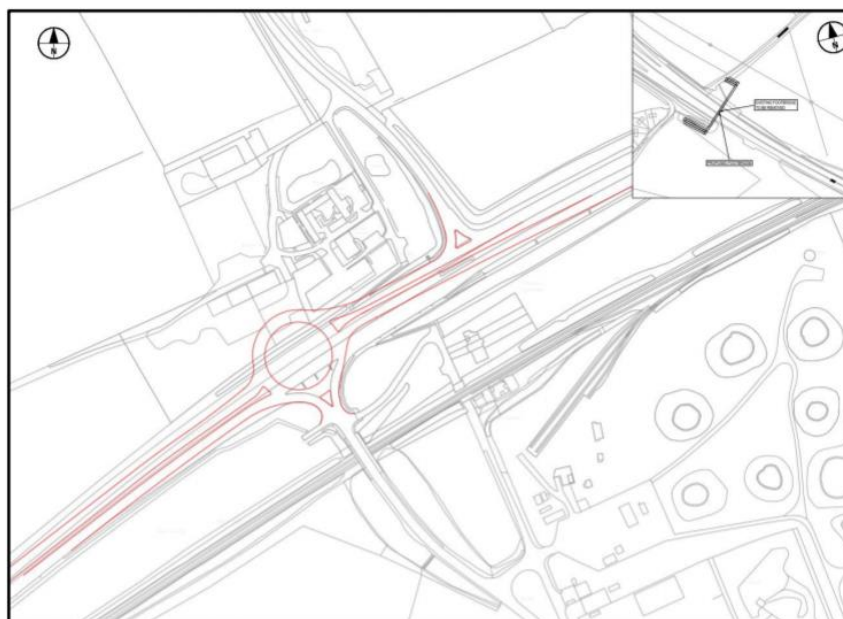


Figure 3-6: Option 6: A11 and Station Lane roundabout

Option 7 - A11 underpass

- 3.3.22. Option 7 consisted of a new three arm roundabout proposed to the north of the A11, which connects to the proposed A11 northbound off-slip, and A11 northbound on-slip. This roundabout is located approximately 350m to the west of Station Lane (south), as shown in Figure 3-7.
- 3.3.23. The roundabout connects to Station Lane (south) via a two-way link, which passes beneath the A11 mainline.
- 3.3.24. The existing A11 southbound off-slip and on-slip for Station Lane (south) remain unchanged.
- 3.3.25. Cantley Lane footbridge is as discussed for Option 4.

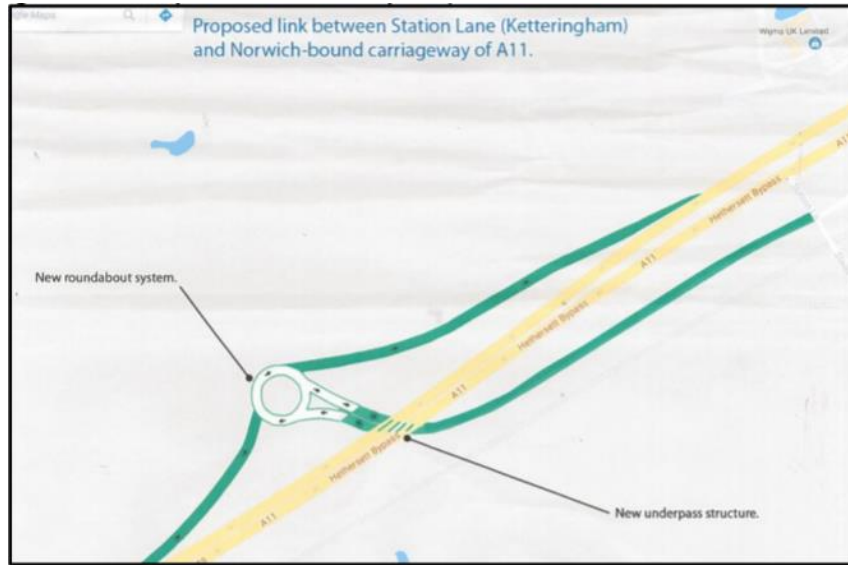


Figure 3-7 Option 7: A11 underpass southwest of Station Lane

Justification for chosen option

3.3.26. Options 1 and 2 were not considered further due to:

- The overbridge and its high embankments being considered as visually intrusive to the residents of Cantley Lane South.
- Proximity of overhead power lines.
- Potential for greater propagation of traffic noise.
- Potential for an increase in through traffic along Cantley Lane South and the Cringleford Residential Extension Development.

3.3.27. Options 5, 6 and 7 detailing improvements to the Station Lane junction were not considered further due to:

- Properties on Cantley Lane South requiring additional detours of between 4.7km and 5.3km, depending on the options chosen in order to access the existing A11/A47 Thickthorn Junction.
- The detour noted above leading to adverse response times for emergency services, accessing Cantley Lane South.
- Access to properties on Cantley Lane South being restricted by the low railway bridge. With a headroom of 13 feet 6 inches, access would be restricted for agricultural equipment

3.3.28. Options 3 and 4 were considered suitable for further progression. Detailed assessments for engineering design and environmental aspects including a Designers Risk Assessment were undertaken and presented in the Side Roads Options Strategy Options Report prepared for the 2019 statutory consultation.

3.3.29. The Side Road Options Strategy Report can be found at the following link:

https://highwaysengland.citizenspace.com/he/a47-a11-thickthorn-junction-improvement-scheme/supporting_documents/Side%20Road%20Strategy%20Options%20Report%20Part%201%20pages%20to%2057.pdf

3.3.30. On completion of the Side Road Options Strategy Report, although the environmental impacts of Option 4 were considered to be higher than Option 3, the preferred Option 4 solves the existing traffic and safety problems for the following reasons:

- Minimises disruption to road users as the majority is offline reducing traffic management to existing highways. The existing road can remain in use for local traffic during construction.
- Reduces the risk of the route being used as a rat run.
- Removes impacts upon Cringleford Residential Extension Development.
- Avoids lengthy diversions for residents along Cantley Road.
- Provides an attractive and continuous route for non-motorised users between Cantley Lane and Cantley Lane South via the new non-motorised user bridge across the A47.
- Generates less excavated materials and reduces the export of surplus excavated material.
- Reduces the effects from noise, air pollution and vibration as the option is further from Cringleford properties and impacts fewer properties.
- Reduces the amount of works directly adjacent to overhead cables.
- Considers the potential to expand the Thickthorn Park and Ride site in the future.

3.3.31. Table 3.1 shows a summary of environmental impacts between Option 3 and Option 4.

Table 3.1: Summary of options 3 and 4 – environmental impact

Topic	Option 3 - Comment	Option 4 - Comment
Air Quality	Option 3 air quality impact not likely to be significant.	Option 4 air quality impact not likely to be significant.
Biodiversity	Option 3 adversely impacts upon NERC Act habitats and other habitats of high biodiversity value. Mitigation measures can be provided.	Option 4 adversely impacts upon NERC Act habitats and other habitats of high biodiversity value including veteran trees. Mitigation measures can be implemented except for veteran trees where mitigation measures would take decades to provide the same quality of biodiversity value as would be lost.

Topic	Option 3 - Comment	Option 4 - Comment
Heritage	Option 3 situated within 270m of a scheduled monument potentially introducing temporary effects.	Option 4 situated within 20m of a scheduled monument significantly impacting legibility of the context of the asset and loss of archaeology remains.
Landscape & Visual	Option 3 at-grade or below grade avoids loss of Cantley Wood, severance of fields and favourable visual impacts.	Option 4 results in partial loss of Cantley Wood, severance of fields and adverse visual impacts as a result of elevated highway.
Noise	Option 3 slightly greater impact due to the Cringleford Development.	Option 4 results in no noise increase to Cantley Lane residents.
Water Environment	Option 3 slightly adverse impact due to the highway cutting intercepting groundwater.	Option 4 adversely impacts a source protection zone, landfill and flood plain. There would also be works to divert the watercourse which would negatively impact the water environment.

3.4. Post PRA design development

3.4.1. The proposed single option for the A47/A11 Thickthorn Junction was developed further in 2018 and can be reviewed in the Scheme Assessment Report at the following link:

<https://highwaysengland.citizenspace.com/he/a47-a11-thickthorn-junction-improvement/results/schemeassessmentreport2018.pdf>

3.4.2. The PRA design continued to be developed with traffic flow and safety as considerations alongside the continuation of environmental assessments.

Statutory Consultation - 2019

3.4.3. Public consultation was undertaken in 2019 to present the preliminary design including the modifications following the 2017 non-statutory consultation and the inclusion of updated engineering and environmental assessments.

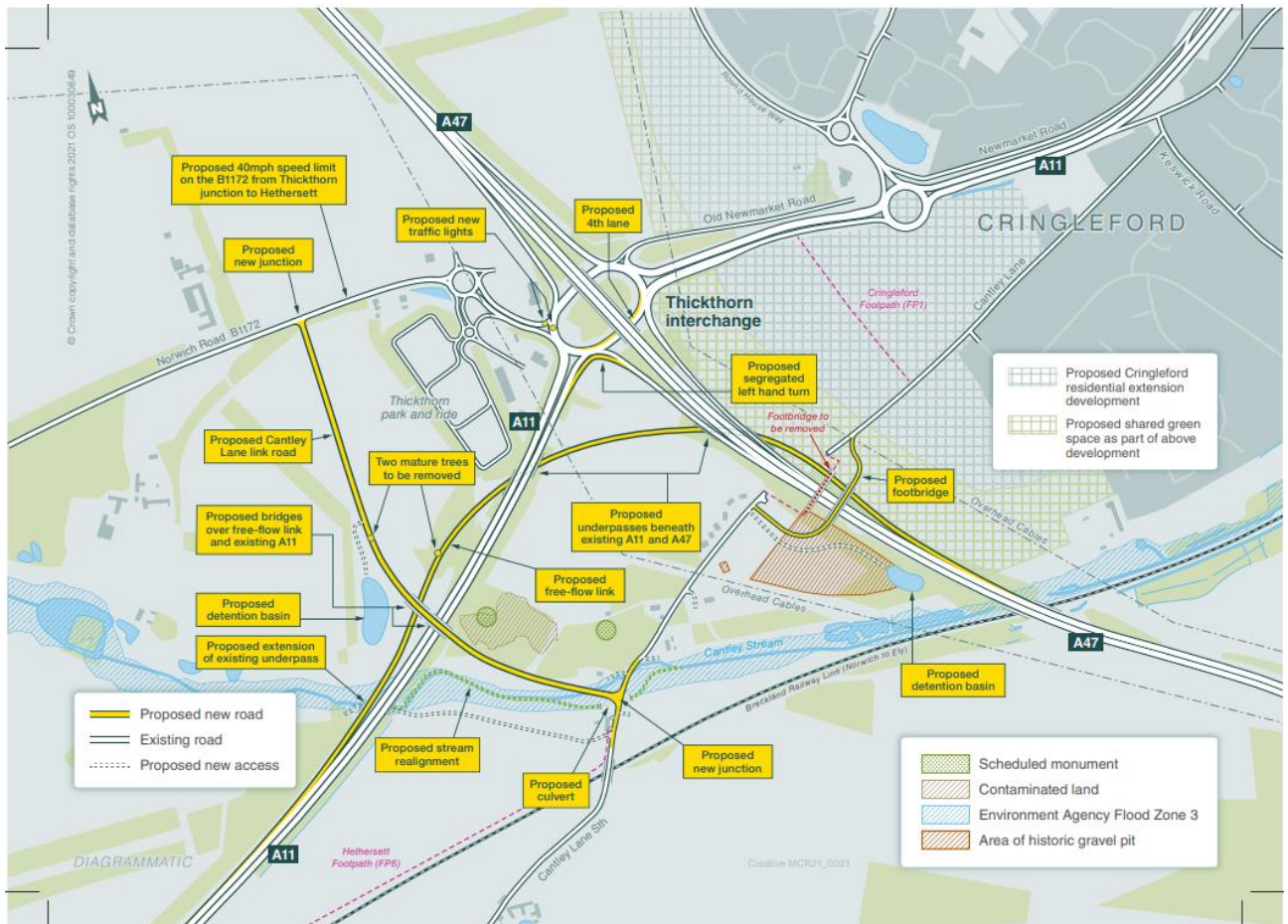
3.4.4. Further detail on the consultation process, including public consultation and statutory consultation with stakeholders, is detailed in Environmental Statement Chapter 4 Assessment methodology (TR010037/APP/6.1) and the Consultation Report (TR010037/APP/5.1)

Chosen option design development

3.4.5. The Proposed Scheme has been further developed since the preferred route announcement. Taking on board feedback received and from ongoing stakeholder engagement the design of the Proposed Scheme has been

developed to that now set out within the DCO application and as shown on Figure 3-8.

Figure 3-8: Proposed scheme design



- 3.4.6. The Proposed Scheme has been identified as the best option to meet the defined need and objectives, including the delivery of a comprehensive set of benefits as detailed in this document.
- 3.4.7. Transportation benefits include reduced journey times and improved safety, resilience and journey time reliability consistent with national and local planning objectives for transport, economy and the environment.
- 3.4.8. Through the increased capacity and improved journey time reliability, the Proposed Scheme would assist in making the region more attractive for businesses and provide the required infrastructure for development including housing and employment.
- 3.4.9. A number of alternatives around the development of the chosen design option have been undertaken following feedback from the 2019 statutory consultation events. These design developments are outlined in the Scheme Design Report (**TR010037/APP/7.3**), submitted as part of this DCO application. The following

key design changes have occurred following the alignment presented at statutory consultation:

- The removal of the A47 westbound to A11 southbound link road
- Repositioning of the proposed drainage detention basins
- Shortening of the realignment of Cantley Stream
- Repositioning of the replacement footbridge across the A47, shortening the previously proposed detour
- Removing the requirement to widen the Breckland railway bridge
- Removal of proposed works between the existing A47/A11 Thickthorn Interchange and the Round House Roundabout
- Addition of a segregated left hand turn from the A47 westbound onto the A11 southbound
- Repositioning of the Cantley Lane link road and Cantley Lane South junction