Lincolnshire COUNTY COUNCIL
HIGHWAYS ALLIANCE

Objectors' Alternative Proposals
Alternative 3
Roundabout at Hawthorn Road

1. The Lincolnshire County Council (A15 Lincoln Eastern Bypass) (Classified Road) (Side Roads) Order 2014.

2. The Lincolnshire County Council (A15 Lincoln Eastern Bypass) Compulsory Purchase Order 2014.

3. Application In Relation To Proposed Compulsory Purchase Of Land Held By The Canal & River Trust.

Department for Transport Reference: NATTRAN/EM/LAO/0084

Contents

1. Introduction

The A15 Lincoln Eastern Bypass is a Major Project promoted by Lincolnshire County Council. The published Scheme includes the construction of 7.5km of single carriageway between the A158 Wragby Road in the north and the A15 Sleaford Road in the south. It also includes the additional NMU bridge at Hawthorn Road.

Alternative 3 involves the provision of a roundabout at Hawthorn Road to provide all movements between Hawthorn Road and the LEB. The proposed alternative would replace the left in / left out junction with the LEB currently provided in the scheme.

Alternative 3 was published in the Lincolnshire Echo on 23rd July 2015.

The County Council has carried out a desktop assessment of the Alternative but has not undertaken a detailed engineering design, or environmental assessment. The time available within the statutory process would make such detailed work unfeasible and the cost of a fully detailed assessment would not be justified in the County Council's view.

This note records the results of the desktop study assessment.

2. Engineering and Buildability

The approach to the assessment of this alternative has been to leave the proposal, especially the main line, in a form that is as consistent as possible with the published scheme. That means the main line vertical and horizontal alignment remains as published and the fact that it will be a high load route remains to ensure consistency. The provision of a roundabout at this location would therefore require the junction to be constructed in cut and for the vertical alignment of the main line to remain compliant in terms of forward visibility while meeting the northern tie in at the Wragby Road Roundabout. The proposal would require significant additional cut to the west of the junction at the tie in impacting on Hawthorn Road West and the adjoining lands including the Public Open Space. In line with the separate NMU provision at other roundabouts, the alternative would still require the provision of the NMU crossing of the LEB in accordance with the scheme strategy.

The proposal would require the dualling of the LEB between Hawthorn Road and the existing Wragby Road Roundabout in order to reduce the impact of delays created by siting two roundabouts in close proximity and in order to prevent blocking back from one junction to another at peak periods. This in turn would also require the existing roundabout at Wragby Road to be enlarged to accommodate the additional carriageway.

There would also be a greater impact on Statutory Undertakers as a result of this proposal.

A roundabout at this location would require the installation of a drainage pollution bypass separator (in a similar manner to all other roundabouts on the scheme) to mitigate the increased risk of fuel spillages associated with this form of junction.

3. Environmental Impacts

Raising of the main line of the LEB would increase noise impacts on properties adjacent to the route. The proposal would increase noise impact due to braking and acceleration of vehicles on the approaches to the roundabout and there would be an increase in light pollution from the increased provision of the street lighting required by a large roundabout and the section of dual carriageway between major junctions.

4. Traffic, Safety and Economics

This alternative would maintain a direct link between Cherry Willingham and Reepham and the Carlton estate area via Hawthorn Road while also allowing direct access to LEB from both east and west. However, this arrangement will also allow traffic from the villages to the east of LEB to continue using the local roads in the Carlton estate and Carlton Boulevard with negative safety and environmental impacts on the residents of these areas.

With this alternative, the additional Hawthorn Road roundabout would be very close to the Wragby Road roundabout and this would result in an increase in risk of collisions.

The additional roundabout would require all traffic on the LEB to slow down and then accelerate and this will add to overall delays and transport costs.

St Augustine Road junction is extremely close to the proposal and consideration would therefore need to be given to diverting to the new roundabout as an additional leg. To provide an additional 5th leg on any roundabout is contrary to best practice as it represents many difficulties in terms of balancing flows and safe operation through a land efficient geometric design. TA16/07 (Appendix 2) provides evidence that the addition of a fifth leg is likely to increase the Accident frequency by 60%. The additional leg would reduce operational efficiency and generate queues. An alternative solution would be to realign the St Augustine Road Junction by taking land from the Hospice site in order to increase the distance of the junction from the proposed roundabout to improve traffic movement and safety.

An additional all movements junction increases accident risks.

When considering all traffic in the Lincoln area, analysis shows that the differences in journey times and distance travelled between the preferred scheme and this alternative are negligible and would make no discernible difference to the benefits in a cost/benefit analysis.

This alternative will attract additional traffic through the Carlton development, increasing traffic flows on Hawthorn Road to the west of the LEB, St Augustine Road and Carlton Boulevard as it provides better access to the Bypass. This will have a negative impact on residents of the Carlton development in terms of air quality, noise and safety.

This alternative will attract higher flows on Hawthorn road to the east of LEB in the AM peak giving a higher safety risk for pedestrians and cyclists, including school children. Some journeys to and from Cherry Willingham and Reepham would be shorter and quicker with this alternative and some would be longer and slower; as has been outlined previously in evidence presented to the Inquiry. Considering only the traffic associated

with Cherry Willingham and Reepham, the roundabout would deliver a saving of less than 2% in vehicle kilometres travelled in all of the time periods considered and a saving of up to 6% in vehicles hours spent travelling. These savings equate to an average of 0.2 kilometres per vehicle trip and just over 1 minute per vehicle trip in the peak periods

However, when considering all traffic in the Lincoln area, analysis shows that the differences in journey times and distance travelled between the preferred scheme and this alternative are negligible and would make no discernible difference to the benefits in a cost/benefit analysis.

5. Consequential Impacts

This alternative will attract additional traffic through the Carlton development, increasing traffic flows on Hawthorn Road to the west of LEB, St Augustine Road and Carlton Boulevard. This will have a negative impact on residents of the Carlton development in terms of air quality, noise and will require intervention by the Highway Authority. It would also potentially further increase traffic on Hawthorn Road West due to it being a shorter route to and from Bunkers Hill and for traffic diverting to this roundabout to avoid Wragby Road roundabout.

Following the Secretary of State's decision not to confirm the Orders after the previous Inquiry, the County Council took the opportunity to refine its current modelling. This was done in order to better understand travel patterns in the locality, refine model responses to take account of detail and provide a platform upon which the revised future growth and local development assumptions could be tested with the latest configuration of LEB. The results of this modelling work indicate that the Junction of Hawthorn Road with Bunkers Hill is significantly over capacity due to traffic growth with the non-stopping up Hawthorn Road. The only option available to address the imbalanced flows at this junction would be to provide traffic signals. Provision of the roundabout could further increase traffic flows at this junction and as a result the capacity would be further reduced.

The junction of Wragby Road with Outer Circle Road is currently running near to capacity and would be relieved with the construction of the LEB. However, the inclusion of a roundabout at Hawthorn Road with a direct connection to the LEB would significantly increase traffic levels necessitating improvements that would be required to provide additional capacity on the Wragby Road East / Bunkers Hill approach including the junction of Wolsey Way.

6. Land Requirements

The proposed alternative requires land that falls outside of the highway boundary for which Planning Permission exists for both the permanent works and the temporary works areas required to construct the alternative. Some of the additional land is within Public Open Space which would require the consideration of the need to go through the special parliamentary procedure to acquire the land in accordance with Section 19 of the Land Acquisition Act 1981 which would have cost and delay implications and will need approval from the Secretary of State.

Will require additional land and as a result will need new Compulsory Purchase Orders. A change to the Side Roads Order will be required to reverse the current proposal to stop up Hawthorn Road.

7. Planning Considerations

A new Planning Permission would be required for the roundabout, dualling of the mainline of the LEB and the changes to the drainage attenuation features.

8. Cost\Funding

The net additional cost of providing the roundabout with an NMU bridge and the left in left out junction removed is approximately £2.52m.

Consequential junction improvements in the City arising from the LEB would be assessed post implementation of the Scheme and delivered as part of the Highway Authority's general duties and obligations under the Highways and Traffic Management Acts. Additional consequential junction improvements arising from this alternative proposal would however include the following:

- Signalisation of Hawthorn Road Bunkers Hill junction - £0.87m
- Improvement of Wragby Road / Outercircle Road junction - £0.85m.

The net increased cost of the Alternative is therefore approximately £4.24m

Additional costs would also be incurred due to the greater scope of statutory undertakers diversions required to accommodate the proposal as well as the elongated construction programme required to construct the roundabout. Costs associated with the requirement to consider the special parliamentary procedure and planning permission modifications would also be incurred.

9. Programme

Programme would be delayed because of new planning application and CPO\SRO.

10. Conclusion

The Alternative, when compared with the Scheme with planning permission does not provide any advantages that justify investigating it any further.

There is no advantage in traffic terms over the Scheme beyond some very limited opportunities for movements between residential areas close to the LEB and villages to the east; which in the Scheme will be served for all non-motorised movements by the additional NMU bridge.

In all other respects, the advantages offered by the LEB to all users without the roundabout at Hawthorn Road are reduced or negated by this provision. There is also additional cost when compared to the provision in the published scheme.

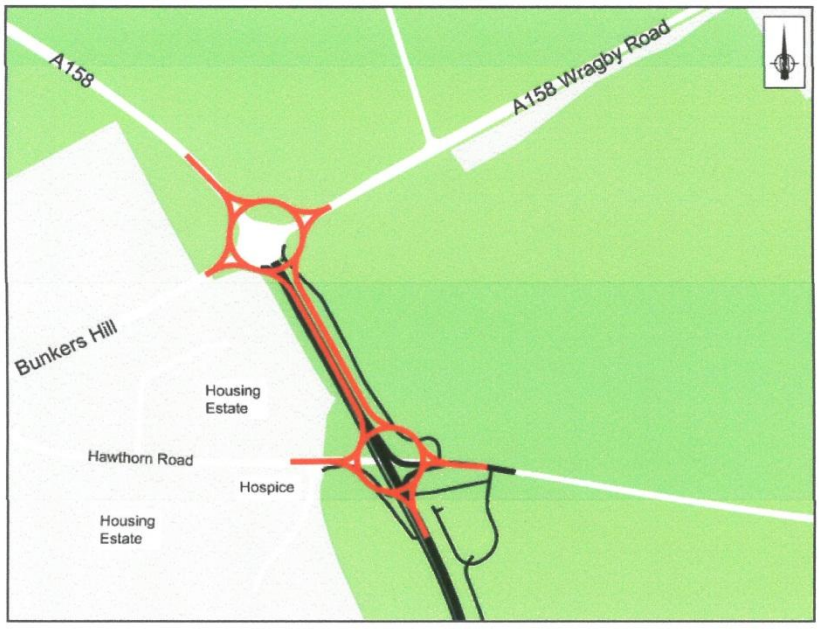
The alternative would incur additional costs and programme delays due to the requirements of the special parliamentary procedure, new planning permission and CPO SRO.

11. Previous Inspectors Comments from the 2014 Inquiry

At the previous Inquiry the Inspector concluded the following with respect to Alternative No 3 (Alternative 4 at the previous Inquiry):

''This Alternative has limited public support and has resulted in counter objections. An advantage is that a direct link between Cherry Willingham and Reepham would be maintained with the Carlton estate and Carlton Centre via Hawthorn Road, whilst also allowing direct access to the LEB from the east and west. However, the introduction of a roundabout close to the Wragby Road roundabout would increase the risk of collisions and the interruption to traffic flow would add to delay and overall transport costs.The effect on the St Augustine Road junction and possible diversion to form an additional leg is a concern. The costs would be similar to Alternatives 2 and 3. In conclusion, this Alternative would not offer any material advantage over the Scheme".

Appendix 1 – Plan Showing Alternative 3



Appendix 2 – Extract From TD 16/07

VOLUME 6 ROAD GEOMETRY
SECTION 2 JUNCTIONS

PART 3

TD 16/07

GEOMETRIC DESIGN OF ROUNDABOUTS

SUMMARY

This document sets out the design standards and advice for the geometric design of roundabouts. It supersedes TD 16/93.

INSTRUCTIONS FOR USE

1. Remove contents pages from Volume 6 and insert new contents pages dated August 2007.
2. Remove TD 16/93 from Volume 6, Section 2.
3. Insert new Advice Note TD 16/07 into Volume 6, Section 2.
4. Please archive this sheet as appropriate.

Note: A quarterly index with a full set of Volume Contents Pages is available separately from The Stationery Office Ltd.

2. SAFETY AT ROUNDABOUTS

2.1 In 2004 there were about 207,400 personal injury road accidents in Great Britain **(Road Casualties Great Britain, 2004)**. Of these, about 18,000 (8.7%) occurred at roundabouts. The proportion of accidents at roundabouts which were fatal was 0.35%, whereas 0.88% of all other junction accidents and 2.2% of link accidents were fatal. This indicates the effectiveness of roundabouts in reducing accident severity. The average accident cost at a roundabout was calculated to be about 68% of that at other junction types and about 47% of that on links. This suggests that on average, roundabouts are safer than other junction types. However, this will not necessarily be the case for all road users or for a particular junction.

2.2 A study undertaken in 2004 (**TRL Unpublished Report UPR/SE/194/05**) determined the accident frequencies (accidents per year) by severity over a five year period (see Table 2/1) for a sample of 1,162 roundabouts. The sample comprised all roundabouts in some local authorities, but only the busier roundabouts in others, making the analysis slightly biased towards busier roundabouts. The table does not include accident rates because only limited reliable flow data were available. The number of accidents per year increases with the number of arms (because of corresponding increases in the number of potential conflict points and traffic flow. On average, there are more accidents at roundabouts with at least one approach that is dual carriageway compared with roundabouts where none of the approaches are dual carriageway roads. Dual carriageway roundabouts generally have higher levels of traffic.

2.3 Overall, single vehicle accidents accounted for 15% of the total in the sample, but they had a higher severity than multi-vehicle accidents (which include a high proportion of shunt accidents on the approaches). In general, large roundabouts have a higher proportion of single vehicle accidents than smaller roundabouts.

2.4 Flow data were only available for 44 high flow roundabouts. The average accident rate (accidents per million vehicles passing through the junction) at these roundabouts was 36.2.

2.5 Table 2/2 shows the percentage of accidents by type of vehicle and by severity for the sample of 1,162 roundabouts sampled.

Table 2/1: Average Accident Frequency at Roundabouts Between 1999 and 2003

No. of arms	No. of sites	Accident frequency (accidents per year)				Accident severity (% fatal and serious)
		Single carriageway roads	Dual carriageway roads	Grade separated junctions	All roads	
3	326	0.63	1.28	2.70	0.79	9.3
4	649	1.08	2.65	5.35	1.79	7.1
5	157	1.72	3.80	7.67	3.66	7.1
6	30	2.11	4.62	8.71	5.95	5.2
All	1162	1.00	2.60	6.28	1.87	7.2