

Technical Note 3

Project Number: T23548

Project: Land North of A47 Normandy Way and West of A447 Ashby Road

Title: Access Roundabout Location

Date: 19.08.25

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Revision:

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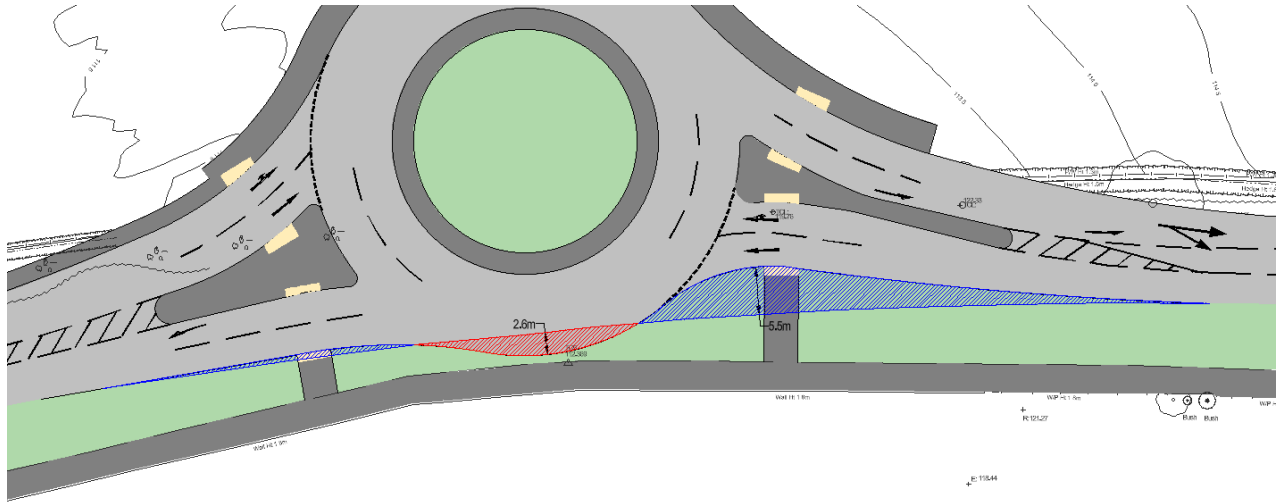
Background

- 1.1 Hub Transport Planning Ltd has been commissioned by Richborough to provide transport advice for a proposed residential development on Land North of A47 Normandy Way and West of A447 Ashby Road, Hinckley.
- 1.2 It is intended that the proposed development will provide up to 415 residential dwellings, accessed via a 3-arm roundabout along the A47 Normandy Way, with connectivity to a consented development site to the west via an internal link road that also connects through to Stoke Road (serving as an additional access point).
- 1.3 This note provides a response to queries raised at the Planning Committee meeting regarding the position of the 3-arm roundabout along the A47 Normandy Way and the impact on residents immediately to the south of the A47.

Junction Location and Geometry

- 1.4 The site access roundabout is shown on drawing **T23548.001 rev H**.
- 1.5 The roundabout is essentially sited equidistant between the A47 junctions with Nelson Drive to the west and Drake Way to the east; this affords junction separation and 120m forward visibility splays to the give-way lines of the A47 approach arms, from both directions, which meets the Design Manual for Roads & Bridges (DMRB) stopping sight distance for the prevailing 40mph speed limit.
- 1.6 The location also allows for the adjacent ghost-island junctions to be appropriately tapered and incorporated into the wider design without any impact on their layouts, such that they can retain full DMRB compliance for the prevailing 40mph speed limit.
- 1.7 It is worth highlighting that the westbound approach to the junction requires the A47 carriageway to be pushed north away from the existing residential area to the south of the A47, in order to achieve DMRB compliant entry path curvature from the east; this needs to be 100m or less and is shown at just under 90m.
- 1.8 The result of this requirement is that the westbound A47 carriageway is moved just over 5.5m to the north (at the furthest point), compared to the circulatory carriageway which cuts just 2.6m into the existing highway verge on the southern side of the carriageway (at the nearest point); this is shown in the roundabout extract overleaf. The extract also shows the small sliver on the westbound exit where the A47 carriageway is moved away from the existing residents.
- 1.9 It is also clear that the overall area of carriageway moved north to provide the westbound movement through the junction comfortably exceeds the area of verge removed to accommodate the circulatory carriageway.

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- 1.10 In terms of the geometry of the roundabout, the diameter is 50m and this is required in order for the junction to provide sufficient capacity to accommodate both the proposed development site and future traffic flows along the A47.
- 1.11 This is demonstrated by the capacity analysis that was undertaken and forms part of the submitted Transport Assessment (TA) report, which shows the following capacity results in the 2032 future year assessment:

Approach	AM Peak 08:00-09:00			PM Peak 17:00-18:00		
	RFC	Queue	Delay (s)	RFC	Queue	Delay (s)
2032 Base + Committed + Development						
Site Access	0.25	0	6	0.19	0	8
A47 East	0.80	4	10	0.58	1	5
A47 West	0.55	1	4	0.75	3	7

RFC – Ratio of Flow to Capacity, Queue – Max Mean Queue, Delay – Seconds per PCU

- 1.12 The maximum RFC that is acceptable for a new site access junction is 0.85; with the AM peak assessment showing 0.80, there is limited flexibility in the design to provide for a smaller footprint.
- 1.13 It is also worth noting that if the capacity analysis allowed the diameter to be reduced slightly, say to 48m, technically this could only move the whole junction just 2m north of the current location (at most), but would then require the approach arms to be reduced in width in order to retain the required DMRB design standard of the ratio of the approach width to the circulatory width, whilst also retaining DMRB compliant entry path curvature, and being able to facilitate two large HGV movements through the junction at the same time (as required by the highway authority).
- 1.14 In effect, a small change to one element of the design has multiple potential effects on other design elements of the junction, all of which must be DMRB compliant in order to be acceptable to the highway authority.
- 1.15 Similar issues apply if the current junction footprint was moved to the north, further away from the residential area to the south of the A47.
- 1.16 Whilst the eastbound entry path curvature would be acceptable, to retain a suitable westbound entry path curvature (without it also then being too severe), the A47 carriageway would need to start moving away from the residential area to the south from a significant distance to the east of the junction, which would then affect the design of the ghost-island junction to the east, potentially resulting in a non-compliant DMRB design.

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- 1.17 A further effect of relocating the junction to the north would be that significant lengths of hedgerow along the site frontage with the A47 would need to be removed to provide the new junction and the forward visibility splays; even moving the junction just a few metres north (which would do very little in terms of reducing the impact on the residential area to the south) would result in approximately 25m of additional hedgerow being removed.
- 1.18 A substantial relocation of the junction into the site could require the entire length of hedgerow to be removed to accommodate the footprint and visibility splays.
- 1.19 That said, the junction wouldn't be able to move significantly to the north for other (non-transport) reasons, such as a requirement for third-party land, loss of proposed dwellings, and/or significant changes to the drainage strategy.

Nelson Drive and Drake Way

- 1.20 Our understanding is that a query was raised as to why the roundabout could not have been proposed at the existing A47 junction with Nelson Drive to the west, or with Drake Way to the east (of the current location), thus creating a 4-arm junction.
- 1.21 Therefore, it is worth highlighting that a 50m diameter roundabout could not fit in either location without requiring third-party land on the northern side of the A47, because the development site frontage does not extend as far east as Drake Way; whilst the hedgerow and trees running north-south opposite Nelson Drive forms the western extent of the site boundary, thus a significant proportion of the junction and the eastbound forward visibility splay would require third-party land.
- 1.22 A further issue with a 4-arm roundabout design in either of these locations is that the residential access roads of Nelson Drive and Drake Way taper down quickly in their current layouts to provide the appropriate residential access road widths, and thus the bellmouth widths are not consistently wide enough to accommodate the roundabout arm easily.
- 1.23 The result of this is that a 50m diameter roundabout would therefore need to be pushed away from the existing bellmouth in each of these locations, so that the entry and exit radii for the residential access roads could be accommodated properly within the design, with swept paths able to be accommodated for refuse and delivery vehicles, etc. without overrunning of the centrelines, or requiring third-party land on either side (associated with the properties fronting each side of these roads in the vicinity of the A47).
- 1.24 However, in design terms, pushing the junction away from the existing bellmouth locations would lead to the creation of reverse curves on the approach from the east and exit to the west; this also occurs to some extent in the current design, however DMRB guidance (CD 116) states that this is acceptable for a 3-arm roundabout, as shown below:

3.6.8 On the circulatory carriageway, short lengths of reverse curve should be avoided between entry and adjacent exits.

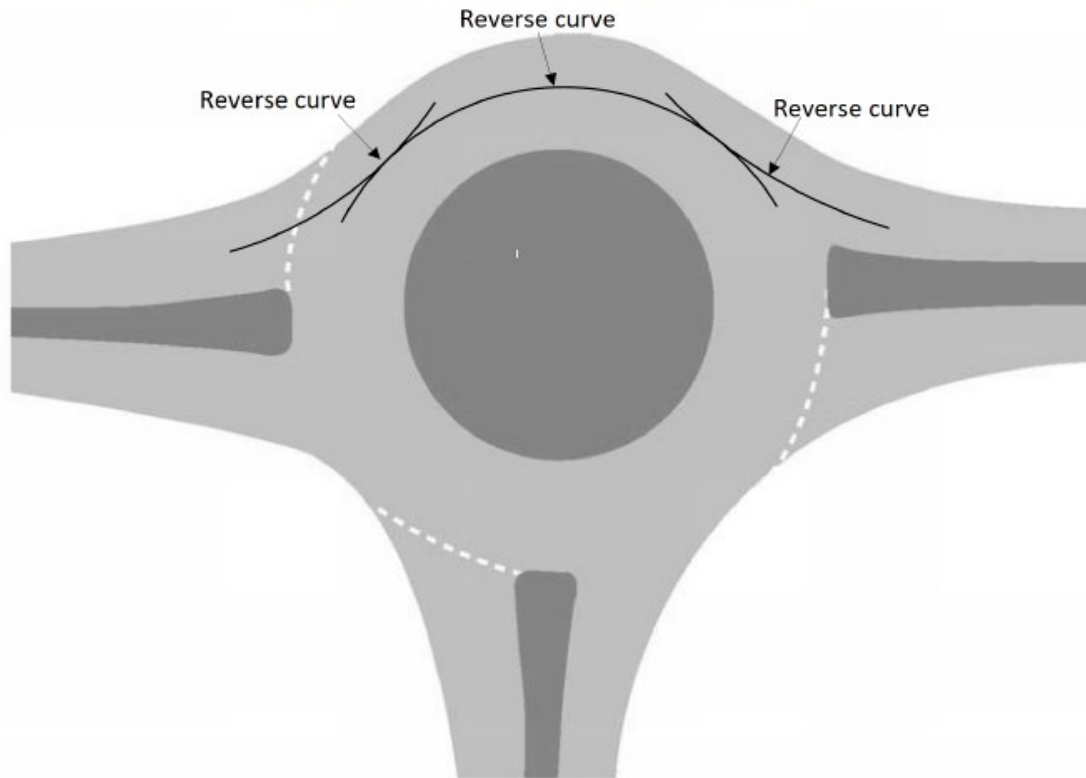
NOTE 1 Short lengths of reverse curves can be avoided:

- 1) by linking the curves with a short straight section;
- 2) by reducing the size of the ICD; or
- 3) by converting to a double roundabout.

NOTE 2 Where there is a considerable distance between the entry and the next exit, such as at three-arm roundabouts, reverse curvature is acceptable (see Figure 3.6.8N2).

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Figure 3.6.8N2 Three-arm roundabout illustrating reverse curvature



NOTE 3 Reverse curves (to the right and then to the left on the approach) can be effective in providing additional deflection on poorly aligned existing roundabouts, but sharp curves are not good practice and could induce HGV rollover or accidents involving powered two wheelers (PTW).

- 1.25 This is not acceptable for a 4-arm roundabout design and could lead to the issues raised in Note 3 above, with the potential for accidents involved HGV rollovers and/or powered two wheelers.

Summary

- 1.26 The site access roundabout junction has been designed in the proposed location to take account of multiple issues, including (but not limited to), land ownership constraints, DMRB design guidance, capacity and safety.
- 1.27 Due to the issues set out above, it is not feasible to relocate or redesign the junction to move the southern extent of it further from the existing residential area to the south of the A47.
- 1.28 As shown, the current design actually results in more of the A47 carriageway being moved away from the residential area than existing verge taken to deliver the junction.
- 1.29 Even a very small change to the location or design is likely to have significant implications in terms of other factors that have contributed to the design as shown, but in doing so would achieve very little in terms of reducing the impact on the residents on the southern side of the A47.
- 1.30 A substantial design change in terms of the geometry or location is not considered to be feasible.