

Technical Note

Project:	Havant Reservoir		
Subject:	Response to Local Highway Authority - Northern Access Layout		
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Client	Portsmouth Water
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Introduction

This Technical Note supplements the planning application submitted in support of the Havant Reservoir planning application (Havant Ref: APP/20/00990 and East Hampshire District Council Ref: 51680/001).

Hampshire County Council (HCC), as Local Highway Authority (LHA), have provided formal comments on a number of transport related issues, and the purpose of this Technical Note is to respond specifically to comments pertaining to the layout of the proposed northern access junction. It is intended to serve as a covering Technical Note that will provide additional context and support for a Departure from Standard (DfS) application being submitted to HCC.

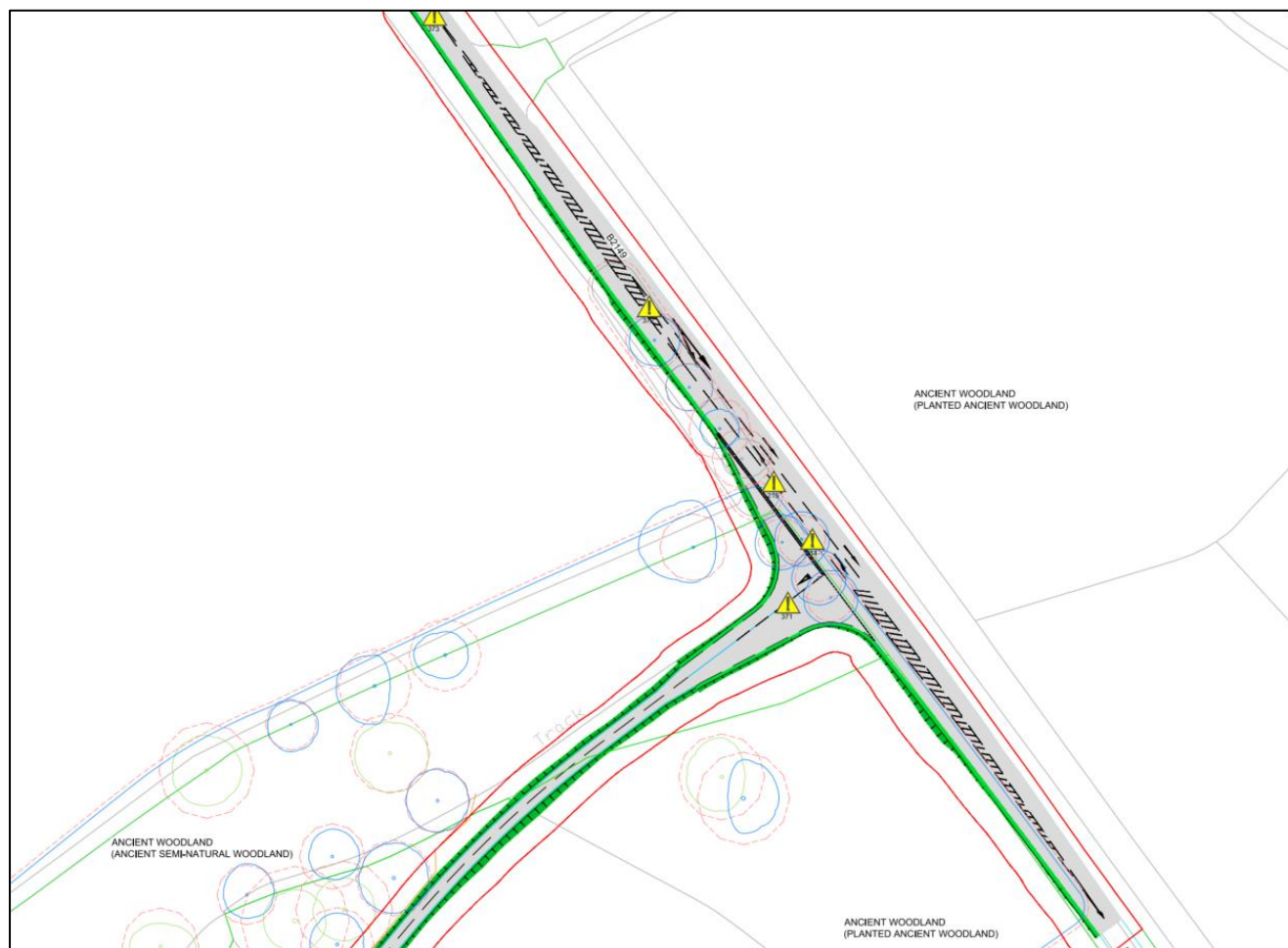
The DfS application is required specifically for one design parameter of the northern access junction design, specifically the forward visibility on the mainline; however, the LHA have recommended that other comments made on the design of the junction (not relating to the DfS requirement) should be responded to concurrently, to ensure the design review by HCC engineers is undertaken on a complete package. The DfS application form, following the HCC pro-forma, is provided in Appendix A for reference.

Proposed Layout

It is proposed to provide a priority junction connecting the proposed northern access route to the B2149, with a right-turn ghost island afforded to vehicle users travelling southbound along the B2149 to access the site. The layout adopted for the junction is in accordance with DMRB CD123 Rev. 1, with the access road adjacent to the junction being 6m in width, tapering down to 3.65 along the main route of the access road (with suitable passing places to allow two-way traffic). 215 metre visibility splays are provided for exiting vehicles in accordance with DMRB CD123 Cl3.6, on the basis of the 60mph speed limit. It should be noted this is in excess of the 160 metres required for the observed 85th percentile speed of 53mph.

The proposed layout is presented in **Figure -1**.

Figure -1 - Proposed Layout of Northern Access Junction



Review of LHA Comments

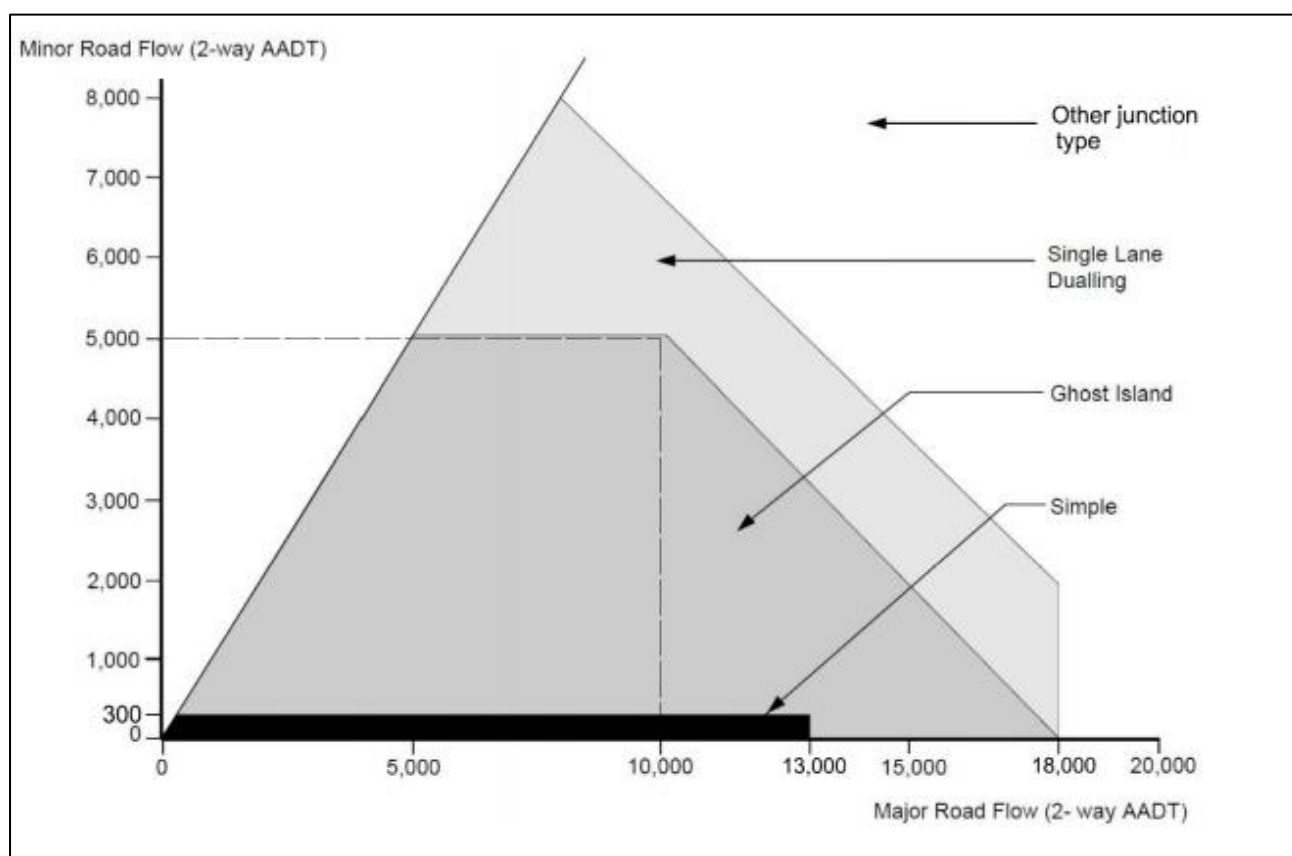
Single Lane Dualling

The LHA have stated that *in accordance with DMRB CD123 ghost islands shall only be used where major road traffic flows allow traffic turning right out of the minor road to do so in one manoeuvre. Given average daily flows of above 15,000 on B2149 and addition of 700 daily movements on the access this would mean that Single Lane Dualling should be considered.*

Applicant Response

It is not considered that Single Lane Dualling (SLD) should be recommended as a requirement in this instance, based on Figure 2.3.1 within CD123, provided in **Figure -2** for reference.

Figure -2 - Guidance on Priority Junction Provision on Single Carriageway Flows (CD123 Figure 2.3.1)



Whilst it is acknowledged that the LHA state that the junction form is dependent upon an agreed distribution, it is considered that sufficient information can be derived from the submitted material to determine the principle of the junction form. In addition, it is now understood that the LHA is in agreement with the trip distribution presented in the *Technical Note TNPS02_Havant Reservoir_Traffic Distribution Sensitivity revision_V2.0*.

As noted by the LHA, the AADT of the B2149 is approximately 15,000 vehicles, with traffic surveys supporting the submitted planning application indicating an AADT of 14,440. Whilst the LHA comments state that there is a minor arm flow of circa. 700 vehicles, it should be noted that the AADT for the minor arm is 372 (based on the revised distribution). This is well below the level of 2,000 recommended within CD123 for SLD. It is also important to note that even on a worst-case daily flow (forecast as a weekend summer's weekend day) the site could generate just ~1,000 trips on the minor arm; which is still well within the recommend maximum flow levels for a ghost island layout.

As noted, the capacity is well within the guidance for a simple right turn ghost island. There is no flow justification for SLD as identified. With respect to CD 123 the following should also be taken into account:

- (i) para 2.17 "SLD layouts shall only be used on roads with hard strips" The B2149 does not meet the requirements for a standard width carriageway and does not have hard strips. Therefore, not suitable for SLD.
- (ii) para 2.18.1 "SLD should be used in preference to ghost island where overtaking opportunities are restricted and/or where right turning traffic would need to make this manoeuvre in two stages". It is observed that overtaking opportunities are not restricted and there is no reason to suspect that the right turn manoeuvre could not be made in a single stage as there is adequate visibility from the junction to the left and right. Therefore, SLD is not considered a requirement.

Consideration has also been given to comparable approved junctions within the vicinity of the proposed northern access. It is noted that two priority junctions have been approved to facilitate access to the Land East of Horndean development to the north of the site. Reference has been made to the submitted layout plans, and accompanying traffic forecasts for this development as a point of comparison. **Appendix B** presents a comparison of the peak hour traffic flows forecast at the neighbouring accesses with the proposed northern access junction of Havant Reservoir. The comparison demonstrates that the peak hour traffic flows at these locations are well above the typical network peak hour traffic flows for the proposed reservoir access, and comparable to the 'development peak' flows at the reservoir access (taken from the weekend peak hour).

Upon review, it is noted that no SLD has been required at these neighbouring accesses, despite the comparable traffic flow forecasts being designed to.

On the basis of the guidance set out within DMRB, and the review of comparable access points within the vicinity of the site it is considered that the principle of a priority junction with a right-turn ghost island is appropriate.

Right Turn Egress

The LHA have stated that *trip distribution is key to agree the number of likely vehicles egressing the northern access by turning right, travelling south on the B2149 to establish if this is a likely manoeuvre and may lead to vehicles stopping in the carriageway as they cannot turn right in one movement.*

Applicant Response

The key parameter for right-turn egress, is visibility from the minor arm. The visibility splays from the junction for both left and right turning vehicles out of the site exceed the required length criteria in accordance with CD123 C13.4 and 3.6 based on the observed 85th percentile speed.

It is acknowledged that the LHA have raised previous concerns about egressing vehicles turning right but withheld full judgement until the number of right-turning vehicles was known.

The trip distribution, revised in accordance with the views of the LHA, indicates that the number of right -turning vehicles is relatively minor, with **Table -1** presenting the number of right-turning vehicles across different scenarios.

Table -1 - Summary of Right-Turning vehicles on Egress

Scenario	Number of Right-Turning Vehicles
AM Peak (weekday 08:00-09:00)	0
PM Peak (weekday 17:00-18:00)	2
Development Peak (weekend 12:00-13:00)	11
Annual Average Daily	26
Summer Average Weekend Day	92

As the table demonstrates, the number of right-turning vehicles is low, and not likely to result in any waiting vehicles. In addition, it is pertinent to note that the number of vehicles turning right is comparable to the forecast trips that will be utilising the approved Land East of Horndean accesses, and the proposed 40mph terminal is at the start of the southbound diverge taper of the proposed northern access.

It is also worth noting that the access has been modelled as part of the submitted Transport Assessment, which indicates that the junction would operate well within capacity, with a Ratio of Flow to Capacity (RFC) of 0.12 (i.e. no queue is generated by vehicles waiting to egress the site).

Access Strategy

The LHA have stated that whilst there are engineering concerns with the layout of the northern access, the principle of providing an access from the north is supported. The LHA have, however, noted concerns with regards to use of the site as a rat-run, and use of the site for motorbikes and other anti-social behaviour.

Whilst not directly related to the layout of the northern access, it is considered pertinent to comment on these observations here, as they form a consideration in the acceptance or otherwise of the northern access layout.

Applicant Response

It is not clear what typical route this 'rat-run' would serve to by-pass. However, consideration should be given to the outline proposals for the access routes, with a number of pedestrian crossings located within the car park area, which can be developed as raised tables at detailed design. There is also a minor priority junction between the car park and the northern access which will be developed at detailed design. It is considered that both measures would strongly discourage the use of the site as a rat-run.

It is also pertinent to note that there are a number of existing measures that will contribute to traffic calming and discourage rat-running. Between Middle Park Way and the Swanmore Road entrance to the reservoir there are three road narrowing's for single way traffic over 750 metres

Further consideration of additional measures, such as ANPR access barriers and parking charges can form part of the detailed design, but it is considered that the principle of the access and routes can be agreed with outstanding matters being condition if necessary.

Road Safety Audit

The LHA highlighted that the Road Safety Audit states that drivers who fail to realise there is a junction ahead may attempt to overtake a slower moving vehicle and find themselves on the wrong side of the carriageway as another driver turns out of the site access road resulting in a head-on collision or they may encounter a stationary vehicle in the right turn lane.

The proposed access junction is not clearly visible on the approach when travelling northbound due to the vertical alignment of the B2149, which includes a crest curve to the south of the junction. Because of this, stopping sight distances on both approaches are substandard.

Applicant Response

As set out within the designer's response to the RSA, submitted to HCC, a departure from standard (DfS) is being sought, with further justification provided within the DfS applications. An assessment of access options for the Havant Reservoir was undertaken based on engineering, environment and stakeholder considerations, and the proposed northern access was identified as the preferred north option.

It is important to recognise that if the junction was relocated to the north or south, then visibility along the B2149 would be made worse. Whilst a compliant vertical alignment on the mainline could be built at this location, it would require the re-profiling of the carriageway, which is considered to have a significant environmental impact.

It should be noted that a 40mph limit to the immediate north has been approved, which terminates at the start of the south bound taper of the ghost island. It is considered that this would result in the traffic travelling at a lower speed than currently observed, where there is no 40mph speed limit in place.

With regards to drivers who fail to realise there is a junction ahead attempting to overtake, it should be recognised that the start of the centre double white lines (no overtaking markings) set out in the designer's response, combined with 'No overtaking' and the 'Side road/ destination signs' will inform drivers of the junction, mitigating this risk.

The Need for a Departure

Consideration has been given to alternative mitigation, or the application of a departure from standard. A proposed DfS application pertains only to the existing forward visibility on the B2149, relating to the Clause 2.13 Note 2. The departure relates to stopping sight distance (SSD) for northbound B2149 traffic approaching the proposed access and the corresponding southbound traffic.

The length and location of where the SSD departure occurs is shown within the DfS application, however in summary the required desirable 160m SSD cannot be realised for a distance of 110m (from chainage 720 to 610) the junction centreline is a chainage 550.

It is relevant to highlight an Access Route Option Appraisal (HTR-ATK-XX-XX-RP-Z-0021) exercise, which concluded from a number of access routes that the northern access being proposed was the most suitable access location from the north; with the following conclusions being noted:

1. If the location of the access is moved to the south east (towards) Rowlands Castle it would lead to an even greater loss of Ancient Woodland than the limited impact caused by the current proposal. Ancient Woodland is valued as an irreplaceable national asset. In addition, as can be seen from the SSD profile that moving the junction south would worsen the SSD performance. Therefore, this approach received no further consideration.
2. If the location of the access is moved to the north west (towards) Horndean it would need to traverse private land for some distance. In addition, as can be seen from the SSD profile that moving the junction north would worsen the SSD performance. Therefore, this approach received no further consideration.
3. If the B2149 is regraded to remove the intermittent dips and peaks to provide a standard compliant profile; it would in theory require the following work and have the following impacts:
 - Lower the peak by 500 mm approximately;
 - Raise the trough by 650 mm approximately;
 - Carry out service diversions;
 - Require the closure of the B2149 for 6-8 weeks to enable the lowering and corresponding pavement reconstruction to be completed; Purbrook Way (through Leigh Park) to the south is the next equivalent B road on an east-west axis;
 - Environmental impact caused by further potential loss of ancient woodlands present to the north and south of the B2149;
 - Environmental pollution impact caused by diverted traffic caused by longer routes being used and associated congestion; and
 - Disruption costs caused by traffic diversions leading to additional travel and congestion costs due to lost time. There is not a suitable diversion route to take traffic from a closure over a prolonged period of time.

Based on the conclusions presented above, a DfS is being sought for forward visibility on the B2149.

It is considered important to note that the standard refers to the target height range for forward visibility of 0.26m and 2.0m; and the current north and south profile means that there is a sub-standard SSD when the target height is less than 0.7m. Therefore, it is considered that a typical vehicle would still be visible, as it would be above the height of 0.7m. With regards to right turning vehicles into the site, the ghost island provides a suitable waiting area, that removes them from the mainline.

In addition, it should also be recognised that visibility from the minor arm of the junction is greater than the requirements of the recorded 85th percentile speed.

Summary

This Technical Note responds to comments made to the LHA with regards to the layout of the proposed northern access junction at Havant Reservoir, to allow the proposed DfS application to be reviewed in light of the full design context. Further information relating to the DfS application is provided within the HCC proforma (attached as Appendix A for reference), and should be read in conjunction with this note. It is considered that this Technical Note demonstrates that the layout as currently proposed, is in line with current standards on all matters apart from forward visibility on the mainline, to which the DfS application relates.

Appendices

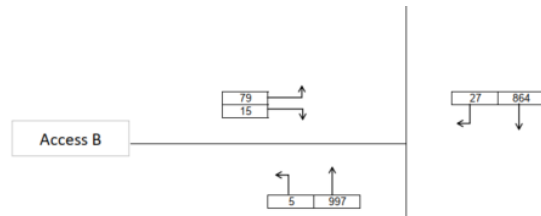


Appendix A. Departure from Standard Application Pro-forma (available on request)

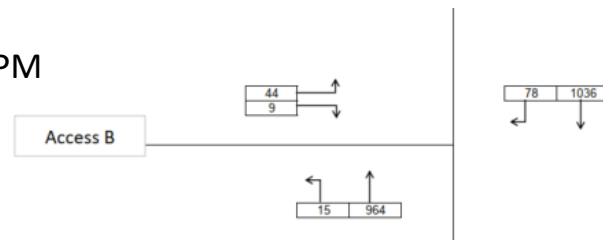
Appendix B. Comparison of Junctions

Land East of Horndean Access B

AM

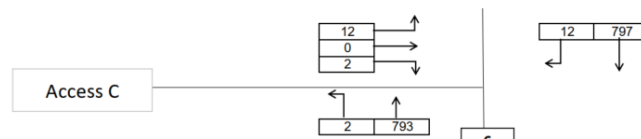


PM

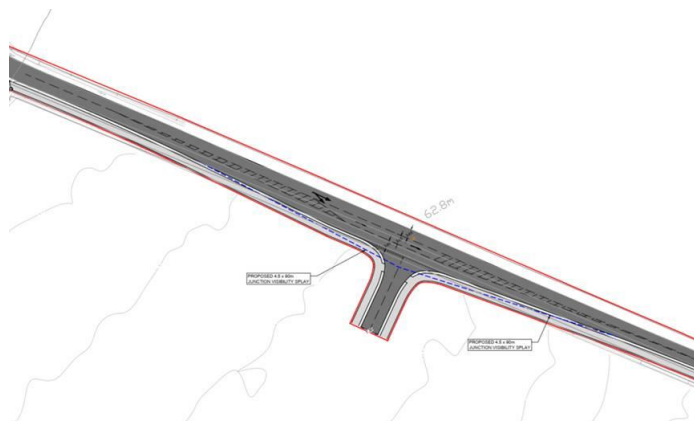
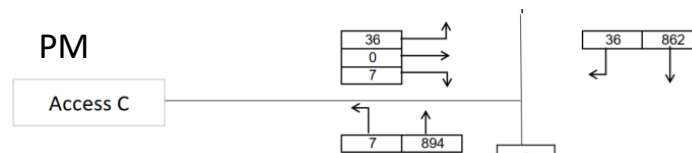


Land East of Horndean Access C

AM



PM



Havant Reservoir – Northern Access

Development Peak (Weekend)

