Technical note

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1. Introduction

Hydrock Fore are commissioned by Equites Newlands (Goldthorpe) Ltd in relation to a hybrid planning application for a proposed employment development on land to the south of Dearne Valley Parkway, near Goldthorpe, Barnsley. The commission includes the preparation of a Transport Assessment (TA) and Framework Travel Plan (FTP) for submission with the planning application to Barnsley Metropolitan Borough Council (BMBC).

This note sets out a consolidated response to a consultation from Hickleton Parish Council on the above planning application.

2. Response to Consultation

HPC Comment

1. We believe the 2022 baseline traffic data used in the ES10 development is based on an incomplete data set for traffic volumes along the A635. The traffic counter at Marr was inoperative for part of March 2022 as can be seen from the figures in Table 1. The traffic volume data is averaged across each month, the peak hourly weekday traffic volume is averaged across each month and in brackets shows the highest figure for that month. The Marr traffic data is a good proxy for traffic flow through Hickleton on the A635. As can be seen from Peak Hourly Volume figures the traffic flow at peak times is consistently greater than 1,600 (your baseline figure) and as high as 1,904 in November 2022. Taking an average of peak hourly traffic flow from the data in Table 1 suggests a more realistic hourly traffic flow figure is 1,764 vehicles/hour. Your modelling and assessment should take in to account the likely impact on traffic congestion at peak rush hour in the morning and late afternoon (max peak >2,000 vehicles/hr) when traffic turning on and off the A635 at the Hickleton cross roads and at 2 junctions in Marr is likely to be most severe. We would like you to comment on these points as the potential impact on noise, pollution and safety in Hickleton and Marr will be greater than your assessment when ES10 is completed.

Hydrock Fore Response

Data from the traffic counter at Marr was not specifically used for the purposes of the Transport Assessment. Instead, traffic data for Hickleton was established from turning count surveys commissioned in June 2022. These surveys are unrelated to the traffic counter.

Specifically, based on the turning count surveys, peak hour traffic flows in the Hickleton village of approximately 1,900 vehicles / hr were used as the basis for the assessment, and this can be observed at Figures 15 and 16 of the submitted Transport Assessment report.

The assessed traffic flows are therefore higher than the peak hour flows quoted in the HPC note and suggested as 'realistic' (of 1,761 vehicles / hr), and consequently are appropriately robust.

Data from the Marr counter was used to provide traffic flows in the format required for air quality and noise assessment work submitted with the planning application, in line with standard practice, and this was obtained from Doncaster Council for periods when the counter was operational in March 2022. The data confirmed

24hr 7-day average daily traffic flow (for use in air quality assessment) of approximately 19,750 vehicles in both directions), and 18hr average weekday flow (for use in noise assessment) of approximately 20,250 vehicles in both directions).

HPC Comment

2. Highways England have modelled traffic flows at Junction 37 of A1,(REF: T E C H N I C A L M E M O R A N D U M SDEB51 Dated 19/12/2019 HIGHWAYS ENGLAND SPATIAL PLANNING ARRANGEMENT – NORTH EAST AND YORKSHIRE & HUMBER 1 Doncaster Local Plan – Local Plan Modelling – Interim Progress PROJECT NUMBER: DEVHU002 DOCUMENT REF: TM004) , to assess the cumulative impact of the Doncaster Local Plan on the SRN. The study found that " that, by 2035, several approach lanes to the A1(M) Junction 37 roundabout will be operating over capacity, with or without the developments of the Local Plan coming forward. However, it can be seen that the Local Plan will result in additional queuing on the majority of approaches to A1(M) Junction 37. Of particular importance to Highways England is the forecast increase in queuing to the offside lane of the southbound off-slip during the PM peak hour, which will be extensive enough to extend back onto the A1(M) mainline carriageway. It is therefore concluded that improvement works are required at the junction to adequately mitigate the predicted traffic impact of the Local Plan." It should be noted that the study concluded that, based on current traffic conditions, all 4 approaches to Jn 37 will be at or above capacity irrespective of any planned developments.

Hydrock Fore Response

We cannot locate the specific document referenced, but based on the quoted title and date, it appears to have been prepared as part of the evidence base underpinning Doncaster Council's local plan (the wider evidence base is no longer publicly available following adoption of the local plan by the Council in 2021).

As we cannot locate the specific document referenced, we cannot comment on the specific methodology used by Highways England in 2019, but it is likely that the assessment was based on modelled traffic flows as envisaged in (or potentially before) 2019. As such, this assessment would naturally now be considered out of date for the purposes of considering the impacts of specific development proposals.

Regardless of the previous assessment undertaken for the purposes of the local plan evidence base, assessment of Junction 37 of the A1(M) has been undertaken as part of the planning application, based on observed traffic data surveyed in 2022. This assessment has been submitted to, and agreed by, National Highways (formerly Highways England) in their consultation on the planning application. On this basis, our assessment of Junction 37 of the A1(M) supersedes the assessment undertaken by Highways England in 2019 for considering the impact of the proposed development as part of the planning application.

For ease of reference, our assessment is appended to this note. Regardless of the anticipated position at the end of the local plan period as assessed by Highways England in 2019, our assessment demonstrates that improvement of the junction is not necessary to accommodate the changes in traffic flows associated with the proposed development. This conclusion has been agreed by National Highways.

Appendix A

Extract of A1(M) Junction 37 Assessment

4. A1(M) Junction 37

4.1 Base Year Assessment

Traffic flow data for the Base Year scenario has been derived from classified turning count and queue length surveys undertaken during the AM and PM peak periods on 21 June 2022, as part of the wider package of surveys undertaken for the purposes of the submitted Transport Assessment. On the basis of the surveys, AM and PM peak hours of 08:00 to 09:00 and 16:15 to 17:15 are identified respectively. The modelled traffic flow data is presented at Appendix A.

A Junctions10 model of the existing junction layout has been developed. The Junctions10 model has been run for the 2022 Base Year scenario, based on the surveyed traffic flows. The model results are summarised in Table 13 and presented in full at Appendix H.

Table 13: A1(M) Junction 37 - 2022 Base Year Assessment

Link	AM Peak Hour		PM Peak Hour	
	RFC	Queue (pcu)	RFC	Queue (pcu)
A1(M) Southbound Exit Slip Road	0.25	0.4	0.34	0.5
A635 Barnsley Road (East)	0.63	1.8	0.50	1.1
A1(M) Northbound Exit Slip Road	0.40	0.7	0.49	1.0
A635 Barnsley Road (West)	0.68	2.3	0.52	1.2

The assessment indicates that the junction operates with a degree of spare capacity in both modelled peak hour scenarios. This accords with observations of the junction operation in practice, and the Junctions10 model is therefore fit for purpose in assessing the future operation of the junction with the development in place.

4.2 2028 Opening Year Assessment

Assumptions in relation to committed development and traffic growth between 2022 and 2028 are consistent with those in the submitted Transport Assessment.

However, given the assumptions made to assess the residual traffic impacts (representing implementation of the proposed active travel works, public transport improvements and travel planning measures) as set out above, the resulting development traffic flows for the weekday peak hours are updated compared to the submitted Transport Assessment work. and demonstrated as follows (all for the weekday AM and PM peak hour scenarios respectively:

- Figure 6 and 7 for light vehicle trips.
- Figure 11 and 12 for total development traffic flows.

The resulting traffic flows for weekday AM and PM peak hours in the 2028 Opening Year scenario are demonstrated on:

- Figure 19 and Figure 20 for the Do Minimum scenario (there is no change to this scenario compared to that submitted with the Transport Assessment, but is provided for completeness).
- Figure 21 and Figure 22 for the With Development scenario.

The Junctions10 model outputs for the 2028 Opening Year scenario are summarised in Table 14, and presented in full at Appendix H.

Table 14: A1(M) Junction 37 - 2028 Opening Year Assessment

Link	AM Peak Hour				PM Peak Hour			
	2028 Do Minimum		2028 With Development		2028 Do Minimum		2028 With Development	
	RFC	Queue (pcu)	RFC	Queue (pcu)	RFC	Queue (pcu)	RFC	Queue (pcu)
A1(M) Southbound Exit Slip Rd	0.29	0.5	0.31	0.5	0.37	0.6	0.40	0.7
A635 Barnsley Road (East)	0.69	2.4	0.72	2.7	0.56	1.3	0.59	1.5
A1(M) Northbound Exit Slip Rd	0.44	0.9	0.47	1.0	0.57	1.4	0.59	1.5
A635 Barnsley Road (West)	0.76	3.5	0.79	4.1	0.58	1.5	0.62	1.7

The assessment demonstrates:

- In the 2028 do minimum scenario, regardless of whether the development is brough forward, all approaches to the junction operate with a modelled DoS below the normal practical capacity threshold of 0.85. This indicates spare capacity would remain available at the junction in the future scenario.
- The changes in traffic flows associated with the development would be accommodated on all approaches with a minor corresponding increase in modelled queues. On all approaches, the modelled increase in queues represents less than 1pcu, which can be comfortably accommodated without affecting the operation of the wider network.

On this basis. it is concluded that the changes in traffic flows associated with the proposed development in the Opening Year scenario are satisfactorily accommodated by the existing layout of the junction, and consequently no mitigation measures in the form of physical changes to the junction are required.

4.3 Merge and Diverge Assessment

The predicted traffic impact at the slip roads of A1(M) Junction 37, and resultant merge and diverge assessment is provided within this section. The merge and diverge assessments have been undertaken using Figures 3.12b and 3.26b of CD 122 of DMRB and have been undertaken for the Base, Do Minimum and With Development assessment scenarios. Traffic flows on the A1(M) mainline have been derived from the WebTRIS database, with traffic flows obtained for the weekday AM and PM peak hours on Tuesday 21 June 2022; in accordance with the same date as the '2022 Base' traffic surveys were undertaken.

The merge and diverge diagrams for A1(M) Junction 37 are provided at Appendix I, and summarised in Table 15 and Table 16.

Table 15: Merge / Diverge Assessment - A1(M) Junction 37 Northbound Slip Roads

MD	Scenario	TP	M Flow	MD Flow	Future Layout				Recommended Layout			
					T	CL	UM	DM	T	CL	UM	DM
Merge	2022 Base	AM	2,464	370	B	2	2	2	A	1	2	2
		PM	2,568	311	B	2	2	2	A	1	2	2
	2028 DM	AM	2,522	392	B	2	2	2	A	1	2	2
		PM	2,630	328	B	2	2	2	A	1	2	2
	2028 WD	AM	2,522	398	B	2	2	2	A	1	2	2
		PM	2,630	336	B	2	2	2	A	1	2	2
Diverge	2022 Base	AM	2,464	561	A	2	2	2	A	1	2	2
		PM	2,568	738	A	2	2	2	A	1	2	2
	2028 DM	AM	2,522	607	A	2	2	2	A	1	2	2
		PM	2,630	813	A	2	2	2	A	1	2	2
	2028 WD	AM	2,522	634	A	2	2	2	A	1	2	2
		PM	2,630	827	A	2	2	2	A	1	2	2

Table 16: Merge / Diverge Assessment - A1(M) Junction 37 Southbound Slip Roads

MD	Scenario	TP	M Flow	MD Flow	Future Layout				Recommended Layout			
					T	CL	UM	DM	T	CL	UM	DM
Merge	2022 Base	AM	2,418	748	B	2	2	2	A	1	2	2
		PM	2,650	550	B	2	2	2	A	1	2	2
	2028 DM	AM	2,475	826	B	2	2	2	B	1	2	2
		PM	2,714	601	B	2	2	2	A	1	2	2
	2028 WD	AM	2,475	839	B	2	2	2	B	1	2	2
		PM	2,714	629	B	2	2	2	A	1	2	2
Diverge	2022 Base	AM	2,418	264	A	2	2	2	A	1	2	2
		PM	2,650	429	A	2	2	2	A	1	2	2
	2028 DM	AM	2,475	278	A	2	2	2	A	1	2	2
		PM	2,714	452	A	2	2	2	A	1	2	2
	2028 WD	AM	2,475	287	A	2	2	2	A	1	2	2
		PM	2,714	459	A	2	2	2	A	1	2	2

The assessment demonstrates that the recommended merge and diverge lane layouts remain the same for the 2028 opening year scenario, either with or without the proposed development in place. The predicted impacts of the proposed development will not result in a material change to the required slip road layouts, beyond those that may be required in any event as a result in growth to baseline traffic. As such, no changes to the future layout of A1(M) Junction 37 are considered necessary to satisfactorily accommodate traffic associated with the proposed development.

4.4 Road Safety

Personal injury collision data recorded in the vicinity of Junction 37 of the A1(M) was obtained from the City of Doncaster Council (CDC) and assessed as part of the submitted Transport Assessment. For the purposes of this assessment, the collisions recorded in the vicinity of Junction 37 are re-represented below:

- Collision ref A-00019-15 (6 January 2015): A collision of slight severity occurred on the motorway section as a HGV changed lanes and failed to spot a vehicle whilst turning, resulting in a four vehicle collision including vehicles travelling behind. The causation factors were recorded as "failed to look properly" and "failed to judge other person's path or speed".
- Collision ref A-00280-15 (25 February 2015): A collision of slight severity occurred on the motorway section as a vehicle travelling southbound collided with the rear of a vehicle in front, in slowing traffic. The causation factor was recorded as "failed to judge other person's path or speed".
- Collision ref A-01720-15 (20 November 2015): A collision of slight severity occurred at the roundabout as a vehicle travelling westbound braked sharply to avoid another vehicle. This caused two vehicles behind to collide with the rear of each vehicle. The causation factors were recorded as "following too close", "failed to judge other person's path or speed" and "sudden braking".
- Collision ref 16113686 (4 October 2016): A collision of slight severity occurred on the motorway section as a vehicle travelling southbound collided with the rear of a vehicle in front, in slowing traffic. The causation factor was recorded as "failed to judge other person's path or speed".
- Collision ref 16144740 (31 December 2016): A collision of slight severity occurred on the motorway section as a vehicle travelling southbound collided with the rear of a vehicle in front, in slowing traffic, pushing the vehicle into the central crash barrier. The vehicle drove away from the scene without stopping. The causation factor was recorded as "failed to look properly".
- Collision ref 1678411 (12 June 2016): A collision of slight severity occurred on the motorway section as a vehicle travelling northbound collided with the rear of a vehicle in front, in slowing traffic. This caused a domino effect between six vehicles. The causation factor was recorded as "failed to judge other person's path or speed".
- Collision ref 17168378 (16 March 2017): A collision of slight severity occurred at the roundabout as a vehicle entering from the southbound exit slip road collided with a vehicle travelling westbound across the roundabout, causing the vehicle to spin off into a bush. The causation factor was recorded as "careless, reckless or in a hurry".
- Collision ref 17225987 (25 September 2017): A collision of slight severity occurred at the roundabout as a stationary motorcyclist parked at the junction was hit by a vehicle travelling eastbound towards the southbound entry slip road. The causation factor was recorded as "deposit on the road (e.g. oil, mud, chippings)".
- Collision ref 17230383 (13 October 2017): A collision of slight severity occurred on the motorway section as a vehicle travelling southbound failed to react to slowing traffic and swerved into the central crash barrier. The causation factor was recorded as "failed to judge other person's path or speed".
- Collision ref 17237478 (24 October 2017): A collision of slight severity occurred on the motorway section as a LGV travelling southbound collided with the rear of an LGV in front. The causation factors were recorded as "slippery road surface" and "failed to look properly".
- Collision ref 17284681 (17 December 2017): A collision of slight severity occurred on the motorway section as a vehicle travelling northbound collided with the rear of a vehicle in front, in slowing traffic. This caused a domino effect between three vehicles. The causation factor was recorded as "failed to judge other person's path or speed".

- Collision ref 18283270 (17 March 2018): A collision of slight severity occurred on the motorway section as a vehicle travelling northbound in poor weather conditions lost control and collided with a vehicle in front. The causation factor was a recorded as “slippery road surface”.
- Collision ref 19818573 (25 February 2019): A collision of serious severity occurred on the A653, east of A1 Junction 47, as a vehicle travelling eastbound was “dazzled by the dun” and collided with a vehicle travelling in the opposite direction. The causation factor was recorded as “vision affected by dazzling sun”.

Overall, thirteen collisions were recorded at A1(M) Junction 37 during the assessed period, though nine of these collisions occurred on the motorway section not relating to the roundabout or slip roads. One of the collisions resulted in serious injury, and there were no fatalities. The collision records indicate that the identified collisions occurred for reasons indicative of driver error, and there is no evidence of a specific highway safety issue on the network that would need to be addressed to safely accommodate the changes in traffic flows associated with the development.

5. Summary

This Technical Note sets out assessment of the impacts of the proposed development at the key junctions on the Strategic Road Network, in accordance with consultation by, and discussions with, National Highways in relation to the submitted planning application.

Specifically, this Technical Note assesses the impact of the development at M1 Junction 36 roundabout and "Birdwell Roundabout", which effectively comprise a linked traffic signal-controlled gyratory, as well as "Rockingham Roundabout" (a priority-controlled roundabout located 250m north of Birdwell Roundabout), and Junction 37 of the A1(M).

The assessment demonstrates that:

- The changes in the traffic flows related to the development will not represent a significant impact on the future operation of the junctions assessed.
- There is no evidence of a specific road safety issue related to the existing layout of the junctions considered, which needs to be addressed to safely accommodate changes in traffic flows associated with the development,

On this basis, and in accordance with the provisions of Circular 01/2022, it is concluded that the existing junctions on the Strategic Road Network can safely and efficiently accommodate changes in traffic flows associated with the development in the opening year scenario, and mitigation (in the form of physical changes to the junction layouts) is not necessary.