## EXHIBIT LIST

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2. SEGREGATED LEFT TURN LANES AT ROUNDABOUTS

2.1 General

2.1.1. This chapter provides requirements and advice for the provision of Segregated Left Turn Lanes at roundabouts. A flowchart identifying the decision process for the inclusion of a Segregated Left Turn Lane is provided in Figure 2.10 of this document.

2.1.2. The two basic types of Segregated Left Turn Lane, namely segregation by road markings (non-physical) and physical segregation are shown in Figure 2.1. In both types of layout, vehicles are channelled into the left hand lane by road markings, supplemented by Advance Direction Signs. They proceed to the first exit without having to give way to other vehicles at the entry onto the roundabout. Segregation by road markings can be less effective because it can be subject to abuse by vehicles over-running the non-physical island.

2.1.3. The designer shall determine whether facilities for pedestrians, cycle traffic and equestrians are required at Segregated Left Turn Lanes and, if so, determine whether they can be catered for safely within the junction design. In some cases this may not be possible and designers shall consider alternative layouts. Requirements and advice relating to the provision for pedestrians, cycle traffic and equestrians are provided in Chapter 4 of this document.

2.1.4. The use of Segregated Left Turn Lanes requires the designer to consider a number of factors including road safety, capacity and facilities for pedestrians, cycle traffic and equestrians, and shall only be considered where their introduction:

a) results in an increase in the overall capacity of the entry or roundabout in question when compared to alternative design or improvement measures; or

b) results in an improvement to the junction’s road safety i.e. a reduction in collision numbers or severity; and

c) safely makes provision for pedestrians, cycle traffic and equestrians, where these user groups are permitted.

2.1.5. Only physical Segregated Left Turn Lanes shall be used in conjunction with traffic signals at roundabouts.

2.1.6. Non-physical Segregated Left Turn Lanes shall only be used on sections of highway where appropriate crossing facilities for pedestrians, cycle traffic and equestrians are provided away from the Segregated Left Turn Lane.

2.1.7. Uncontrolled crossing points shall not be provided across Segregated Left Turn Lanes.

2.1.8. Physical Segregated Left Turn Lanes shall only be provided at street lit junctions.

2.1.9. Physical Segregated Left Turn Lanes shall be used where vehicles using the Segregated Left Turn Lane have to give way at the exit.

2.1.10. Accesses and junctions shall not be located within Segregated Left Turn Lanes.
2.43 Left turn slip lanes may be signal-controlled or uncontrolled. A consistent approach to the layout of the slip lanes and their associated pedestrian crossing facilities should be adopted. Individual junction layouts should not mix uncontrolled and controlled crossings where they combine to form a single pedestrian crossing route [See Figures 5/2 and 5/4].

2.44 Uncontrolled left turn slip lanes may make crossing for pedestrians more difficult as a result of increased vehicle speeds, and it is important to consider the whole effect of the geometric layout upon pedestrian crossing facilities. The effect of the taper, crossing lengths and pedestrian desire lines should be considered when identifying the locations for pedestrian crossings.

2.45 Left turn slip lanes with a separation island should be considered where:

- the left turn traffic movement is high;
- left turn manoeuvres for large goods vehicles need to be facilitated;
- delay for left turn vehicles would otherwise be significant;
- left turn traffic capacity requirements would extend the green time required for the straight ahead traffic movement phase.

Separation Islands

| 2.46 | Separation islands shall be provided to separate uncontrolled traffic from controlled traffic where left turn slip lanes are provided, as indicated in Figure 2/15. |

Right-Turning Traffic Movements

2.50 Accidents at signal-controlled junctions can occur as a result of conflict arising from right turning traffic movements. If local circumstances permit, right turn movements may be banned. Alternatively, a number of signalling techniques may be employed to control the right turn movements and these techniques should be considered at an early stage of the design to determine the appropriate measures.

2.51 Where the 85th percentile approach speed is greater than 72kph (45mph) there is an increased risk of accidents between right-turning vehicles seeking gaps and on-coming vehicles travelling at speed. It is recommended in such situations that right-turns should be separately signalled [See TA 12 (DMRB 8.1.1)].

Non-Hooking Arrangements

2.52 Where opposing right turn lanes can be aligned directly opposite each other turning movements are improved with right turn traffic passing nearside to nearside (non-hooking) as illustrated in Figures 2/17 and 2/18. Non-hooking road markings permit a small number of right turning vehicles to wait within the junction intervisibility zone.

2.53 Figure 2/17 illustrates an arrangement where the central reserves on the major road are offset to facilitate non-hooking turning movements on the major road phase or a separate right turn phase.

2.54 Figure 2/18 shows the right turning lane separately signalled and segregated from the adjacent ahead-only traffic by a traffic island. This feature is recommended on high speed roads and can be adopted in other cases if local circumstances permit.

2.55 Figure 1/1 illustrates an example of a non-hooking arrangement with separation islands provided to deflect the right turning traffic at a junction which is subject to geometric constraints.
SINGLE UNIT (SU) TRUCK DESIGN VEHICLE
TURNING RADIUS = 42 ft [12.80 m]
SCALE = 1:20 [1:200]

Turning Template for Single Unit Trucks or Buses
Localised provision of welfare and offices within future compound.

Secure site, ecological and environmental survey and mitigation commences.
Q3 2020

Construct haul route access from Yarnfield Lane to compound.
Commence compound mobilisation.

Ongoing ecological and environmental survey and mitigation.
Q4 2020

Commence temporary roundabout construction and temporary diversion of utilities.

Commence mobilisation of Transfer Node (limited use to support Yarnfield Lane and M6 works.

Mobilise motorway traffic management - commence tie in works.

Commence Yarnfield Lane substructure.

Construct temporary access to Whitemoor Farm. Temporary utility diversion.

Commence Yarnfield Lane underbridge.

Non motorway northbound and southbound slip road roadworks.

At grade signalised plant crossing.
Q1 2021

Switch traffic to temporary alignment.

Commence Yarnfield Lane IMBR underbridge.

Commence earthworks and roadworks to Yarnfield Lane.

Switch traffic to temporary alignment.

Work-in-progress
Highway, earthworks and structures continue on Yarnfield Lane.

M6 slip roads – tie in and non-motorway works completed.
Complete environmental mitigation throughout. Mobilise for main works throughout.

Switch public traffic to new Yarnfield Lane.

Divert gas main and telecoms into Yarnfield Lane.

Construct permanent access to Whitemoor Farm. Switch to new and remove temporary access.
Q1 2022-Q2 2023

IMB-R Construction

Works details omitted for clarity.

Line: IMB-R Construction

Phase 1

Year 1

Year 2

Year 3

Year 4

Year 5

Year 6

Year 7

Year 8

Year 9

Operation

Line: A465 (7)

Line: Work-in-progress

Line: Yanfieal Lane Public Traffic

Line: Motorway Emergency Access

Line: HS2 Construction Traffic Route

Line: HS2 Hele Road

A465 (7)
Q3 2023

Prepare existing Yarnfield Lane bridge for demolition.

Demolish Bridge

*Work-in-progress*
Q4 2023 – Q2 2024

- Complete IMB-R civil engineering works ready for rail systems works.
- Construct permanent Northbound slip arrangement.
HS2 Ltd used the 2017 County Council count to replace its 2016 count, due to concerns that the count was undertaken while Meaford roundabout was under construction. However, in Table 265 there are two major discrepancies between the counts (A34 (N) ahead, and A34 (N) Right). The County Council understand that the 2016 count was adjusted upwards to take into account some Automatic Traffic Count (ATC) data which showed the A34 SB flow to be higher. However, the County Council believe that there may be errors in the ATC as the flow in the 2017 count matched the 2016 count reasonably well, as does the downstream count at Walton roundabout. The County Council has been in correspondence with HS2 Ltd on this matter and some sensitivity testing is being undertaken. The County Council is awaiting the results of this work.

### A34 / Meaford Road Roundabout

Table 291  
The capacity results demonstrate that HS2 have a significant impact at this junction. This is the first analysis of the roundabout, with the original ES modelling the old priority junction. HS2 will need to work with SCC to mitigate the impact at this location.

### A51/Aston Bridge Staggered Junction

Table 300.2  
This junction was assessed for the first time in AP2 ES. This was necessary following the introduction of the new A51 (Stone to Weston) construction route and helps to alleviate some of the issues and mitigation works which would be required on Beaconside. The capacity analysis shows that HS2 traffic has an impact in the AM peak. HS2 Ltd need to work with the County Council to mitigate the impact (Aston Bridge north RFC 1.16 from 1.03, queue 25 to 14).

### New M6 bridge on Yarnfield Lane

CA03 p.94  
There is insufficient detail contained in the AP2 ES regarding the new bridge. It is understood that it will be 12m wide including a 6m road width. The County Council believes this should be no less than 6.8m. This reflects HS2 Ltd’s own policy, which states there should be road widths of at least 6.8m where HGVs regularly pass (Appendix C, Paragraph C.6.2, Technical Standards – Roads (HS2–HS2–HW–STD–000–000001)).

The County Council currently has no plans to improve cycle facilities along Yarnfield Lane. However, the bridge must be designed in such a way that it doesn’t preclude the provision of a facility across it in the future. The bridge must therefore have enough width on one or both sides to provide a 3m footway / cycleway, plus additional clearance for any other required infrastructure, such as safety barriers.

### Yarnfield North Transfer Node

CA03 Table 207  
The AP2 ES reports a very substantial increase in the number of HGVs associated with the transfer node at Yarnfield North embankment satellite compound. In the original ES the predicted number of two-way HGV trips during the twelve-month busy period and within the peak month of activity was 935-1185, which itself was a significant number. According to the AP2 ES, that figure rises to 1886-2329, although the busy period has reduced to five months.