

EXHIBIT LIST

Reference No: HOC/00128

Petitioner: Stone Town Council and Chebsey Parish Council

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HOUSE OF COMMONS SELECT COMMITTEE HIGH SPEED RAIL (WEST MIDLANDS - CREWE) BILL

Petition: HS2-P2A-128-1
 Stone Town Council and Chebsey Parish Council
 Stone Railhead and IMB-R / Aldersey's Rough alternative

Petition presentation	Mr Timothy Corner, QC
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Witnesses	Mr Trevor Gould
	Mr Gordon Wilkinson
	Mr Trevor Parkin
	Mr John Fraser

Exhibits in order of appearance		
Mr Corner QC	Summary of the case for the Petition	Email 2
Mr Gould	Proof of Evidence	Email 3
	Summary Proof of Evidence	
	Select Committee presentation slides	
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	Summary Proof of Evidence	
	Select Committee presentation slides	
Mr Parkin	Proof of Evidence	Email 5
	Proof of Evidence, High Speed Rail (West Midlands to Crewe): Review of Aldersey's Rough Sift Analysis	
	Select Committee presentation slides	
General	Letter from Cllr. P. Farrington, Leader of Stafford Borough Council	Email 6

HOUSE OF COMMONS SELECT COMMITTEE
HIGH SPEED (WEST MIDLANDS-CREWE BILL)
PETITION BY STONE TOWN COUNCIL AND CHEBSEY PARISH COUNCIL
WEDNESDAY 25th April 2018

SUMMARY OF THE CASE FOR THE PETITIONERS

1. Stone Town Council and Chebsey Parish Council (“the Councils”) are grateful for the opportunity to appear before the Select Committee. The Councils object to the proposed Railhead/IMB-R at Stone. Instead, they propose that a Railhead/IMB-R should be constructed at Aldersey’s Rough, a location north of Stone.
2. The objections to the **Stone** proposal can be summarised as follows.
3. First, a Railhead/IMB-R at Stone will restrict Staffordshire’s ability to connect into the national rail network, as *Trevor Gould* will say. The Railhead/IMB-R is located on the Norton Bridge to Stone railway line. Additional services will use that line once HS2 is commissioned, including the promised HS2 service to Stoke-on-Trent via Stafford. Maintenance trains accessing the Stone IMB-R would have to use the line during the day, and not just at night. This is likely to require diversion of the HS2 service to Stoke onto the Stone to Colwich line, which in turn would cut out Stafford from the HS2 service, with likely knock-on consequences for the viability of the service to Stoke.
4. Secondly, construction of the Railhead/IMB-R will cause unacceptable traffic problems during construction. *Gordon Wilkinson* will lead on these issues. Those problems are worsened by the narrow site and by the fact that the site is crossed by Yarnfield Lane, the B5026 Eccleshall Road, and the Norton Bridge to Stone line.
5. The Councils are particularly concerned about the impact of construction HGVs on Yarnfield Lane and four junctions ; (a) A34 junction with Yarnfield Lane; (b) A 34 junction with the A520 and B5026; (c) A 34 junction with A51 and Brooms Road; (d) B5026 Eccleshall Road junction with Pirehill Lane.
6. Yarnfield Lane is the primary means of access for the village of Yarnfield to and from Stone. The carriageway is narrow and for much of its length there are no formal footways. It is unsuitable for HGV traffic, as is the junction of Yarnfield Lane with the A34.
7. Also, there is already considerable congestion at the four junctions, which will be substantially worsened by the HS2 construction traffic. The promoters have underestimated the impact of HS2, because they have underestimated base flows

(flows in the absence of HS2 traffic) and because they have considered the various junctions in isolation, without taking account of the cumulative impact of traffic flows that will be displaced from junctions operating over-capacity.

8. Again, there are serious safety concerns about the alterations to Yarnfield Lane that will be needed in order to accommodate access for construction vehicles.
9. If the Railhead/IMB-R is not provided at Stone, there will still be activity at that location in order to build the line, as the Promoters have said. However, construction will be simpler and will not lead to the problems identified above.
10. Fortunately, there is an alternative location for the Railhead/IMB-R, namely **Aldersey's Rough**.
11. As well as avoiding the disbenefits of Stone, Aldersey's Rough will have the following important advantages;
 - a. Once Phase 2b is in operation, an IMB-R in this area will need to provide maintenance services in relation to the line for both Phases 2a and 2b, and Aldersey's Rough will be more centrally located than Stone.
 - b. Provision of the Aldersey's Rough Railhead/IMB-R will involve re-activating part of the Newcastle to Market Drayton railway line. That work could be the catalyst for re-opening the line into Newcastle itself, which is the most populous town in the country not currently linked to the national rail network. Reinstating train services to Newcastle would not only benefit that town but would also enable Stoke and North Staffordshire to take advantage of additional services to Manchester Airport, Liverpool and North Wales that can be provided once, as planned, new platforms are provided at Crewe station.
12. Further, construction at Aldersey's Rough will be simpler and will cause less disruption to communities than Stone, because it is a more isolated location.
13. The Promoters have compared Aldersey's Rough with Stone in the document "Phase 2A C862 Strategic Evaluation of Railhead and IMB-R Locations-post CP3 design". *Trevor Parkin* will present a Review of that Evaluation and contend that its conclusions are erroneous. Aldersey's Rough is preferable to Stone in both engineering and environmental terms.
14. Also, the Councils dispute the Promoters' assertion that a Railhead/IMB-R would cost more to construct at Aldersey's Rough. The Promoters' cost estimates cannot be fully assessed, because they have refused to provide details. However, given that the engineering aspects of construction at Aldersey's Rough are simpler, Aldersey's Rough is likely to be cheaper, or at least no more expensive. Additionally, the Promoters are wrong to add cost to Aldersey's Rough on the ground that maintenance loops at Pipe Ridware would be required in association with it. Such loops would not be needed.

TIMOTHY CORNER, QC

20th April 2018

High Speed Rail (West Midlands to Crewe): Proof of evidence of Trevor Gould

1. Introduction

1.1 Background

1.1.1 My name is Trevor Gould and I am a former Member of the Institute of Administrative Management. Almost my entire working career has been spent in manufacturing industry and for 11 years to the end of 1999 I was Operations Manager for a large multi-national manufacturer.

1.1.2 Since the year 2000 I have been working as a self-employed Management Consultant on behalf of a London-based national importer and distributor in the bathroom and kitchen industry.

1.1.3 I have a personal interest in the railway industry and have followed it closely, from without it and not within it, for over 50 years. As such, my evidence will largely be related to those aspects of our petition relating to railway matters.

1.1.4 As HS2 Ltd can attest, I am a firm believer in the principle of HS2 and a long-term advocate of the project, having attended numerous presentations held by the Promoters in various locations on Phases 2a and 2b, and discussed the project in detail with many of HS2 Ltd's engineers and other staff.

1.1.5 In 2013 I submitted a detailed report on the subject of the benefits to be gained from HS2, to a Working Group set up by Newcastle-under-Lyme Borough Council to explore such benefits. As a result of that report I was asked by the then leader of the Council, Gareth Snell (currently Member of Parliament for Stoke-on-Trent Central), to continue to develop my ideas for rail connectivity in the Borough. Subsequent to Gareth Snell relinquishing his position I continued that work with his successor as Council Leader.

1.1.6 I am not one of the founder members of the Stone Railhead Crisis Group (SRCG), joining a few weeks later after having seen plans for the poorly-sited and heavily constrained railhead proposals from HS2 Ltd.

1.1.7 Unlike my colleagues, Trevor Parkin and Gordon Wilkinson, I do not live in any of the parishes in which the railhead is currently proposed to be located. I live in the parish of Whitmore, which is the parish into which we are proposing the railhead should be relocated.

1.2 Scope of Evidence

1.2.1 My evidence is broken down into 4 separate sections. In order that Members of the Committee might more fully understand the railway aspects of the SRCG's case, the first section describes the current rail network in the geographic area through which the western leg of HS2 Phase 2 will pass, together with some of the problems associated with the network.

1.2.2 The second section details the rail network following completion of HS2 Phase 2.

1.2.3 Next I will identify the logistical and operational problems of HS2 Ltd's Stone proposal, together with its resultant detrimental effects on future HS2 services in Staffordshire.

- 1.2.4 Finally, I will contrast those problems and effects against what can be achieved by the adoption of Aldersey's Rough as the location for the Railhead and IMB-R.

2. Current Rail Network

2.1 Overview

- 2.1.1 The western leg of HS2 Phase 2 lies almost entirely within the area of the Constellation Partnership; a Government-backed alliance of 7 Local Authorities and 2 Local Enterprise Partnerships, which is situated between the Midlands Engine and the Northern Powerhouse.
- 2.1.2 It is a Government requirement that the Constellation Partnership formulates a Growth Strategy, predicated on the premise of the anticipated investment and development associated with HS2.
- 2.1.3 That strategy has now been published and the Partnership aims to deliver 100,000 new homes and 120,000 new jobs by 2040. [Ref: Constellation HS2 Growth Strategy Summary: 2017/2018](#)
- 2.1.4 Crewe is recognised as the Gateway to the North, with lines radiating to Shrewsbury, North Wales, Liverpool, Scotland, two routes to Manchester and a freight line to Northwich.
- 2.1.5 None of those local services head south from Crewe. Apart from the West Coast Main Line (WCML) to London, all that Staffordshire has is a branch line to Kidsgrove and on to Derby.

2.2 Train Service Restrictions

- 2.2.1 Despite there being a long-held ambition to operate a through service to Liverpool from Stoke, that can't be achieved. This is because those trains would conflict with express trains on the WCML in the Crewe station area, so Crewe becomes a dead end for trains from the Stoke direction via Kidsgrove, and all passenger trains must terminate there.
- 2.2.2 Local stopping services between Stafford and Stoke were suspended on 23rd May 2004, in order to upgrade the WCML and allow more express trains to run. That created capacity issues, so there are no longer any train services to villages located between the county town at Stafford and Staffordshire's biggest centre of population in Stoke.
- 2.2.3 The current Manchester to Stoke-on-Trent local service used to continue onwards at alternate hours to Stafford and Birmingham, calling at the villages of Wedgwood and Barlaston on the way.
- 2.2.4 Wedgwood and Barlaston stations are still open and appear in the railway timetable but are not served by any stopping trains. Instead they receive a much inferior bus substitution service, simply because of the capacity constraints on that section of line.
- 2.2.5 Between Stoke and Crewe lies the Borough of Newcastle-under-Lyme. Newcastle is the most populous town in the whole of the country that doesn't have its own railway station. In the past the town was served by several routes and numerous mineral lines.
- 2.2.6 Cheshire East Council wants to introduce a Northwich to Crewe service but the conflicting moves at Crewe that cause capacity issues preclude that service from operating.
- 2.2.7 Critically, those conflicting moves prevent anywhere in Staffordshire having a direct train service to Manchester Airport, a vital transport artery in attracting business and investment into our region.

2.3 Concerns for Staffordshire's businesses

- 2.3.1 Staffordshire Chambers of Commerce has voiced serious concerns about business drift from Staffordshire into Cheshire once HS2 is open, and that the benefits of the 100,000 extra houses and 120,000 new jobs are likely to be felt in the Cheshire part of the Constellation Partnership [Ref: Briefing Paper HS2 - Stoke-on-Trent 2017, Staffordshire Chambers of Commerce](#)
- 2.3.2 Crewe is rightly regarded as being the Railway Capital of the World. The biggest concern of the Staffordshire Chambers of Commerce is that Cheshire East Council is well advanced, on the premise of HS2, with numerous plans for expansion; growing the town of Crewe, raising its status and influence in the area, as well as its attractiveness to investors and developers.
- 2.3.3 The lack of a Stoke to Manchester Airport service is another reason for that concern. It seriously disadvantages local companies in Stoke-on-Trent and Staffordshire, in comparison to companies in Cheshire.
- 2.3.4 Consider that Stoke-on-Trent is closer to Manchester Airport than many smaller northern towns and cities, serves a catchment area of almost half a million people, yet the current rail network is unable to provide it with a train service to the airport.
- 2.3.5 North Staffordshire has a burgeoning logistics industry, much of which is attracted by the region's demographic location in the UK. With the opening of the new deep water container terminal at Liverpool docks, and the widening of the Panama Canal, it is vital that those logistics firms have direct rail access to the docks, otherwise they may relocate elsewhere.
- 2.3.6 Despite this, there will still be no direct rail access to Liverpool from north Staffordshire once HS2 is open.
- 2.3.7 Stoke-on-Trent is already well known for being at the wrong end of many socio-economic league tables. The latest of these surveys, reported in the local newspaper on 6th April 2018, shows that pensioner poverty in Stoke on Trent is the worst in the whole country, with pensioners living on a lower income than anywhere else. [Ref: The Sentinel 6th April 2018](#)
- 2.3.8 Similar statistics exist for average earnings (second lowest), educational achievements, child poverty, fuel poverty, poor housing and other social factors.
- 2.3.9 If the existing poor connectivity situation isn't remedied post-HS2, which under present plans it cannot, it will result in the already deprived area of Stoke-on-Trent becoming further disadvantaged, both socially and economically.

2.4 Catalyst for change

- 2.4.1 The introduction of HS2 services into the major HS2 hub at Crewe presents the ideal opportunity to address the connectivity failings of the current rail network.
- 2.4.2 We will show how that can be achieved by re-siting the Railhead/IMB-R to Aldersey's Rough, and how Stafford, Stoke-on-Trent and the other towns and villages of Staffordshire will finally be able compete on a level playing field for the investments and developments that will follow the opening of HS2 Phase 2a.
- 2.4.3 First we need to demonstrate why that can't happen if plans for the Railhead/IMB-R at Stone go ahead.

3. Proposed rail network following completion of HS2 Phase 2

3.1 HS2 route

- 3.1.1 The HS2 main line bypasses Staffordshire's towns and cities on its way to Crewe and Manchester.
- 3.1.2 There will be no captive HS2 services calling at anywhere in Staffordshire.
- 3.1.3 Part way along Phase 2a, HS2 crosses over the Network Rail route between Norton Bridge and Stone. It's at this point that HS2 Ltd proposes to locate the Stone Railhead and IMB-R.
- 3.1.4 The location of the proposed Aldersey's Rough site is approximately 13km further north on HS2, on the currently freight-only former Newcastle to Market Drayton branch line.
- 3.1.5 HS2 Phase 1 is planned to run as far as Fradley Junction, at which point a short spur, known as the Handsacre Link, will connect it to Handsacre Junction on the WCML, south of Stafford.
- 3.1.6 The use of this spur by HS2 classic-compatible trains allows HS2 services to run onto the WCML. The original train service plan, formulated when Phase 1 of HS2 was expected to be completed several years before any part of Phase 2, was that those trains would run up the WCML to Liverpool, with alternate services calling at either Stafford or Crewe.

3.2 Opportunity for passenger train operators

- 3.2.1 Once HS2 is commissioned, capacity will be freed-up on Network Rail lines, because most of the express train services on those lines will transfer to roughly equivalent HS2 services running along HS2.
- 3.2.2 That enables passenger train operators to increase the frequency and stopping patterns of local and regional services on Network Rail lines, to open or reopen new and former stations, and to introduce additional services.
- 3.2.3 Those new services are expected to include reinstatement of the Manchester to Stoke service into Stafford, running along the Norton Bridge to Stone line and allowing Wedgwood and Barlaston to regain their train services, and probably a similar service between Stafford and Crewe.

3.3 Capacity between Norton Bridge and Stone

- 3.3.1 HS2 Ltd had intended to path freight trains supplying its proposed Stone Railhead/IMB-R during the day, but the effect of providing additional passenger train services along the Norton Bridge to Stone line is that it reduces the number of paths available for freight trains to be able to run.
- 3.3.2 All freight trains, when either entering or exiting the sidings accessing the Railhead/IMB-R, need to undertake a conflicting move, similar to those previously-mentioned conflicting moves that are so restrictive to passenger trains in the Crewe station area.
- 3.3.3 Those conflicting moves will take up to 8 minutes to complete, during which time no other trains will be able to use that section of track in either direction.
- 3.3.4 We contended that once the anticipated number of additional passenger trains begins to run along the Norton Bridge to Stone line, those 8 minutes required to undertake conflicting moves will no longer be available to the freight trains.
- 3.3.5 HS2 Ltd disagreed with us on that point and maintained there was plenty of capacity.

3.4 Chris Grayling announcement

- 3.4.1 However, HS2 Ltd changed its view after the announcement of the direct service to Stoke-on-Trent. On 20th May 2017, during a visit to North Staffordshire, the Secretary of State for Transport, Chris Grayling, publicly announced that Stoke-on-Trent will have a direct HS2 service to London, and that a feasibility study could be undertaken into linking Newcastle-under-Lyme back into the West Coast Main Line.
- 3.4.2 That HS2 service to Stoke-on-Trent has been achieved by combining the Liverpool HS2 service with the Preston HS2 service, running them as one train along HS2 as far as Crewe, then splitting them there to serve both destinations.
- 3.4.3 That releases a path on HS2 to enable a new classic compatible service to run along the Handsacre Link, stopping at Stafford, then continuing to Stoke-on-Trent and terminating at Macclesfield.
- 3.4.4 Unfortunately, that means that the Stoke-on-Trent HS2 service has to use the line from Norton Bridge to Stone, which reduces the amount of capacity for handling supply trains into the Railhead/IMB-R on that line even further.
- 3.4.5 When that became known, HS2 Ltd agreed with us that there will be insufficient capacity on the Norton Bridge to Stone line to run its supply trains during the day, so has changed its plans and instead it now intends to run its supply freight trains at night. We contend that there will be insufficient capacity for that to take place.

4. Problems

4.1 Railway layout

- 4.1.1 The lack of space on the proposed Stone site, due to it being sandwiched into a long, narrow strip of land between the M6 motorway and the HS2 main line, has resulted in the inclusion in the plans of a number of what HS2 Ltd itself refers to as “sub-optimal” features.
- 4.1.2 In order to supply the IMB-R, most trains will need to change direction 4 times, which is inherently dangerous, time consuming and expensive.
- 4.1.3 All trains in or out of the IMB-R from Network Rail must use the line from the Network Rail sidings into the headshunt. All those trains must also use the line from the main yard into the headshunt.
- 4.1.4 The headshunt is also the primary access to/from the main yard for HS2 maintenance trains heading to/from the north along HS2.

4.2 Maintenance regime

- 4.2.1 The anticipated timetabling of HS2 trains allows for only a 5 hour maintenance window for the IMB-R to maintain the HS2 line, between 12:00 am and 05:00 am, when there will be no passenger trains operating on HS2.
- 4.2.2 This maintenance window will shorten if HS2 trains are not running to schedule, or in unforeseen circumstances. It is also likely that future changes to commercial operations on HS2 may shorten the maintenance window even further.
- 4.2.3 The introduction of the classic compatible service along the Norton Bridge to Stone line doubles the risk of operating supply trains into the IMB-R during the maintenance window, because the IMB-R will rely on not only trains on HS2 running to time, but also the Stoke and Macclesfield classic compatible trains running to schedule.

- 4.2.4 The location and layout of the Stone site, which is expected to receive most of its supply trains from the south, restricts train movements to such an extent that 4 reversals of direction are required in order that those trains can supply the site. [Figure 1 – Stone Railhead/IMB-R](#)
- 4.2.5 Those reversals necessitate numerous time-consuming safety procedures to be carried out after each manoeuvre, including the shutting down of locomotives, cab checks, brake tests, visual inspection of the train etc. Speed will be limited throughout the site and control of train movements will require operatives on the ground in the IMB-R, in addition to the driver.
- 4.2.6 Our calculations show that it will be around 107 minutes into the 5 hour maintenance window before the first supply train from the south is able to reach its destination in the IMB-R yard.
- 4.2.7 Subsequent supply trains entering the site will take a further 25 minutes each, assuming they follow on from the previous train at the earliest possible opportunity, so a third train into the IMB-R would not arrive until 157 minutes into the maintenance window. Those subsequent trains also introduce conflicting moves, which slow down operations.
- 4.2.8 Similar restrictions apply to trains exiting the site, meaning that the last train must start its exit around 102 minutes before the maintenance window closes, otherwise it risks interfering with the operation of both HS2's maintenance trains and the HS2 passenger service between Macclesfield and London.
- 4.2.9 As a result of the time taken to undertake these train movements, and if 3 supply trains were to enter the IMB-R, the last of those would be 259 minutes into the 300 minutes of the maintenance window by the time it cleared the path of HS2 services on the Macclesfield to London service. So no more than 3 supply trains will be able to enter the IMB-R each night.

4.3 HS2 Ltd response to capacity constraints

- 4.3.1 HS2 Ltd has told us that the capacity constraints at Stone aren't a problem because "for the first few years the line will be new and won't require more than one supply train per night."
- 4.3.2 But that is not a satisfactory answer in my view. Any permanent maintenance facility must be exactly that – permanent. It must be capable of servicing HS2 for the lifetime of the line. The proposed site at Aldersey's Rough meets that criterion. The Stone site does not. As the line ages, it is inevitable that the nightly number of supply trains will increase.

4.4 Known risk that can't be calculated

- 4.4.1 The risk that the number of supply trains to Stone will exceed the IMB-R's nightly capacity is all the greater because of the unprecedentedly heavy loading the line will experience.
- 4.4.2 In December 2016 a conference was held by the Permanent Way Institute of Europe, the pre-eminent body on railway construction, specifically to discuss the best track forms for high speed railways. [Ref: Rail Engineer 15th December 2016](#)
- 4.4.3 The keynote address gave details of the stress and loadings that HS2 would suffer. The estimated loading is over 60 million gross tons per annum (MGTPA), based on train speeds, weights and frequency.
- 4.4.4 As a comparison, HS1 carries only 14MGTPA, less than a quarter of that predicted for HS2.
- 4.4.5 No-one in the world has any experience of the effects of the loadings that HS2 will suffer, so maintenance requirements can be described as no more than a best guess.
- 4.4.6 The man who gave that keynote speech to the Permanent Way Institute was Niall Fagan, HS2 Ltd's own Head of Track Engineering. So HS2 Ltd already knows it has no evidence to

back up its “one train a night” assertion, even when the line is new, and appears to have simply plucked a figure out of thin air to try to discredit our argument.

- 4.4.7 The railhead is likely to need daily shipments of slabs, rails, aggregates for stabilising earthworks, overhead catenary supplies, spoil trains and more, so we could be looking at 6, 8 or even 10 freight trains into the railhead nightly. No one can say for sure, but what we can say is that it is highly likely that substantially more than 3 trains per night will be required.
- 4.4.8 As I have already said, once the number of freight trains serving the railhead goes above 3 per night, as a maximum, the railhead doesn't have the capacity to handle them.
- 4.4.9 The Stone site can't be laid with a different track access configuration in order to handle extra trains because of the physical barriers of the M6, HS2 and Norton Bridge to Stone line, whereas Aldersey's Rough has the capacity to expand to handle additional maintenance traffic and cover any as-yet-unknown future requirements, as I explain below:

4.5 Increased capacity constraints once Phase 2b is commissioned

- 4.5.1 But those are just the problems when Phase 2a is open. When the western leg of Phase 2b is opened capacity issues will get even worse, because Phase 2b will be maintained from same IMB-R as Phase 2a, and it will be built on ballasted track, not slab track.
- 4.5.2 That requires a different, and additional, type of supply train, the ballast train, which puts even more strain on capacity.
- 4.5.3 Ballast also requires much more maintenance than slab track, and has a much shorter life expectancy, so requires more supply trains and more track maintenance trains.
- 4.5.4 Another problem for Stone is that ballast trains are 800m long. The sidings at Stone can't accommodate 800m long trains. HS2 Ltd acknowledges that fact, and the fact that Aldersey's Rough has been designed in a way that it can accommodate those trains.
- 4.5.5 HS2 Ltd's answer for the Stone site is to split the ballast supply trains into 2 sections in order that they can access the site, then to connect them back together on a loop line adjacent to HS2, to undertake their maintenance duties.
- 4.5.6 That means that every ballast train that accesses the IMB-R will take twice as much capacity as other types of supply train. Twice as much capacity in a maintenance facility that is already acknowledged as struggling to provide that capacity.
- 4.5.7 But there's a further unknown factor, and an equally worrying aspect regarding the number of supply trains needed per night. That is the phenomenon known as ballast flight. [Ref: Rail Technology Magazine 21st September 2017](#)
- 4.5.8 This phenomenon involves small particles of the ballast lifting with the turbulence of passing trains, and occurs when excessive loadings are placed on the track, as will be the case with HS2 Phase 2b.
- 4.5.9 It causes greater maintenance requirements on rolling stock and also damages the track, due to particles being ground between the wheels of passing trains and the surface of the rails.
- 4.5.10 The extent to which this will require extra maintenance can't be calculated because nowhere else has ever imposed such loadings on ballasted tracks.

5. Consequences

5.1 Alternative supply option: supplying Stone during the daytime

- 5.1.1 All of these factors will lead to an alternative solution needing to be found to supply the IMB-R. Lack of night time capacity at Stone leaves only one option available to HS2 Ltd. That option is to revert to the original plan and supply the IMB-R during the day.
- 5.1.2 There will be no available paths to accommodate the supply trains on the Norton Bridge to Stone line once the additional expected train services are introduced. That option therefore means that some passenger train services along that line will need to be withdrawn in order to accommodate the extra supply trains.
- 5.1.3 The most likely casualty of this would be the HS2 classic compatible service to Stoke and Macclesfield, because by withdrawing that service it avoids the possibility that the supply trains to the HS2 IMB-R will affect timekeeping of HS2's own trains.
- 5.1.4 To uphold the commitment made to Stoke-on-Trent by Chris Grayling, the Macclesfield-bound HS2 trains would be re-routed along the Stone to Colwich line, which will by then have plenty of capacity due to the withdrawal of many of the Pendolino train services.
- 5.1.5 Those classic compatible trains can then avoid the Norton Bridge route altogether, won't conflict with access to the IMB-R, and freight trains can run during the day without threatening the HS2 timetable.

5.2 Economic consequences of re-routing the Macclesfield train

- 5.2.1 Unfortunately the casualty in all this is Stafford, which will lose its HS2 service because the Stone to Colwich line bypasses Stafford. There will be no HS2 service to our county town.
- 5.2.2 That will have enormous economic consequences on the town, which has over £500m of investment earmarked for the Stafford Gateway Masterplan, much of which is dependent on HS2 services calling.
- 5.2.3 There is a further likely consequence. If the service does not call at Stafford, that it then leaves the Stoke and Macclesfield HS2 service in a very precarious position, without any passenger revenue from Stafford.
- 5.2.4 Macclesfield is a less than credible destination for a HS2 service already. Unlike the existing Pendolino trains, the HS2 service will have no revenue from Manchester or Stockport passengers, and additional investment in infrastructure is required to enable HS2 trains to terminate at Macclesfield.
- 5.2.5 It's questionable whether there is any business case for a Macclesfield service in the first place. It is unlikely that any future franchisee of HS2 train services would consider it to be commercially viable. Without the patronage from Stafford customers the service is even less viable than the current plans, meaning that not only Stafford, but also Stoke, would lose its HS2 service.
- 5.2.6 Thus the tenuous hold that Staffordshire has on a dedicated HS2 service will almost certainly be lost if the railhead is built at Stone.
- 5.2.7 The Stoke City Council and Newcastle Borough Council Joint Local Plan, currently out for consultation, states "1.10 ...the Constellation Partnership's main objective is to capitalise on the opportunities that HS2 and supporting infrastructure could bring to the area of north Staffordshire and south Cheshire."

- 5.2.8 This particular piece of HS2 supporting infrastructure, the Stone IMB-R, will almost certainly become Staffordshire's Nemesis, threatening the connectivity and future prosperity of our whole region.
- 5.2.9 The Joint Local Plan goes on to say "At this stage the Partnership has identified an ambition to deliver 100,000 new homes and 120,000 new jobs across the wider area by 2040 predicated upon assumptions in relation to transport infrastructure investment."
- 5.2.10 If the Stone railhead goes ahead, with the associated connectivity restrictions that would impose on Staffordshire; Crewe town and Cheshire will inevitably be a more attractive proposition than Staffordshire for that investment, those homes and those new jobs, because Staffordshire will have lost its ability to compete.
- 5.2.11 The business drift that the Staffordshire Chambers of Commerce are so worried about could become a flood.

6. Advantages of, and opportunities provided by, Aldersey's Rough

6.1 The Newcastle to Market Drayton branch line

- 6.1.1 Although it currently carries only a single track, the former Market Drayton branch was built as a double track formation, so meets the criterion laid down by HS2 Ltd for providing access to a Railhead/IMB-R.
- 6.1.2 The line is still open, but unused, between Madeley Junction and Silverdale, and could be upgraded with connections both northbound and southbound to the WCML.
- 6.1.3 The branch gives access to a large area of land at Aldersey's Rough, which does not suffer the physical constraints of the proposed Railhead/IMB-R site at Stone, thereby enabling an optimum layout to be designed. HS2 Ltd's own proposed design is capable of handling supply trains much more effectively than at Stone, and could also be expanded if necessary.
- 6.1.4 Unlike the Norton Bridge to Stone line, neither the WCML along this stretch, nor the section to Aldersey's Rough, conflict with either classic compatible or core HS2 trains.
- 6.1.5 In contrast to the Norton Bridge route, which will carry more rail traffic once HS2 is open, the WCML will initially carry considerably less traffic, making pathing of supply trains into an IMB-R at Aldersey's Rough much easier than it will be at Stone.
- 6.1.6 And unlike the existing Stoke line, which accesses Crewe from the east, trains from the Aldersey's Rough direction are already on the west side of the WCML on entering Crewe, so don't suffer from conflicting moves problems there either, and can easily access the main Network Rail infrastructure yard at Basford Hall, or use the Independent Lines that bypass Crewe station in order to continue northwards.
- 6.1.7 The significance of all those points is that Aldersey's Rough has far greater capacity than Stone, and operating an IMB-R from there presents no threat to either the HS2 timetable or train services on Network Rail routes.

6.2 Beyond Aldersey's Rough

- 6.2.1 Between Aldersey's Rough and Newcastle-under-Lyme the branch is still laid as single track as far as Silverdale, the end of Network Rail property. The former trackbed beyond that point is now a public right of way all the way to the old railway station site in Newcastle.

- 6.2.2 The fact that Newcastle no longer has a railway station is a massive disincentive for anyone thinking of investing in the borough.
- 6.2.3 The former railway runs through an area known as the Western Urban Villages. Silverdale, Knutton and part of Cross Heath; a series of heavily-populated former mining villages that Newcastle Borough Council has been trying to regenerate.
- 6.2.4 There are hundreds of new homes that have already been given planning permission along the route of the line.
- 6.2.5 If a way could be found to reopen the former stations in the Western Urban Villages, it would be the biggest shot in the arm of any regeneration proposal, as has been found with communities alongside the dozens of reopened stations and lines since privatisation.
- 6.2.6 Keele is also located along this route. The home of Keele University, Staffordshire's principal seat of learning, host to an increasingly important and growing science and technology park, and destination for hundreds of new international students every year.
- 6.2.7 Because of its international links, there is an immeasurable benefit to Keele University and Science Park and, by extension, Newcastle Borough and the rest of Staffordshire, of the university being able to market itself as having a station with a direct train service to Manchester Airport.
- 6.2.8 Stoke City and Newcastle Borough Councils have a Joint Local Plan to 2033. That plan includes significant development around a Stoke Station Masterplan, regeneration of the Western Urban Villages, and creation of an integrated community to serve the University and Science Park at Keele.
- 6.2.9 Extending and reopening the railway beyond Aldersey's Rough into Newcastle and to Stoke will be instrumental in achieving the goals of that Joint Local Plan.

6.3 Crewe Independent Lines

- 6.3.1 With the proposals recommended by Chris Grayling in the report on the Crewe HS2 Hub Consultation, we now have a way in which all those aspirations can be met.
- 6.3.2 Published on 9th March, that report provides for new platforms to be built on the Crewe Independent Lines on the west side of Crewe station. The purpose of this is to allow the existing Manchester to South Wales regional train services to continue to call at Crewe, without conflicting with the new HS2 classic compatible services
- 6.3.3 By utilising these Independent Lines platforms, and by extending the branch line beyond Aldersey's Rough into Newcastle and Stoke, we can maximise the released capacity created by HS2 on the WCML south of Crewe, and harness it to provide a local train service network that would bring huge benefits to the whole area of the Constellation Partnership.

6.4 Connectivity

- 6.4.1 The long-awaited through services to Liverpool could finally be introduced, giving access to the ever-increasing import and export opportunities that are materialising at the docks, thanks to Liverpool's new deep water terminal and the widening of the Panama Canal.
- 6.4.2 And giving our burgeoning logistics industry the means to take advantage of those opportunities.
- 6.4.3 And there's a local service from Chester that terminates at Crewe, which could be continued via Newcastle into Stoke, giving North Staffordshire through trains to Chester and, potentially, North Wales.

6.4.4 Cheshire County Council has been wrestling with how to reinstate the passenger service to Middlewich and Northwich, without involving conflicting moves. The Independent Lines tunnels allow those towns to connect into the same network, continuing on into Newcastle and Stoke.

6.4.5 But the most important of all the potential services for Newcastle and Stoke is that to Manchester Airport. Routed via the new Independent Lines platforms at Crewe, it would form an extension of the existing Manchester to Crewe service.

6.4.6 This is the big attraction for businesses in Staffordshire. Direct access to the rest of the world through Manchester Airport. Something that north Staffordshire can only achieve by connecting via the Newcastle line to Stoke, and can't be achieved via the Kidsgrove line.

6.5 North Staffordshire network

6.5.1 Once Newcastle is reconnected to the rail network, the cost:benefit of reinstating the former line from there into Stoke has massive potential.

6.5.2 There are a few civil engineering requirements along this short stretch of line, but nothing insurmountable. And there is plenty of redundant railway land available at Stoke to allow reinstatement of bay platforms and additional through lines, so the extension of Chester, Liverpool and Manchester Airport services into Stoke is not a problem.

6.5.3 That then enables the mothballed Leek route to be reopened to passenger traffic, as has been suggested on more than one occasion in recent years, connecting with the preserved Churnet Valley Railway, opening up a rail corridor to Alton Towers.

6.5.4 That will bring a huge tourism boost, and much-needed income, to the Staffordshire Moorlands.

6.5.5 At the western end, this service could head south, to terminate at Whitmore, making that station a parkway station, and creating a trans-conurbation rail corridor across North Staffordshire, from the A53 west of Newcastle, to the A53 in Leek.

6.5.6 One final route is the line to Cheadle. This local service allows reopening of many closed stations in the urban areas of Stoke, as well as several in the Staffordshire Moorlands, and could continue as an extension of the service from Northwich. Staffordshire Moorlands District Council has already asked a local company, Moorland & City Railway, to examine the possibility of reopening the Cheadle branch.

6.5.7 Both of these Moorlands routes have huge freight potential, particularly in quarried stone, achieving one of HS2's stated ambitions of taking freight off the roads and putting it onto rail.

6.5.8 One final service enhancement is that instead of Stafford to Crewe local trains terminating in the bay platforms at Crewe, the Independent Lines idea also enables that service to use those extra platforms, and then continue to Manchester, alternating as an extension of the current Crewe to Manchester Piccadilly and Crewe to Manchester Airport local stopping services.

6.5.9 Businessmen and women landing at Manchester Airport can finally gain access to Stafford and north Staffordshire, without having to change trains or find alternative forms of transport.

6.6 Implementation

6.6.1 With regard to bringing these proposals to fruition, Chris Grayling's suggestion of a feasibility study into reconnecting Newcastle-under-Lyme into the national network, via the

WCML, has two significant points of merit that tip the balance very firmly in its favour. Cost and timescale.

- 6.6.2 The first point is that the biggest single cost element is expected to be the connections from the WCML to the Market Drayton branch and reinstatement of the route to Aldersey's Rough.
- 6.6.3 If Aldersey's Rough is adopted as the site for the IMB-R, this cost will form part of the budget for building HS2 and is simply switched from Stone to Aldersey's Rough.
- 6.6.4 Our estimates are that HS2 Ltd will actually save money by doing just that. When the cost:benefit analysis is carried out as part of the feasibility study, that will be a major boost for the benefit side of the equation.
- 6.6.5 The second point is timescale. Everything we are suggesting should be done within the timescale of building HS2, with further construction cost savings being made by undertaking the work simultaneously.
- 6.6.6 All this connectivity will then be available immediately HS2 starts running. That will be critical in ensuring that Staffordshire is not disadvantaged by HS2, and it addresses the threat of business drift into Cheshire.

7. Conclusions

- 7.1.1 The layout of the current rail network puts Staffordshire at a significant economic disadvantage in relation to Crewe and points north of Crewe. With the introduction of services on HS2 there is the opportunity to address that situation.
- 7.1.2 However, existing plans, specifically proposals to locate the HS2 Railhead/IMB-R at Stone, not only fail to address the problems, but they actively worsen the situation to the extent that the future economy of the whole of Staffordshire will be seriously threatened.
- 7.1.3 We have demonstrated that the Stone site fails to deliver on any of the Government's key objectives and aspirations. It does exactly the opposite.
- 7.1.4 Rather than increasing capacity on the Norton Bridge to Stone line, it actually throttles capacity.
- 7.1.5 Instead of improving connectivity, the Stone site threatens connectivity, by putting in jeopardy the HS2 classic compatible service to Stafford, Stoke and Macclesfield.
- 7.1.6 The Stone site also contributes nothing to encouraging the transfer of freight from road to rail.
- 7.1.7 In addition to all of this, the Stone site does not spread prosperity, but creates a situation in which prosperity will flood into Cheshire at the expense of Staffordshire.
- 7.1.8 This situation cannot be addressed by expanding the site because of its geographic location, constrained between the M6 and HS2.
- 7.1.9 Contrast all of these points with the position of Aldersey's Rough. Aldersey's Rough has the potential to achieve everything that the Government has set out to achieve in the building of HS2 – releasing capacity; improving connectivity; creating opportunities for increasing rail freight, and growing the economy.
- 7.1.10 It is critical to Staffordshire's future prosperity. Quite apart from its better location from an environmental, engineering and economic point of view, we have shown that there are numerous potential opportunities provided by it.

- 7.1.11 By using Aldersey's Rough as the catalyst, we can introduce a new rail network that focuses local passenger services from our area into the major HS2 hub at Crewe and beyond.
- 7.1.12 We are then able to market Staffordshire's businesses as having high speed rail links to many parts of the UK, direct train services to Manchester and Birmingham airports, and access to Liverpool docks.
- 7.1.13 At the same time that minimises, or possibly eliminates altogether, the risk of business drift away from Staffordshire into Cheshire.
- 7.1.14 And by removing the obstacle of the Stone IMB-R, we are also giving Staffordshire's own HS2 service to Stafford and Stoke a fighting chance of survival.
- 7.1.15 One final point to consider. If the Stone Railhead/IMB-R goes ahead, and when we reach the point at which it proves to be unfit for purpose, the taxpayer will then be asked to fund a new IMB-R somewhere else.
- 7.1.16 The irony is that there is only one optimum place along the western leg of HS2 Phase 2 where it can be located. That place is Aldersey's Rough.
- 7.1.17 Why roll the dice on Stone, when there is a copper-bottomed option available at Aldersey's Rough?

Trevor Gould
16th April 2018

Appendix A – Figures

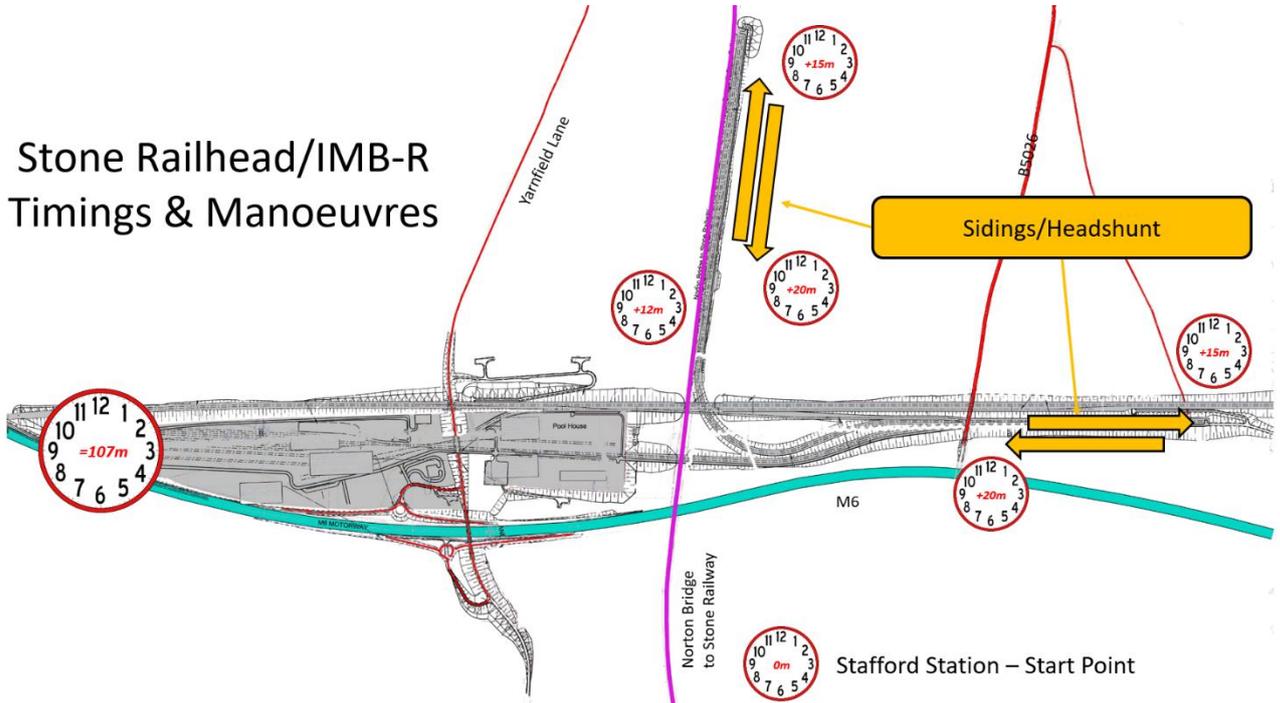


Figure 3.1 - Stone Railhead Timings and Manoeuvres

High Speed Rail (West Midlands to Crewe): Summary Proof of evidence of Trevor Gould

1. Current and post-HS2 Connectivity

- 1.1.1 The western leg of HS2 Phase 2 lies almost entirely within the area of the Constellation Partnership; a Government-backed alliance of 7 Local Authorities and 2 Local Enterprise Partnerships, which is situated between the Midlands Engine and the Northern Powerhouse and whose ambition is to deliver 100,000 new homes and 120,000 new jobs by 2040. [Slide 1 – Constellation Partnership](#)
- 1.1.2 That growth is predicated on the premise of the anticipated investment and development associated with HS2, but Staffordshire Chambers of Commerce are extremely concerned that not only will the majority of that investment head north into Cheshire, but that much of Staffordshire's existing commercial activity will also suffer 'business drift' into Cheshire.
- 1.1.3 There are several reasons for that concern. The first is the excellent HS2 service being planned for the major HS2 hub at Crewe. The proposed service to the far more populated conurbation of north Staffordshire pales into insignificance by comparison. [Slide 2 – Crewe HS2 proposed services](#)
- 1.1.4 And a second reason is that the layout of the current rail network puts Staffordshire at a significant economic disadvantage in relation to Crewe, and northwards into Cheshire. [Slide 3 - Current Rail Network](#)
- 1.1.5 No local services along the current route from Stoke on Trent are able to pass through Crewe station because that would involve conflicting moves with express train services in the station area. Crewe is effectively a dead end to Staffordshire's local services.
- 1.1.6 Yet Crewe has superb rail connectivity, even without HS2. There are rail services to all points north, whereas nowhere in Staffordshire has even a train service to the vital transport artery of Manchester Airport.
- 1.1.7 With the introduction of services on HS2 Phase 2a there is the opportunity to address that situation.
- 1.1.8 However, existing plans, specifically proposals to locate the HS2 Railhead/IMB-R at Stone, not only fail to address the problems, but they actively worsen the situation to the extent that the future economy of the whole of Staffordshire will be seriously threatened.
- 1.1.9 Our evidence shows how it's possible to redress that economic balance simply by relocating the problematic Stone Railhead/IMB-R to the far superior site at Aldersey's Rough, and taking advantage of the capacity and connectivity opportunities that are then genuinely created by HS2.

2. Capacity issues at Stone and their effects

- 2.1.1 The Stone Railhead/IMB-R is located on the Norton Bridge to Stone line, which is a double track, passenger-carrying line. Once HS2 Phase 2a is open, capacity release elsewhere means that the number of passenger trains along this line is expected to be at least twice as many as now. [Slide 4 - post HS2 services](#)

- 2.1.2 Following a commitment made by Chris Grayling on 20th May last year, one of those additional services, possibly even two, will be the HS2 service to Stoke-on-Trent. So HS2 trains will run past the access sidings to the Stone IMB-R.
- 2.1.3 When the Stone Railhead/IMB-R was conceived, all these extra services were either not known about, or not taken into account. The effect of those extra services is that there won't be capacity to accommodate supply trains into the IMB-R during the day, which was HS2 Ltd's original plan, so they will be run at night instead.
- 2.1.4 However, due to the physical constraints of the Stone site, together with the maximum 5-hour nightly maintenance window on HS2, it won't be possible to accommodate more than 3 supply trains per night into the IMB-R. [Slide 5 – Stone site stitched together](#)
- 2.1.5 And once HS2 Phase 2b opens there will be far greater pressure on the maintenance facility, to the extent that the Stone IMB-R won't be able handle the number of supply trains required to continue to maintain HS2.
- 2.1.6 That will then result in supply trains having to run during the day, which will of necessity be at the expense of at least one of the passenger services. The easy option will be to divert the HS2 service to Stoke via the Colwich line, which is likely to make that service commercially unviable and ultimately lead to its withdrawal. [Slide 6 – Macclesfield via Colwich service](#)
- 2.1.7 Both Stafford, with its £500m investment tied up in the Stafford Gateway Masterplan, and Stoke-on-Trent, having its own Masterplan based around the railway station, will suffer enormous cost and deprivation as a result of losing their HS2 services.
- 2.1.8 Our evidence shows that the Stone site will not be fit for purpose as an IMB-R, as a result of which it can't operate without serious damage to Staffordshire's economy.
- 2.1.9 This situation cannot be addressed by expanding the Stone site because of its geographic location, constrained between the M6 and HS2.
- 2.1.10 The only alternative will be that the taxpayer will then be asked to fund a new IMB-R somewhere else. There is only one optimum place along the western leg of HS2 Phase 2 where a fully functioning IMB-R can be located. That location is Aldersey's Rough. So Aldersey's Rough is where the Railhead/IMB-R should be built in the first place.

3. Potential of Aldersey's Rough

- 3.1.1 Unlike at Stone, Aldersey's Rough is served from the West Coast Main Line (WCML) railway, which has four tracks, not two. Unlike at Stone, where the Norton Bridge line will have far less capacity once HS2 is open, the WCML will have far greater capacity. And unlike at Stone, Aldersey's Rough is not on a constrained footprint but can be expanded as and when necessary. [Slide 7 – Aldersey's Rough connections](#)
- 3.1.2 Aldersey's Rough lies alongside the former Market Drayton to Newcastle branch line, which can be connected directly into the four tracks of the WCML in both a northbound and southbound direction.
- 3.1.3 Because supply trains to Aldersey's Rough won't conflict with HS2 train services, it enables the site to be supplied by rail 24 hours a day. Together with the other capacity advantages already outlined, this gives it huge benefits over the Stone site as an IMB-R.
- 3.1.4 Once the route into Aldersey's Rough is established, that provides an even greater opportunity, which is to reopen the line into Newcastle-under-Lyme. Newcastle is the largest town in the country that doesn't have its own railway station, and reopening enables the introduction of passenger services from there to the major HS2 hub at Crewe.

- 3.1.5 It hasn't been possible to do that previously because there wasn't capacity at Crewe station to handle additional passenger services. That situation will change once HS2 is open because new platforms are proposed on the west side of Crewe station, to allow regional train services to pass through Crewe station without conflicting with HS2 trains.
- 3.1.6 The use of those extra platforms will enable local train services that currently terminate at Crewe to continue onwards to Newcastle, as well as facilitating new services and creating new journey opportunities, which is a key benefit for any proposed train service.
- 3.1.7 Having established the link into Newcastle, and the fact that Stoke-on-Trent can't be provided with through services beyond Crewe along the existing rail corridor via Kidsgrove, the cost-benefit of reopening the remaining section of line between Newcastle and Stoke-on-Trent will then almost certainly become financially viable. [Slide 8 – North Staffs services](#)
- 3.1.8 Train services from the north through Crewe and Newcastle would then extend on to Stoke and beyond, into the Staffordshire Moorlands towns, creating a network of local train services and opening up routes to several freight destinations, enabling the transfer of stone, cement and other freight traffic off the roads and onto rail.
- 3.1.9 Stoke City and Newcastle Borough Councils have a Joint Local Plan. It includes significant development around a Stoke Station Masterplan, regeneration of several former mining villages in Newcastle known as the Western Urban Villages, and creation of an integrated community to serve the University and Science Park at Keele.
- 3.1.10 All of these major objectives lie along the rail corridor through Newcastle and Stoke, and will have several reopened stations serving them. That rail corridor is instrumental in achieving the goals of that Joint Local Plan.
- 3.1.11 Aldersey's Rough is critical to the success of the plan and to Staffordshire's future prosperity. Quite apart from its better location geographically for the maintenance of HS2, our evidence shows that there are numerous potential opportunities provided by it.
- 3.1.12 And by removing the obstacle of the Stone IMB-R from the Norton Bridge to Stone line, we are also securing the future of Staffordshire's own HS2 service to Stafford and Stoke-on-Trent.
- 3.1.13 We can then market Staffordshire's businesses as having high speed rail links to many parts of the UK, direct train services to Manchester and Birmingham airports, and access for our burgeoning logistics industry to the new deep water container terminal at Liverpool docks.
- 3.1.14 At the same time that minimises, or possibly eliminates altogether, the risk of business drift away from Staffordshire into Cheshire.

4. SRCG synergy with the HS2 project

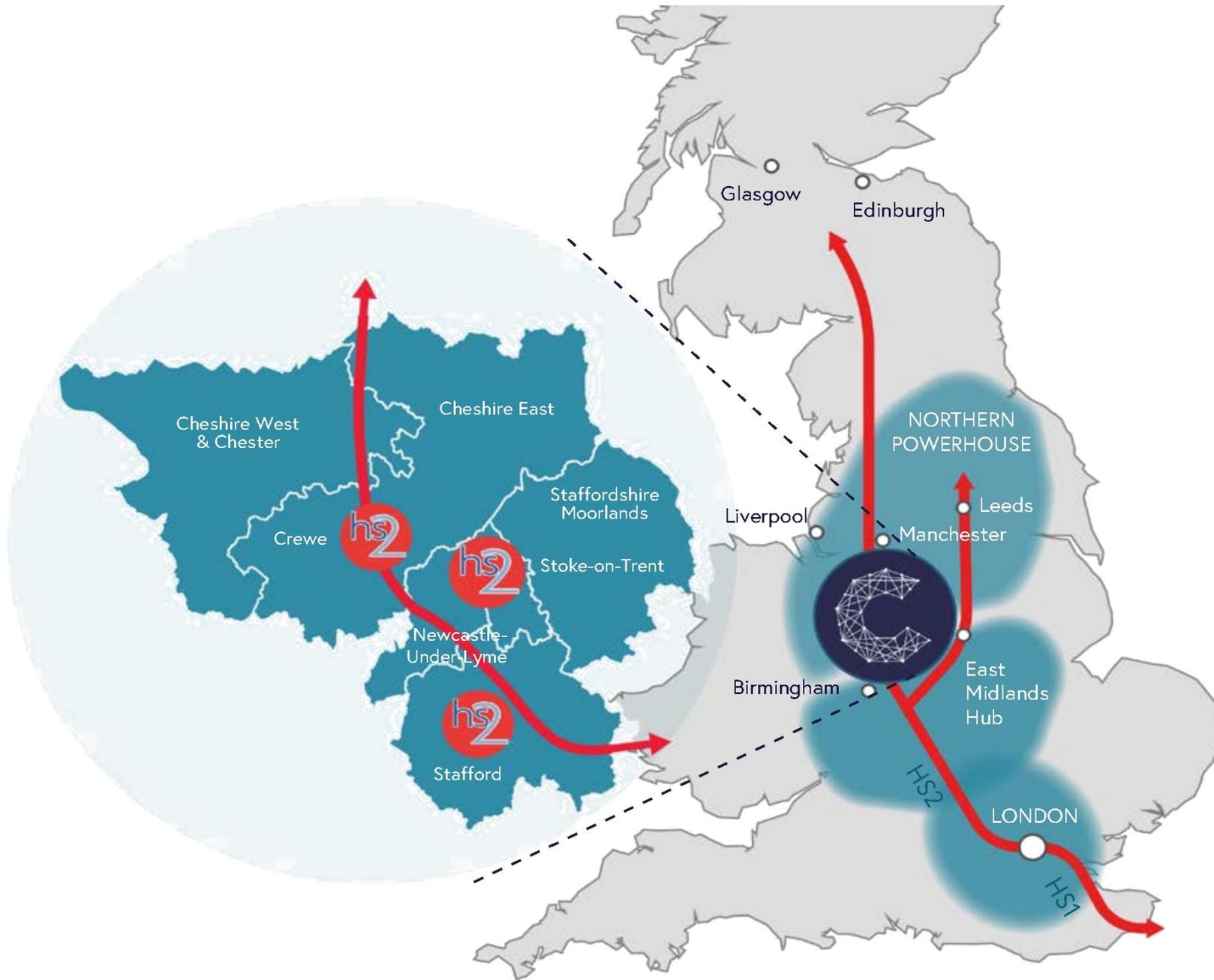
- 4.1.1 We appreciate that HS2 Ltd's Corporate Strategy Document states that the Company's primary remit is to build the line on time, within budget, and to the Promoter's specification.
- 4.1.2 But that Corporate Strategy also requires the Company to *Minimise Adverse Impacts*, and to seek *Wider Benefits Realisation*, that might arise as a consequence of the Company fulfilling its remit. By forging ahead with a Railhead/IMB-R at Stone, HS2 Ltd is failing in its remit on both those counts.
- 4.1.3 In promoting the HS2 project the Government has identified 3 key objectives: - increasing capacity on the national rail network; improving connectivity; and enabling more freight to be transferred from road to rail.
- 4.1.4 Additionally, the Government also has aspirations of HS2 being an engine for growth; spreading prosperity to the north and growing the economy.

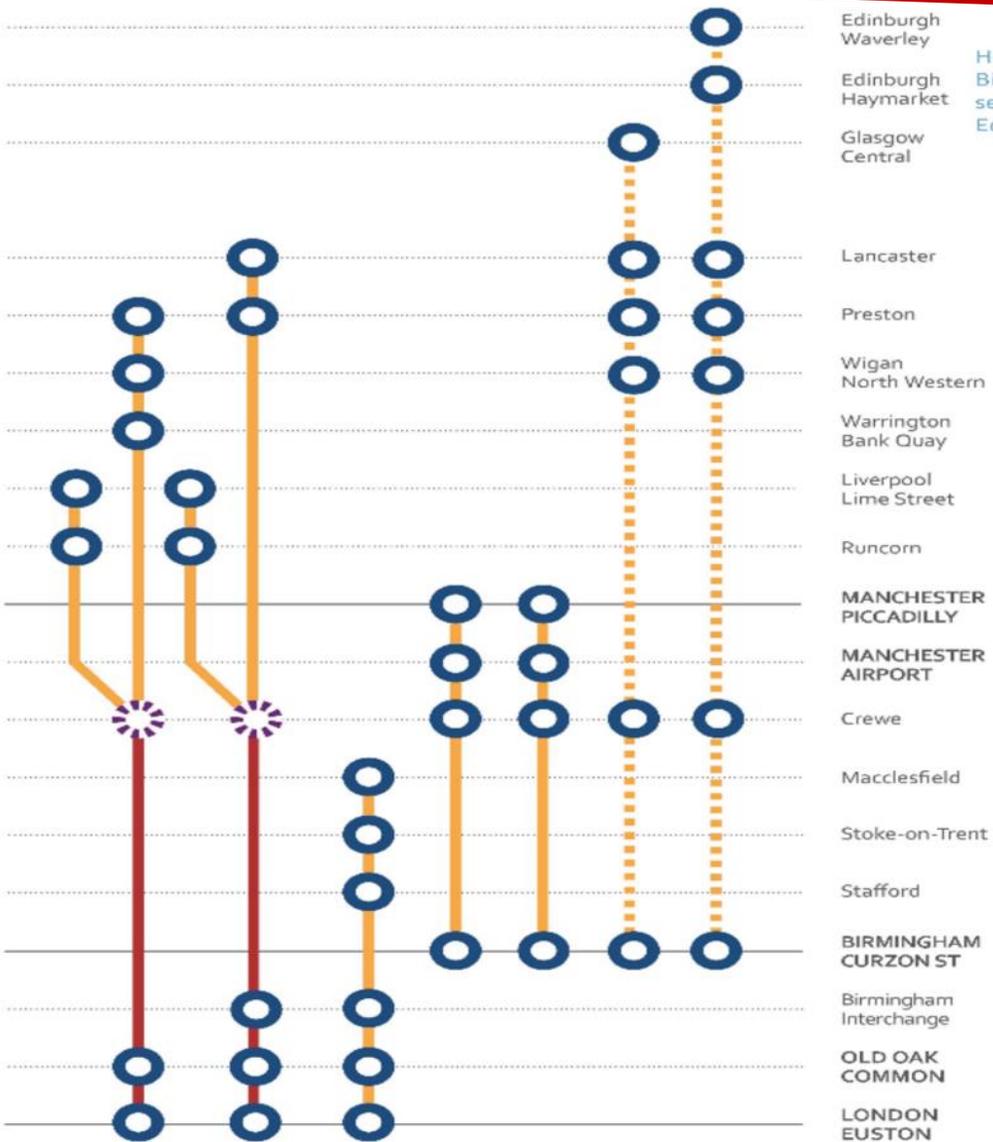
- 4.1.5 Without our intervention we would be left with Stone as the only option for the IMB-R site; a site which fails to deliver on any of the Government's key objectives and aspirations. In fact, it does exactly the opposite.
- 4.1.6 Rather than increasing capacity on the Norton Bridge to Stone line, it actually throttles capacity.
- 4.1.7 Instead of improving connectivity, the Stone site threatens connectivity, by putting in jeopardy the HS2 classic compatible service to Stafford, Stoke and Macclesfield.
- 4.1.8 And the Stone site also contributes nothing to encouraging the transfer of freight from road to rail.
- 4.1.9 In addition to all of this, the Stone site does not spread prosperity, but creates a situation in which prosperity will in all likelihood flood into Cheshire at the expense of Staffordshire.
- 4.1.10 Contrast that to our holistic approach, which has led to a solution that benefits not only the immediate areas of Stone and the Newcastle branch line, but also every Local Authority within the Constellation Partnership, as well as the future maintenance operator of the line, the passenger services franchisee, the taxpayer, the Government and even HS2 Ltd itself.
- 4.1.11 That's got to be good for the whole project and the whole country. Everyone's a winner.
- 4.1.12 So why build the IMB-R at Stone and risk everything that can be achieved, when Aldersey's Rough presents such a wonderful opportunity on a plate?

5. Conclusions

5.1.1

Trevor Gould
April 2018



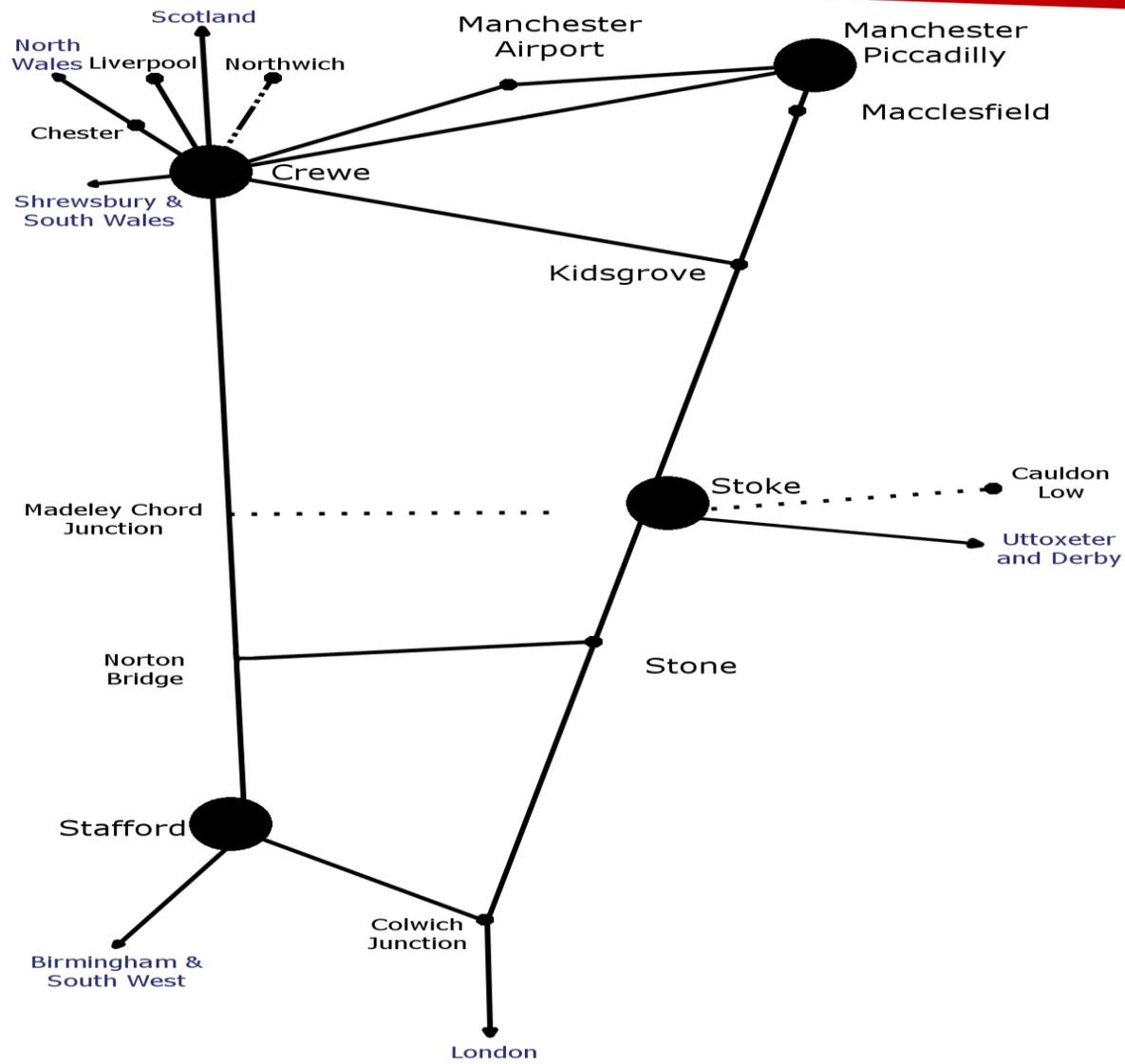


Hourly train from Birmingham Curzon Street serves Glasgow or Edinburgh alternate hours

HS2 services to the Northwest

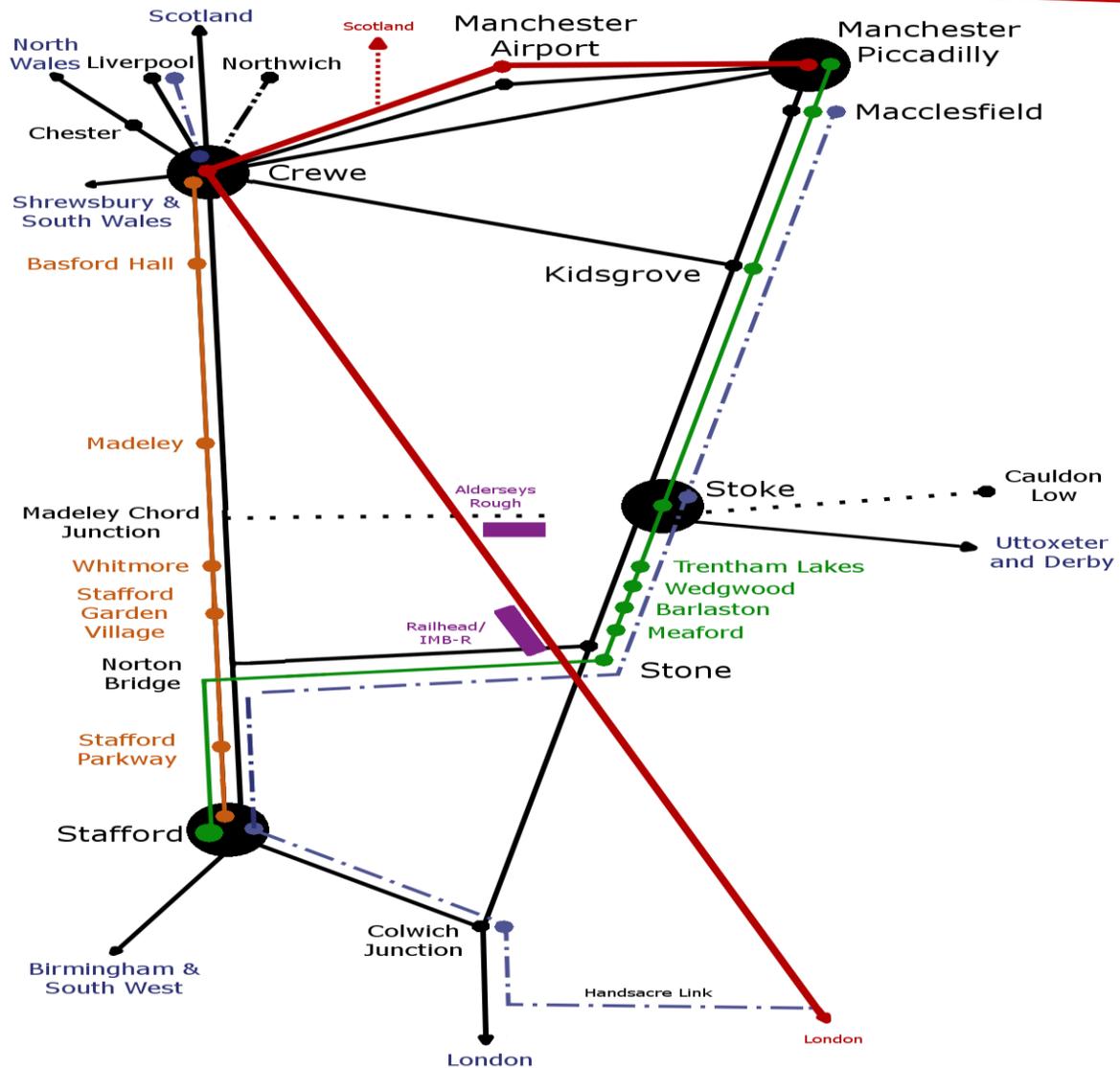
KEY

- 200m HS train
- 400m HS train
- Station call
- ✱ Train divides



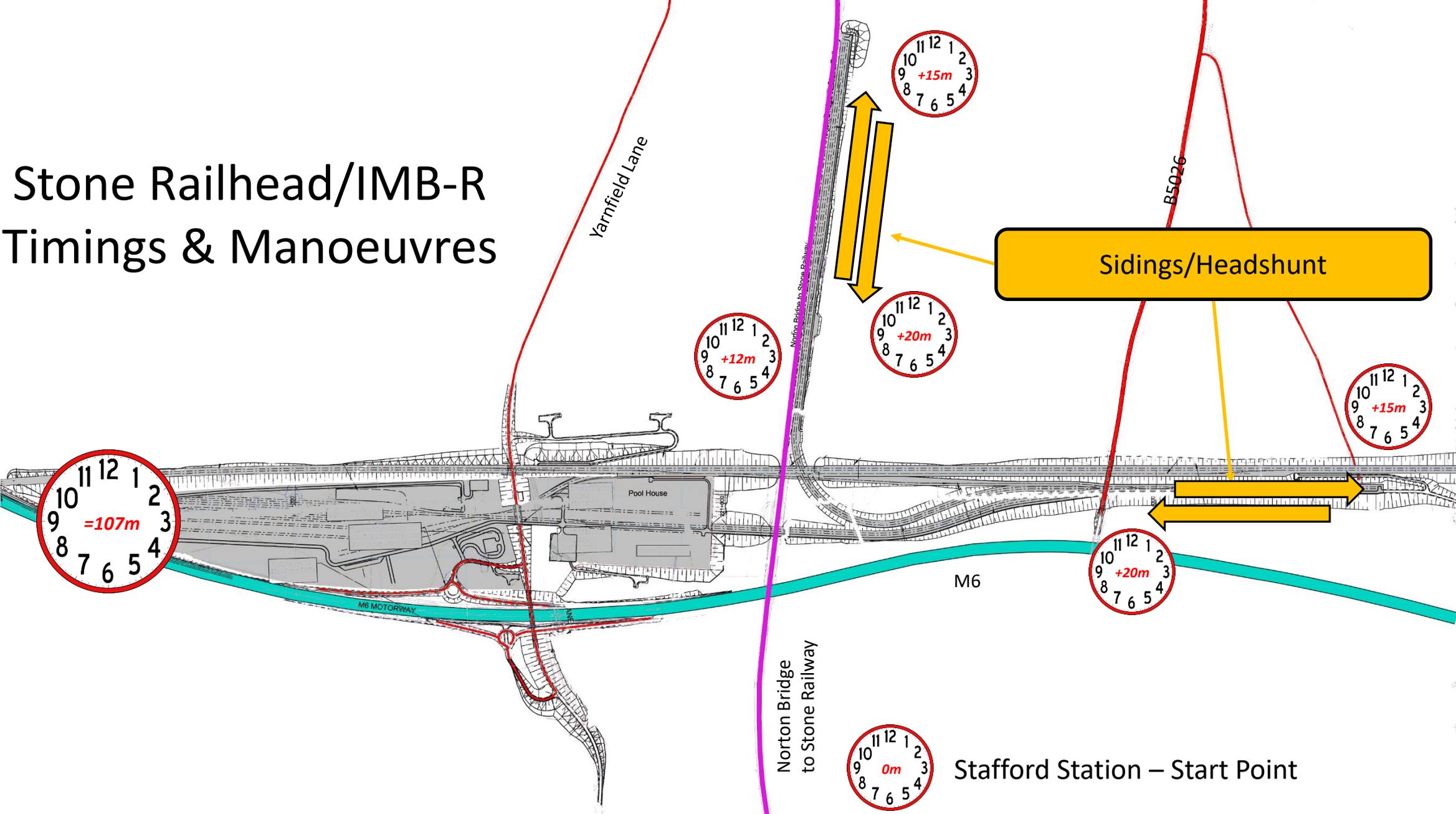
Crewe - Gateway to the north

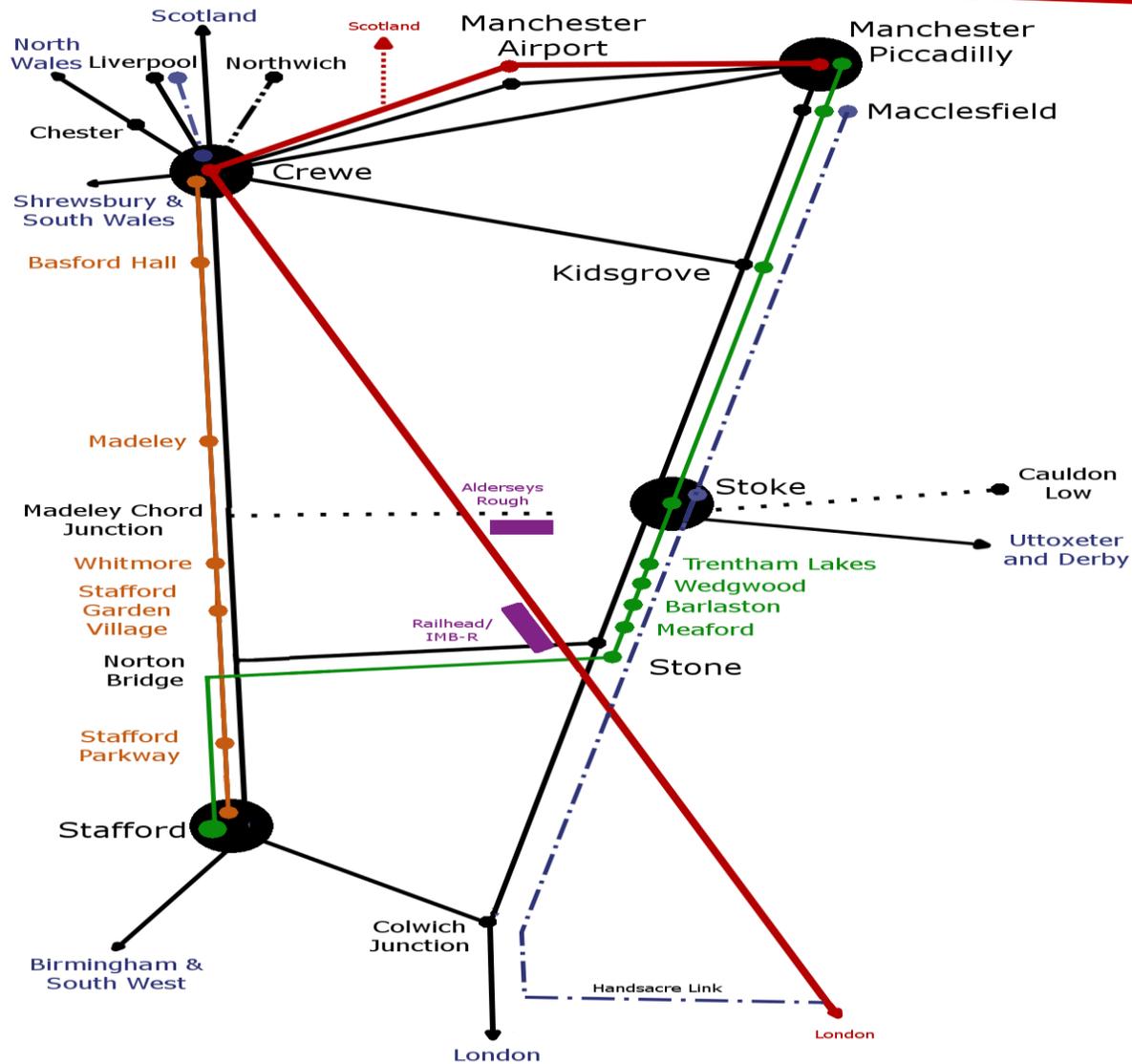
- No local trains south of Crewe
- No Manchester Airport service for Staffordshire



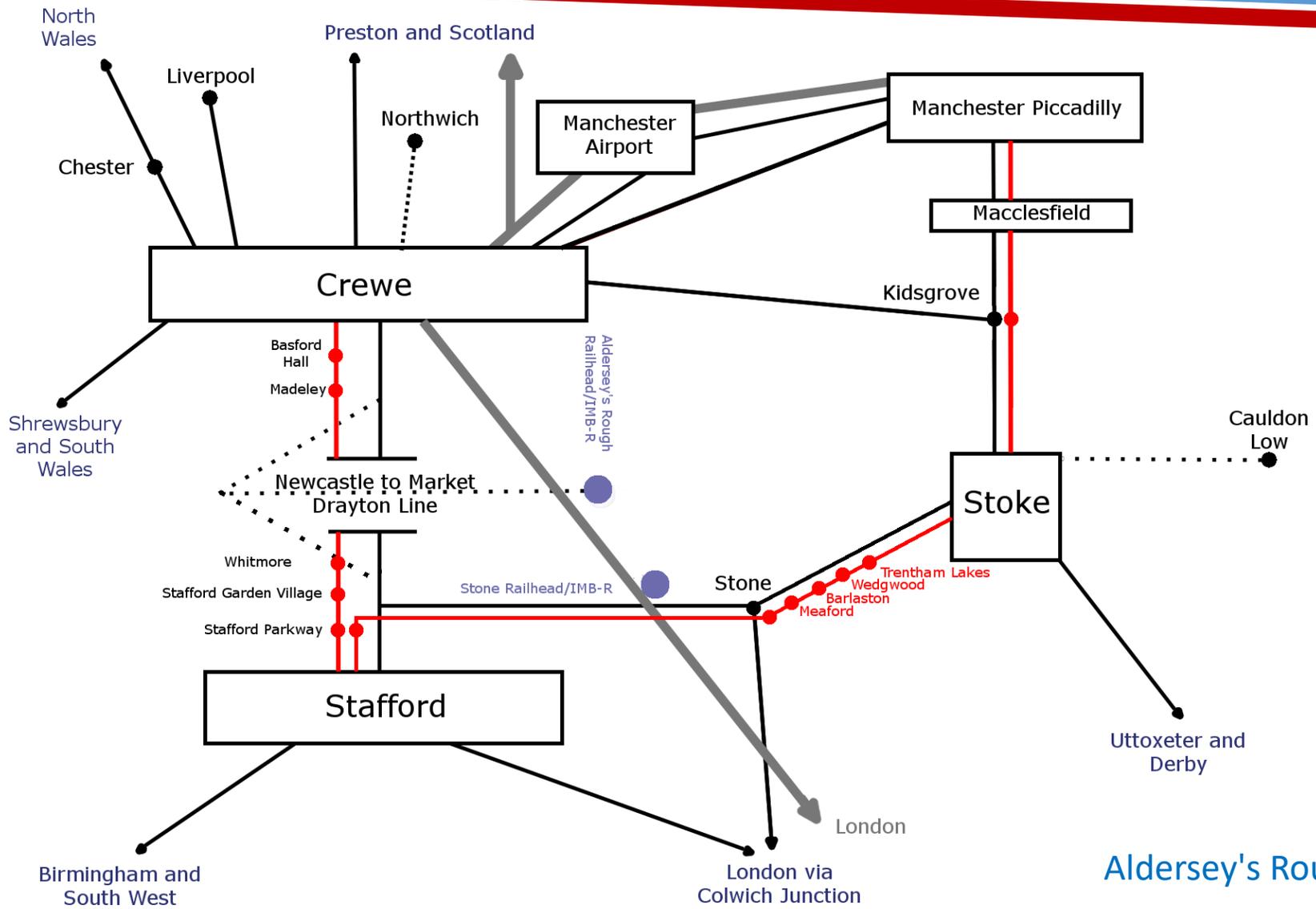
Post HS2

Stone Railhead/IMB-R Timings & Manoeuvres

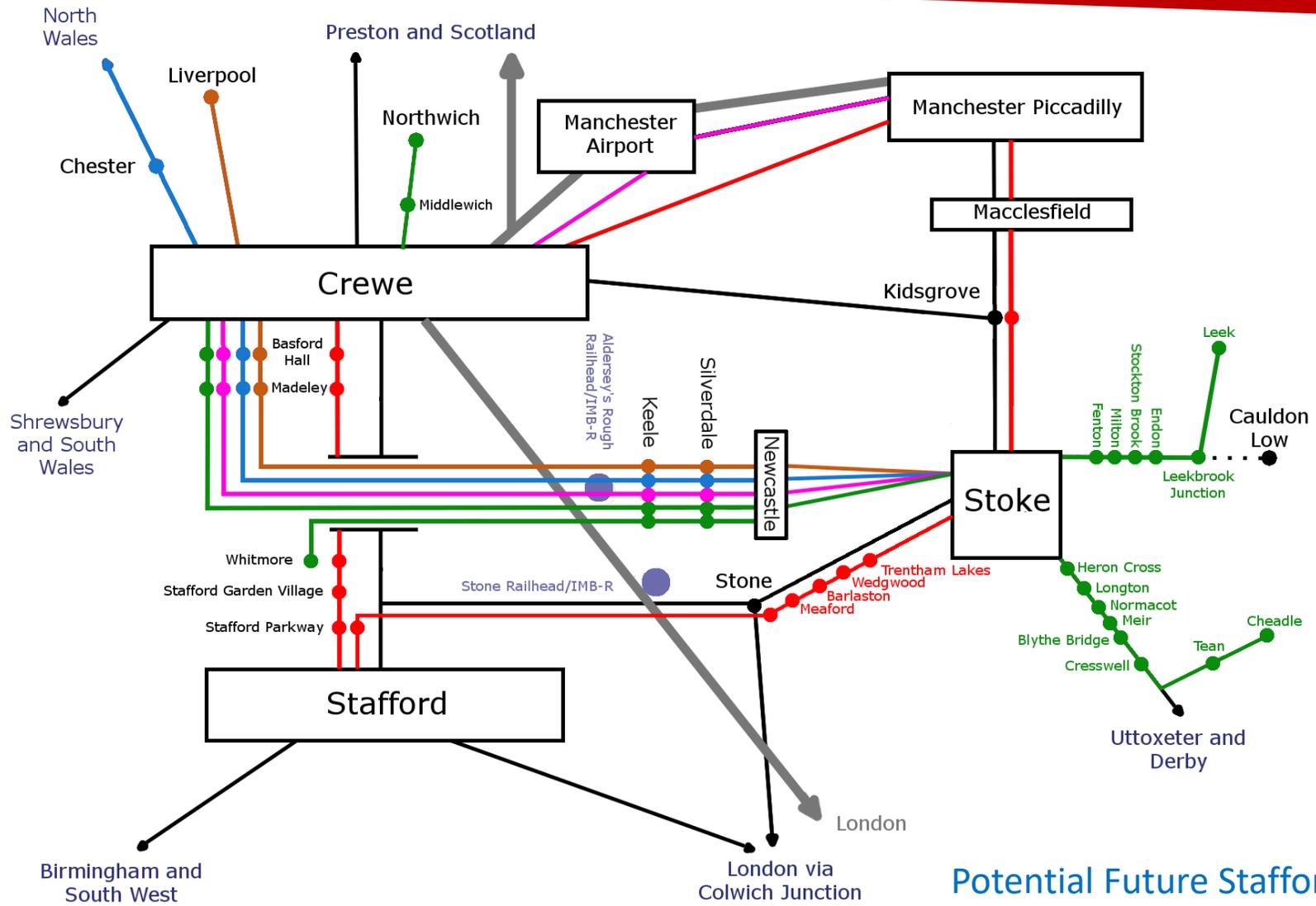




Alternative HS2 route to Stoke



Aldersey's Rough connections



Potential Future Staffordshire Railway Network

High Speed Rail (West Midlands to Crewe): Proof of evidence of Gordon Wilkinson

1. Introduction

1.1 Background

- 1.1.1 My name is Gordon Wilkinson, aged 68, and I have been a resident of Yarnfield village for over 27 years.
- 1.1.2 I am a retired Chartered Transportation Engineer, with a Master's Degree in Transportation Engineering and Planning. My career spans 41 years, of which 35 were spent in Local Government, of which the last 15 were at Staffordshire County Council, where I was Head of Urban Transport Projects.
- 1.1.3 For the final 6 years of my career I was a Senior Consultant at TMS Consultancy, producing and delivering training courses, for both graduate and qualified engineers, primarily on Highway Junction Design, Safety Auditing and all aspects of Road Safety Engineering.
- 1.1.4 In my lifetime I have witnessed a colossal growth in car ownership, the creation of motorways and out of town retail and residential developments through to the widening of those same motorways, new tram systems and the desire for sustainability.
- 1.1.5 As a transportation engineer, I recognise that more railway capacity is crucial if we are to avoid a total clogging of our road arteries. I therefore embrace the concept of HS2 and the prospect that it will be the catalyst for re-opening local stations as well as creating new ones.
- 1.1.6 However, when informed in 2016 that HS2 were proposing to close Yarnfield Lane for 3 years, in order to make this concept a reality, I was concerned. Concerned that, if anyone had the slightest knowledge of the local highway network, they would realise that such a proposal was a totally impractical proposition for the 2200+ inhabitants of Yarnfield.
- 1.1.7 I appreciate that to carry out a junction analysis of approximately 85 junctions affected by Phase 2a is a considerable task in the short timescale available and therefore at best can be little more than a desk top exercise.
- 1.1.8 Although, with objections from the local community, supported by the Highway Authority, HS2 Ltd decided not to pursue the closure of Yarnfield lane, I became concerned as to how this lack of local knowledge may impact on the Transport Assessment that duly followed in July 2017.
- 1.1.9 I will therefore be giving evidence in relation to those concerns on behalf of the parish councils of Stone and Chebsey, who object to the proposals to construct a Railhead and Infrastructure Maintenance Base – Rail (IMB-R) on land to the west of Stone, Staffordshire.
- 1.1.10 In conjunction with my colleagues, I will be giving evidence against HS2 Ltd's proposals to construct and operate a Railhead near Stone and Yarnfield in Staffordshire, for a period of approximately 6¾ years, during the proposed construction stage of its Phase 2a High Speed Rail project and then permanently operate and Infrastructure Maintenance Base – Rail (IMB-R) to serve both Phase 2a (West Midlands to Crewe) and Phase 2b (Crewe to Manchester).
- 1.1.11 I will also give evidence that the proposed alternative site at Aldersey's Rough, which is located near Keele Services in Staffordshire, represents a far better location in which to construct and operate a Railhead /IMB-R from a transportation engineering perspective.

1.2 Purpose of this report

- 1.2.1 To critically analyse HS2s Environmental Statement Volume 5: Technical Appendices, Traffic and transport, Transport Assessment (TR-001-000) Part 2 (ES Vol 5, TA).
- 1.2.2 To examine the relative highways issues relating to the alternative proposal of siting the Railhead/IMB-R at Aldersey's Rough.

1.3 Structure of this report

- 1.3.1 The primary focus will be on HS2 Ltd's analysis of various key junctions within the Community Area 3, Stone and Swynnerton. This will be covered in Section 2.
- 1.3.2 In addition, I will examine the feasibility of HGV movements to and from the Stone Railhead site and associated safety issues and will also undertake:
- An assessment of the traffic impact on Yarnfield Lane and the local highway network, if HS2 was constructed without the Railhead at Stone.
 - An assessment of the construction traffic routes to the alternative Railhead site at Aldersey's Rough; and
 - A comparison of the consequences of constructing either the proposed Stone Railhead or the alternative at Aldersey's Rough in terms of their impacts on the construction routes they utilise.
- 1.3.3 In Section 3, I will look at the Parish Council's proposed alternative Railhead/IMB-R site at Aldersey's Rough from a road transport perspective.
- 1.3.4 In Section 4, I will then examine the alternative options for accessing the residual construction compounds that would be required in the Stone area if the Railhead/IMB-R was relocated to Aldersey's Rough, and how these options would reduce the impacts on the local road network.
- 1.3.5 Section 5, then looks at how other related transport related benefits could accrue at J15 and the local roads that would be used to access the HS2 mainline construction compounds in the Whitmore and Madeley areas, with Section 6 setting out the conclusions that have been drawn from my evidence.

2. Objections to Stone Railhead/IMB-R

2.1 Introduction

- 2.1.1 My evidence will begin by an overview of the local highway network in the Stone area; examining the proposed vehicular access routes to the proposed Railhead/IMB-R site, both temporary and permanent.
- 2.1.2 I will also provide a geometric and performance analysis of Yarnfield Lane, its junction with the A34, and other key junctions on or joining the A34 construction route corridor. My analyses will examine HS2 Ltd's Transport Assessment of the above junctions in some detail and identify any issues of concern where appropriate.
- 2.1.3 I will then focus my evidence on the constraints/safety issues that face both vehicular and vulnerable road users during/post the construction of the Stone Railhead/IMB-R.

2.2 Description of Local Highway Network

A34 Stone Road

Overview

- 2.2.1 The A34 is also the key route that connects to junctions 14 and 15 of the M6, to which it runs parallel at approximately 1.5km (1 mile) to the east (see Figure 2.1). As such, the A34 represents the only feasible alternative route to the M6 when incidents occur between these junctions, and the route used by the West Midland Ambulance Service between the two main hospitals (the County Hospital at Stafford, and the Royal Stoke Hospital). It is also the key route used by the other emergency services, including notably the Staffordshire Fire and Rescue Service, which has a main fire station located at the Fillybrooks on the A34 at Stone.
- 2.2.2 There are two further junctions on this section of the A34 corridor that are directly impacted by HS2 construction traffic, i.e. A34/A520/B5026 and the A34/A51/Brooms Road, which are described below. An individual assessment of these junctions will be examined later in this proof of evidence.

A34/A520 Roundabout/B5026 (Eccleshall Road)

- 2.2.3 The above roundabout, known as Walton Island located just over 1km south of Yarnfield Lane, is a key junction along the A34 corridor which serves as a link to Stone town centre via the A520, and to the residential area of Walton via the B5026 Eccleshall Road. The junction will cater for construction traffic to and from compounds on Yarnfield Lane and on the B5026 Eccleshall Road.

A34/A51 Stone Bypass/ Brooms Road

- 2.2.4 This is another key junction along the A34 corridor. It is located 1km south of the A34/Walton Island and forms a 3 arm roundabout linking two primary routes A34 & A51. The third arm, Brooms Road, provides access to the Stone Business Park.

Yarnfield Lane

Overview

- 2.2.5 Yarnfield Lane is the primary means of access for the village to/from the town of Stone, which is the nearest main town to Yarnfield, and where many people will work, or children (older than the age of nine - Year 6) will attend school. It is also the nearest location for a range of other services, including for health facilities (e.g. doctor's/dentist's surgeries, chemists etc.) and shops, including three (and soon to be four) supermarkets.
- 2.2.6 Yarnfield Lane is also the main access for the village to the primary road network, i.e. the A34, which (in this area) is the main A-Class road that connects Stafford (in the south) to Stoke-on-Trent and Newcastle-under-Lyme on the north. The junction of Yarnfield Lane with the A34 is in the format of a priority junction.
- 2.2.7 Yarnfield Lane will become the primary access for construction traffic to the Railhead/IMB-R. This was originally going to be for the first 9 months whilst new access/egress slip roads with the M6 are constructed. However, in its petitioners response to Swynnerton Parish Council dated 18 April 2018 (page 9), HS2 Ltd has confirmed that the motorway connections would now not be completed until March 2018, which is 15 months after the start of construction operations.
- 2.2.8 During that initial period it may be necessary for lane closures and even temporary closures of Yarnfield Lane. In such situations access towards the A34 and Stone will be restricted to two alternatives, both of which will be subject to interruptions by the construction of the HS2 mainline.
- 2.2.9 The first route option to the A34 at Stone from Yarnfield is via the western exit from the village and then Meece Road to Norton Bridge and then the B5026 Eccleshall Road. This Walton island junction between the B5026 and the A34 is approximately 6.7km via this route.

Eccleshall Road will also be subject to additional traffic relating to the construction of the Stone Railhead/IMB-R.

- 2.2.10 The only other, option involves leaving the village from the west side and travelling north through Swynnerton to the A51, before turning east to meet the A34 junction at Meaford. This journey is 8km from the centre of Yarnfield, which would become 9km by the time the A34 junction with Newcastle Road is reached at the northern end of Stone. Not only does this route represent a long way round, but it will also be subject to interruption by HS2 mainline construction works immediately north of Swynnerton, with access to the A51 severely disrupted.

Section of Yarnfield Lane affected by HS2 construction traffic

- 2.2.11 The section of Yarnfield Lane affected by HS2 construction traffic extends from approximately 400m east of the village boundary, near Moss lane, and then rises over the M6 before dropping down to form a priority junction with the A34 trunk road (see Figure 2.2).
- 2.2.12 There are no formal footways along Yarnfield Lane over this section, but there are grass verges in part but none at all for the last 500m through to the entrance /exit of the Wayfarer Inn which is located adjacent to the A34. There is no formal footway provided on the M6 overbridge.
- 2.2.13 It should be noted that despite the lack of footways, the limited bus service results in residents having to seek access to and from Stone on foot, which is a somewhat hazardous task on certain sections of the lane.
- 2.2.14 The carriageway width on average is approximately 5.6m, but varies from 5.3m near Darlaston Grange farm, through to around 5.7m, approximately 95m from its junction with the A34 before, flaring slightly to 5.9m and 6.3m wide, just 30m and 20m respectively from the junction give way line.
- 2.2.15 Yarnfield Lane also has a 7.5 tonne weight restriction along its entirety. Whilst this restriction is not regularly policed, use of Yarnfield Lane by HGV through traffic to gain access, via Meece Road, to and from the various business and industrial estates at Cold Meece, is very low. This is because this restriction on Yarnfield Lane appears to be naturally enforced due to the narrow carriageway width, the steep gradient encountered within 200m of entering from the A34 (approx. 1 in 9 over 60 m at its steepest) and the geometric layout of the priority junction, which is not designed to facilitate HGV movements.
- 2.2.16 In order to avoid a permanent closure of Yarnfield Lane, HS2 Ltd proposes to construct a new motorway overbridge, which will include a realignment of the lane from near Moss Lane through beyond the proposed underpass of the main HS2 embankment.
- 2.2.17 Until this new bridge structure is operational, the original overbridge will be utilised by all village and construction traffic accessing/egressing the northbound carriageway until the end of June 2023, i.e. for a period of 2½ years. The original overbridge will then be demolished. From July 2023 until the end of the construction period (a further minimum period of 18 months), village and northbound carriageway HS2 construction traffic will share the realigned Yarnfield lane and new M6 overbridge.
- 2.2.18 As stated above, the primary access to the Railhead construction compounds will be via new access/egress slip roads from the M6. The construction period for these new slip roads is envisaged to take 9 (now 15) months during which time all construction traffic will be routed via the A34 and Yarnfield Lane. This is estimated by HS2 Ltd to be 566 construction vehicles per day, which includes 218 HGVs, in each direction.
- 2.2.19 To facilitate this movement of HGV traffic, HS2 Ltd proposes to widen Yarnfield Lane, from its junction with the A34 through to the railhead. This will include a slight realignment of the lane over the last 500m section where it drops steeply towards the approach to the A34. The exact details of the new realignment are not available at this time, but it does not seem to remove

the original deviation of the road over this section, nor does it appear to reduce the steep grade at this location.

2.3 Yarnfield Lane/A34 Junction Analysis

Junction description

- 2.3.1 Whilst the HS2s Transport Assessment at this location focuses solely on the interaction of Yarnfield Lane and the A34, it is important that an adjoining side road on the east side of the A34 (Trent Road), which is located 70m north of this intersection, is included in this appraisal. This is shown in Figure 2.3.
- 2.3.2 Right turning traffic from the A34 into Yarnfield Lane and Trent Road are accessed via separate right turn lanes and together they form a *'Left/Right'* staggered junction, This is similar, in principle, to Figure 8/3 in The Design Manual for Roads and Bridges, TD42/95 *'Geometric Design of Major /Minor Priority Junctions'* (TD42/95).
- 2.3.3 This effectively creates back to back deceleration lanes, which slightly overlap, within the A34 central reserve north of Yarnfield Lane. Whilst its performance in terms of capacity will not be analysed in this review, its geometric location will be examined.
- 2.3.4 The A34, at this location, has two 3.65m running lanes in each direction divided by a grassed central reserve opening of 16 m in length at its junction with Yarnfield Lane. Right turning traffic from the A34 is provided with its own lane, which consists of a turning and deceleration length of 37m and from the end of the direct taper is 3m wide. This widens out to 4.3m at the end of the grassed central reserve which, at this point, is just 1.0m wide. This then creates a total storage width of 5.3m in the central reserve gap.
- 2.3.5 Left turning traffic from the A34 into Yarnfield Lane is assisted by the provision of a narrow nearside diverging taper of just over 50m length and a turning kerb radius of approximately 11m.
- 2.3.6 On entering Yarnfield Lane, there is a service road to Stone Golf Club immediately on the left (i.e. within 7m of the A34 northbound carriageway), which facilitates members wishing to access Yarnfield Lane to either turn left towards the village or turn right if there is no queueing at the Yarnfield Lane give way line. Alternatively members wishing to access the golf club from Yarnfield must turn right into this service road across the path of vehicles entering Yarnfield Lane from the A34. Such vehicle movements can cause confusion and are a potential conflict point.
- 2.3.7 The other end of the service road loops round to join the A34 further south to form a left in/left out priority junction as there is no gap in the central reserve at this location to facilitate right turning manoeuvres.
- 2.3.8 The Yarnfield Lane carriageway is only 5.7m wide adjacent to the main Wayfarer Inn car park entrance/exit (i.e. 95m from the junction) and still only 5.9m and 6.3m wide just 30m and 20m respectively from the junction give way line. The carriageway does flare out, but is still only 6.8m wide, 11m from the give way line, and continues to flare to just enable a left and a right turning vehicle (i.e. two cars) to align side by side at the give way line. However, such narrow carriageway widths, so close to the junction, cannot safely accommodate two-way HGV movements, making this junction unsuitable for use by HGVs.
- 2.3.9 This approach also has a slight uphill up gradient before levelling off just 5m before the give way line. The left corner radius onto the A34 is also only 15m with a, narrow and ineffective, merging taper beyond the tangent point.
- 2.3.10 It should also be noted that some of this left turning traffic includes traffic seeking to access Stone. This is normally achieved by vehicles utilising the adjacent right turn lane facility

leading to Trent Road and also involves traffic trying to avoid the more challenging right turn manoeuvre across the A34, particularly at peak periods.

- 2.3.11 With regard to the right turn out of Yarnfield Lane, the accident record for this location shows that there have been nine recorded injury accidents in the last 5 years and all involved a right turning vehicle from Yarnfield Lane.

Geometric Analysis

- 2.3.12 In my opinion the layout of the Yarnfield Lane /A34 junction is totally unsuitable for HGV traffic and I explain below the reasons for my view in the following paragraphs.

- 2.3.13 The following analysis compares existing site measurements with required standards as defined in TD 42/95, utilising an 85kph Design Speed which, in consultation with the local Highway Authority, Staffordshire County Council (SCC) was deemed appropriate at this location.

A34 central reserve gap

- 2.3.14 The first thing to note is that this right turn lane is shared by vehicles both entering into Yarnfield Lane from the A34 in a southbound direction and those wishing to leave Yarnfield Lane, to join the A34 in a southbound direction.

- 2.3.15 The southbound turning lane has a total turning and deceleration length (including queueing length and direct taper) of 37m. This is below acceptable design standards for a road of this nature. Table 7/5b and Table 7/4, of TD42/95, clearly show that the total length of the deceleration lane should be 55m long, of which the first 15m is the direct taper. The remaining 40m of the deceleration lane should ideally be 3.65m in width and the turning length must be a minimum of 10m regardless of design speed. This results in a minimum lane length of 65m, plus an extra allowance for additional queueing vehicles if required.

- 2.3.16 Given that the anticipated 2023 average right turn peak hour arrival rate on this approach is 4 to 5 PCUs/min, it would be prudent to add a further minimum of 10m in order that vehicles can safely store and decelerate. After allowing for the 10m turning length, this effectively means that the current deceleration length is only 27m which is half the minimum standard. In addition, the deceleration lane width at the end of the taper is only 3m, and again this is below a required width of 3.65m. Furthermore, the minimum width of a physical central reserve at this location should be 3.65m, but is only 2.3m wide and continues to taper to just 1 m wide adjacent to the central reserve opening.

- 2.3.17 The maximum width of the turning lane within the central reserve is 5.3m. However, the minimum width (as required in TD42/95) should be at least equivalent to the vehicles expected to use it. For rigid HGVs, a minimum of 10 m would be required to enable a fully loaded vehicle to cross the two carriageways in two safe steps. Even allowing for entering the current central reserve gap at an angle (dependant on driver visibility to the left from the cab) this would still leave 2-3m of the HGV overhanging the outside lane of the southbound A34. Since there is no additional land available within the central reserve to increase this width such a requirement cannot be realised.

A34 northbound turn into Yarnfield Lane

- 2.3.18 The A34 northbound left turn into Yarnfield Lane is assisted by a narrow diverging lane from the A34 that it is just over 50m long, but still only 2.5m wide at the turning radius into Yarnfield Lane. Therefore, any HGV making this manoeuvre will still be partially on the main A34 carriageway as it enters this left turn, at slow speeds, thus impeding the following traffic and impacting on through traffic speed.

- 2.3.19 In addition, the current radius is approximately 12m and the carriageway width in Yarnfield Lane is only 6.8m at the tangent point, which is likely to result in HGVs straddling the centre line of Yarnfield Lane and be in conflict with traffic travelling in the opposite direction, including queueing traffic at the junction.

- 2.3.20 TD42/95 confirms that nearside diverging tapers shall be provided, where the volume of left turning traffic is greater than 600 vehicles AADT and states *“The tapers shall be formed by a direct increase to a width of 3.5 m contiguous to the corner into the minor road (preferably of a radius of at least 20 m where the main road design speed is 85kph)”*.
- 2.3.21 The existing diverging lane at this location cannot therefore adequately accommodate use by HGVs and, in view of the speed and high flows on the major road, the provision of a diverging lane to current standards should be provided. In this respect, there is sufficient highway grass verge available to facilitate a wider diverging lane, but careful consideration needs to be taken with a 20m entry radius and its resultant impact on the close proximity of the accesses into the Stone Golf Club service road and the Wayfarer Inn. However the lack of carriageway width on Yarnfield Lane near to the junction still makes this left turn manoeuvre from the A34 difficult to achieve in terms of safety.

Yarnfield Lane approach to the junction with the A34

- 2.3.22 As mentioned above, the Yarnfield Lane approach to the junction has a narrow carriageway width, a slight uphill gradient and only minimal storing capacity for cars and LGVs at the give way line. In addition, and as also mentioned above, the width of the storage lane within the central reserve opening of the A34 cannot safely facilitate a HGV turning right out of Yarnfield Lane.
- 2.3.23 The left turn onto the A34 also has a short, narrow merging taper that is only 1.6m wide at the tangent point with the A34 and tapers off within 12 m. The current kerb radius is approximately 15 m. This therefore provides minor road traffic with some limited ability to accelerate before joining the faster traffic streams on the trunk road, where the joining traffic may otherwise impede flow and be a source of hazard. However, this junction geometry effectively provides no assistance for a slow moving HGV to safely merge with through traffic.
- 2.3.24 The provision of an appropriate merging lane at this location will be difficult to achieve. The lack of available highway coupled the presence of a large culvert for the River Trent running directly below the carriageway within 25m of the junction would make the cost of such a facility expensive to construct.
- 2.3.25 The inability to provide even the most basic geometric assistance to HGVs entering the trunk road on this approach exacerbates the safety risk of this manoeuvre.
- 2.3.26 In consideration of the high speed and volume of through traffic on the A34, slow moving trucks turning left or right out of Yarnfield Lane on a slight uphill grade, will also have difficulty in accepting gaps in the through traffic, especially at peak times, and this could have an adverse effect, not only on capacity, but more importantly, on safety.
- 2.3.27 At the meeting held on 20 September 2017 between the SRCG and HS2 Ltd, the HS2 engineering representative conceded that the right turn manoeuvre out of Yarnfield Lane by HGVs could not be safely accomplished due the lack of width in the central reserve opening. However, to overcome this safety issue, he stated that HS2 Ltd was considering ensuring that all HGVs may have to turn left onto the A34 to travel north to the A34/B5027 Newcastle Road roundabout in order to return southwards along the A34. It should be noted that this roundabout was recently modified as part as a safety initiative by the Highway Authority.
- 2.3.28 The lack of any merging lane and sub-standard radius, coupled with all HGV movements having to make this manoeuvre, is neither safe, nor practicable (as referred to above).
- 2.3.29 To summarise, the above analysis identifies the following geometric shortfalls:
- Sub-standard length of deceleration lanes;
 - Sub-standard width of physical central reserve;
 - Sub-standard width of right turning lane within central reserve;
 - Sub-standard turning radii and diverging lane; and
 - No provision of an adequate merging lane.

- 2.3.30 In view of the above issues, the layout of existing priority junction at this location is therefore completely unsuitable from a geometric and safety perspective to facilitate the movement of HGV construction traffic.

Review of HS2 Ltd Junction Analysis

- 2.3.31 HS2 has analysed over 20 junctions in the CA3 area, which are directly affected by HS2 construction Traffic. HS2 has initially analysed each junction with a baseline year of 2016, i.e. their status quo performance. The 2016 baseline traffic data of existing highway routes and junctions has had appropriate growth rates applied to incorporate committed developments, where applicable, to forecast 2023 baseline peak hour traffic flows throughout the CA3 area.
- 2.3.32 Where HS2 construction generated traffic will need to utilise the local highway network to access construction compounds, during the construction period 2021–2027, these trips have been identified and assigned to the various routes and junctions as appropriate and analysed as a third scenario of 2023+HS2.
- 2.3.33 The junctions are analysed for both the AM and PM peak periods and the results are documented in HS2 Ltd's Environmental Statement Volume 5: Technical Appendices, Traffic and transport, Transport Assessment (TR-001-000) Part 2 (ES Vol 5, TA). All references to Tables or data are from this document unless stated otherwise.
- 2.3.34 Notwithstanding the inability for this junction to safely accommodate HGV construction traffic in its present format as a priority junction, HS2 Ltd has analysed this junction in this format to assess its capacity capabilities.
- 2.3.35 2023 future baseline data, with and without HS2 construction generated traffic, has been analysed utilising PICADY modelling software and the performance of the Yarnfield Lane/ A34 priority junction is shown in Table 290. This shows that a total of 285 and 320 PCUs of additional HS2 construction traffic utilises this junction in the 2023 AM and PM peaks accordingly.
- 2.3.36 The overall junction capacity (RFC) calculated for AM and PM peaks (2023 +HS2) was 0.5 & 0.48 respectively. In both peaks, the key flows were the two right turning movements within the junction creating average queues of 1 PCU. Therefore over the peak periods queues of 0-2 PCUs on either of these approaches have been predicted by HS2 Ltd.
- 2.3.37 The A34 right turn flow into Yarnfield Lane in the 2023 AM peak is shown as 272 PCUs, which equates to an average arrival rate of 4-5 PCUs per minute. With regard to this A34 right turn approach into Yarnfield Lane, this queue length was the same as predicted in the 2016 analysis of the junction (Table 265), i.e. 1 PCU.
- 2.3.38 The HS2 Ltd analysis therefore concludes that this junction operates within capacity, with the addition of the HS2 construction traffic in 2023, without any substantial increases in queuing or RFC from the future baseline. However, this evaluation raises notable issues of concern
- 2.3.39 With regard to the 2016 baseline analysis, it is not stated when the actual baseline surveys were undertaken at this location, but the flows, particularly on Yarnfield Lane appear to be an under-estimation of the current situation particularly in view of the Yarnfield Park housing development mentioned above. It is also understood that the Highway Authority, Staffordshire County Council, (SCC) has raised doubts about the validity of the base counts because they may have been influenced by road works taking place on the A34 at that time, resulting in the counts being sub-optimal.
- 2.3.40 In view of the above concerns, the Highway Authority instructed a new traffic count to be undertaken on the 13 September 2017 which, to date, we have not been provided details of. However, the SRCG has carried out a peak period survey of traffic exiting from Yarnfield Lane and also the right turn into Yarnfield Lane from the A34 on 19 September 2017.
- 2.3.41 The results showed that the right turn traffic from the A34 southbound into Yarnfield Lane was similar to the 2016 base data used by HS2 Ltd. However, the total traffic turning right out of

- Yarnfield Lane in the AM and PM peaks was 282 and 211 respectively, compared to the 2016 HS2 Ltd figures of 207 and 144 for the same peak periods. This equates to an increase of 36% and 46% respectively over the baseline flows used by HS2 Ltd before using its growth factors to establish the 2023 baseline flows used in their junction performance assessments.
- 2.3.42 Whilst it is recognised that the SRCG survey was a one off, and that traffic flows can vary from day to day, it is at the very least a significant difference and is likely attributed to the housing development recently completed at Yarnfield Park and the likelihood that the original HS2 Ltd survey was undertaken when major road improvement works were taking place on the A34.
- 2.3.43 Furthermore, site observations noted by both the SRCG and the Highways Authority during its recent count noted occasions when queueing in the A34 right turn lane went beyond its storage capacity, which resulted in vehicles stationary in the outside lane of the southbound A34, with traffic approaching at 50 mph. This situation occurred five or six times in each peak with a maximum queue of nine vehicles recorded. Whilst it is appreciated that PICADY produces a mean maximum queue length over the hour modelled, observations suggest the sub-standard turning and deceleration lane length, identified previously in the Geometric Analysis, is far from satisfactory at this location.
- 2.3.44 It is therefore difficult to equate the observed situation with any of the PICADY results reported by HS2 Ltd, particularly when this recent count identifies flows which are in excess of HS2 2023 baseline assumptions.
- 2.3.45 Notwithstanding the above inaccuracies in traffic flows, the HS2 Ltd analysis for 2016 and 2023 produced very low RFC values for the left turn out of Yarnfield Lane. Site observations show that the ability for left turning vehicles to store alongside right turners is limited to a maximum of 1 PCU. This means that the ability for left turners at the A34 junction to freely move up to the give way line is severely restricted. Consequently this dramatically reduces the effective capacity for this approach and the low RFC values achieved by the HS2 Ltd assessment would suggest that the Yarnfield Lane approach may have been modelled incorrectly.
- 2.3.46 It was subsequently confirmed by SCC that HS2 had in fact estimated that three left turning vehicles could store alongside the right turners at the give way line. This would certainly contribute to an optimistic analysis of the junction's performance.
- 2.3.47 The results appear somewhat optimistic in both the current situation and certainly with regard to when HS2 traffic is present. Analysis of the traffic flows utilised for the 2023 +Hs2 reveal errors in the Yarnfield Lane traffic flows. Table 290 shows that the increase in traffic flow out of Yarnfield lane due to HS2 traffic is 87 PCUs. However, Table 279 clearly shows that the increase in traffic flow for Yarnfield Lane is 87 vehicles comprising of 22 HGVs and 65 cars/LGVs which results in an increase of 109 PCUs. This would suggest that the HS2 Ltd analysis has underestimated the increase in HS2 construction flows by over 25%. The error is also replicated for the flow into Yarnfield Lane from the A34. This further compounds the inaccuracy of the analysis. The PM analysis is numerically acceptable.
- 2.3.48 It is also of note that the Transport Assessment of construction traffic (prepared by HS2 Ltd to accompany the ES) has been limited to identified generated trips using Yarnfield Lane in complete isolation to the impact /consequences of congestion caused by HS2 Ltd construction traffic elsewhere on the local network.
- 2.3.49 As will be demonstrated below, HS2 Ltd's failure to assess the impact of congestion at adjoining junctions, or elsewhere, on the local network, gives a false interpretation of a junction's performance. The queues generated from the adjacent A34/Walton island will produce rat running up Yarnfield Lane thereby putting this priority junction under considerable pressure.

- 2.3.50 A more in depth appreciation of the mechanics of this junction and its role in the local highway network would not have concluded that this junction, in its present format, was suitable for HS2 construction traffic.
- 2.3.51 However, HS2s analysis concludes *“that this junction operates within capacity in the 2023 with the addition of the Proposed Scheme construction traffic, without any substantial increase in queueing or RFC from the future baseline”*.
- 2.3.52 Errors in the HS2 Ltd input data, compounded by optimistic geometric and count data, would suggest HS2 Ltd’s assessment somewhat underestimates the future levels of congestion at this priority junction.
- 2.3.53 To re-iterate my earlier concerns, any traffic engineer that had actually visited this site would have quickly realised that this junction was not fit for purpose. I therefore concur with the Highway Authority that HGVs cannot safely negotiate this junction in its present format.

2.4 Junction analysis at A34 Walton island

Junction description

- 2.4.1 This roundabout junction is located 1.1km south of the A34/ Yarnfield Lane junction. It is a key junction that sits approximately half way along the A34 emergency diversion route between M6 Junctions 14 and 15, and serves as a primary construction route for various compounds in CA3.
- 2.4.2 The County Council have stipulated in its ES consultation response dated September 2017, and in its petition that HS2 works should avoid significant delays on the A34.
- 2.4.3 The junction connects the A34 with the A520 that serves Stone town centre, which is located approximately 0.7km from the junction, together with the B5026 (Eccleshall Road), which provides construction routes to a compound and transfer node associated with Yarnfield South Embankment and Yarlet North Cutting and also to compounds associated with the Yarlet Embankment, via Pirehill Lane. Furthermore, in order to accommodate the HS2 mainline and the Stone Railhead reception tracks and headshunt, which will be constructed in a deep cutting beneath Eccleshall Road, it is necessary to realign the road to the north over a distance of 900m.

Geometric analysis

- 2.4.4 Current observations show that the southbound approach of the A34 to Walton Island experiences considerable queueing in both peak periods.
- 2.4.5 This queue will fluctuate throughout the peak period but does not usually attract A34 through traffic to utilise either Yarnfield Lane or via Newcastle Road/ Stone town centre/Lichfield Street to avoid any perceived delay.
- 2.4.6 It should be noted that the traditional “1 HOUR” peak time scenarios, particularly around towns adjoining primary routes, due in part to perceived and real journey time delays and flexible working, that vehicle flow rates in part of the preceding hour are indeed equal to those encountered in the traditional peak hours.
- 2.4.7 In North Staffordshire this is certainly the case where almost 2 hour peaks are common and a flat flow profile is applicable.
- 2.4.8 In relation to Walton island, A34 southbound average queues lengths of 15-25 are experienced in part of the preceding hours for both peaks.

Review of HS2 Ltd's Junction Analysis

Introduction

- 2.4.9 Table 257 shows the 2016 AM Peak Hour queue for the A34 southbound approach to Walton Island to be 24 PCUs. This is only about half the regular queue length currently observed.
- 2.4.10 Table 257 shows the 2016 PM Peak Hour queue for the A34 southbound approach to Walton Island to be just 9 PCUs. This is totally unrepresentative of the delay experienced on this approach in the PM peak. In fact the predicted 2023 baseline queue of 50PCUs, whilst probably in excess of the current situation, more closely reflects the congestion at this location.
- 2.4.11 The County Council have already stated in its petition that this roundabout is over capacity during the peak periods, which is at odds with HS2 Ltd's 2016 baseline assessment. The Highways Authority has also indicated that there is very limited scope for improvements due to existing constraints.
- 2.4.12 This lack of correlation between the observed and calculated queue lengths would suggest either the flow profiles are wrong, the geometry has been incorrectly measured; or the actual traffic data is wrong.
- 2.4.13 With regard to the first two of these points, I have no way of examining the input data used by HS2 Ltd. However with regard to the traffic data, the 2016 base line flows are shown in Table 257.
- 2.4.14 Examination of recent and historic planning approvals in the Stone area revealed the planning application for a recently constructed residential development approximately 400m south of Walton Island on the A34. Within the planning application Transport Statement, produced by BWB Consultants, there is a traffic survey (Figure 7 in that report), which was carried out in the AM peak 2010. It is a full turning count that was carried out at both the A34/Walton Island and the A34/A51 roundabout, and is reproduced in this report as Figure 2.4.
- 2.4.15 This count shows that even in 2010 north and southbound flows were at levels equal or greater than those predicted in HS2s 2023 baseline flows.
- 2.4.16 Whilst traffic counts will always vary from day to day, the fact that these figures are comparable with an assumed flow 13 years hence gives rise to doubt and, yet again, the accuracy of the data being used to assess the traffic impact at this key junction.
- 2.4.17 In addition, Section 9.2.4 of the Transport Assessment - Volume 5, makes no reference, in its list of committed developments, to the new 500 dwellings at the Walton Hill development off Eccleshall Road which is now under construction.
- 2.4.18 This, combined with a recent increase in proposed HGV construction traffic flows, issued by HS2 Ltd, as part of its SES/APES on 23 March 2018, using the north and southbound A34 carriageway approaches to both Walton Island and the adjoining A34/A51 junction only compounds the question as to the accuracy of the analysis shown in Tables 257 and 282.
- 2.4.19 In my view therefore, it is likely that the future queue length predictions may well greatly underestimate the levels of congestion at this location.

Predicted situation with HS2 traffic

- 2.4.20 Notwithstanding the above concerns, Table 282 shows that 2023 + HS2 AM peak predicted average queue length on A34 southbound approach to the Walton Island is 204 PCUs, i.e. almost 9 times longer than is the apparent current situation (according to HS2), and what this means in practice is shown on Figure 2.5.
- 2.4.21 More importantly, such unprecedented levels of congestion (other than when M6 15-14 is closed) will create considerable rat running along Yarnfield Lane and saturate the existing

A34 right turn lane creating serious safety and capacity issues and making even worse the situation at the Yarnfield Lane /A34 junction assessed above.

- 2.4.22 In addition, such queue lengths will encourage southbound traffic seeking access to the A51 to divert down Newcastle Road, through Stone Town centre gyratory system, and then via Lichfield Street to try and avoid such massive delays.
- 2.4.23 In the AM peak, the impact on Stone Town centre would be considerable in terms of delays and pollution but, of even greater concern, is the high levels of school children accessing St. Dominic's Priory and First School, Alleyne's Academy and St Michael's CE First School, which will result in high car /vulnerable road user conflict ratios.
- 2.4.24 Furthermore, examination of Table 282, 2023 PM peak + HS2 analysis for the B5026 Eccleshall Road approach to the above roundabout predicts a queue of 109 PCUs (see Figure 2.6). According to HS2 Ltd's current queue on this approach for the same peak period, is estimated at just four 4 PCUs.
- 2.4.25 Any traffic on the B5026 wishing to travel north along the A34 or seek access to Stone, or beyond on the A520, will utilise Yarnfield Lane and other routes to access the A34, depending on the destination, thus further compounding safety and capacity concerns at the Yarnfield Lane/A34 junction.
- 2.4.26 To summarise, the A34 / Walton island analysis appears flawed; utilising count data that is questionable and does not include future trips from an adjacent large housing development. In addition the analysis does not include increased HGV flows on the A34 recently amended by HS2 Ltd. However, even if the predicted flows were correct, the estimated queue lengths will create long delays on this strategic corridor which, in turn, will result in considerable rat running on the local highway network generating higher levels of vehicle/vulnerable road user conflicts.
- 2.4.27 The County Council has stated that the roundabout is already at capacity and, since no mitigation measures are available, HS2 should seek alternative routes for their construction traffic to avoid this junction utilising haul routes to serve all compounds off Eccleshall Road and Pirehill Lane.
- 2.4.28 Whilst examining the B5026 approach an examination of the B5026 Eccleshall Road/Pirehill Lane/Lamb Lane Junction is also appropriate.

2.5 B5026 Eccleshall Road/Pirehill Lane

Junction description

- 2.5.1 As stated above, the B5026 Eccleshall Road provides construction routes to a compound and transfer node associated with Yarnfield South Embankment and Yarlet North Cutting and Pirehill lane will be a construction route to the Yarlet Embankment satellite compound.
- 2.5.2 Pirehill Lane is a residential street that has access to the B5026 via a slightly staggered left/right priority junction with Lamb lane. It provides access to Walton residential estate and is the main access to Walton Priory Middle School via Beacon Rise. There is a small cluster of shops opposite Beacon Rise and pedestrian access to these is assisted by the provision of a signalled pedestrian crossing facility.

Review of HS2 Ltd Junction analysis

- 2.5.3 The 2023+HS2 analysis shown in Table 289 predicts queue lengths on Pirehill Lane of 20 and 2 PCUs in the AM and PM peaks respectively.
- 2.5.4 The AM peak queue gives rise for some concern as the predicted queue of 20 PCUs is almost three times that predicted without HS2 traffic. However, the PM peak scenario predicts queues

of only two PCUs on the Pirehill Lane approach, which would suggest there are no problems accessing the B5026.

- 2.5.5 The HS2 analysis concludes by stating that, “*Although the junction moves closer to capacity (RFC= 1.09) this is not considered a substantial increase taking into account that Pirehill Lane is already approaching capacity (RFC = 0.9) in the 2023 future baseline.*” However, as referred to earlier, examination of Table 282 shows that the average queue on the B5026 Eccleshall Road approach to the Walton Island, in the 2023 PM peak with HS2, will be 109 PCUs. This represents a queue length of around 600m on the B5026, which will be well beyond the mouth of Pirehill Lane which is only 400m from the Walton Island.
- 2.5.6 Residents of Pirehill Lane on examining the HS2 Ltd assessment may well be concerned with longer queues in the morning peak, but assume in the evening peak there will not be a problem at this location. However, the reality is that they will encounter considerable delays in accessing the strategic highway network in the PM peak period and some may well opt to turn left up the B5026 to gain access to the A34 via Yarnfield Lane, depending on their destination.
- 2.5.7 Therefore, the process of modelling junctions in total isolation, as used in the HS2 Ltd Transport Assessment, gives an inaccurate, and therefore misleading, representation of the situation at this and other locations.
- 2.5.8 It should also be noted that Eccleshall Road is to be permanently realigned east of the Eccleshall Road/M6 overbridge to facilitate the HS2 mainline and the headhunt that is required for the Stone Railhead/IMB-R. This work will take two years to complete and will result in some temporary lane restrictions and overnight closures. Any diversion of B5026 traffic (including construction vehicles) seeking access to the A34 or Stone area will place even more pressure on Yarnfield Lane which, as I have already established, is unsuitable for HGVs, despite high levels of Stone railhead related construction traffic itself.
- 2.5.9 It should again be noted that when a similar diversion was introduced on Eccleshall Road to facilitate repair work to the B5026 Motorway overbridge, queues on Yarnfield Lane extended back as far as the entrance to Darlaston Grange farm, which is approximately 500m from the junction with the A34.

2.6 A34/A51 Stone Bypass/Brooms Road Junction analysis

Junction description

- 2.6.1 This is another key junction along the A34 corridor. It is located 1km south of the A34/Walton Island and forms a 3 arm roundabout linking two primary routes A34 & A51. The third arm, Brooms road, provides access to the Stone Business Park. There has been concern over the years regarding the ability for Brooms Road traffic to gain access onto this roundabout, particularly in the PM Peak.

Review of HS2 Ltd’s Junction Analysis

- 2.6.2 As referred to above, the traffic count carried out by BWB consultants in 2010 (its Figure 7) included a full turning movement analysis for the AM Peak at the A34/A51 Stone Bypass/Brooms Road junction and this is shown in Figure 2.7 of this proof of evidence.
- 2.6.3 This again shows that the flows into the roundabout from both north and southbound approaches of the A34 are almost identical to those forecast by HS2 for 2023. Whilst in no way conclusive, it does again cast doubt over the baseline flows utilised along this section of the A34.
- 2.6.4 Furthermore and yet again, the 2016 baseline assessment produced in Table 256 produces queue lengths that do not correspond to the current situation at this location. This is further highlighted in Table 256 where, despite concerns raised in paragraph 2.2.138, no queues are

predicted on the Brooms Road arm in 2016. In addition, even in Table 281, a queue of only 3 PCUs is predicted for the 2023+HS2 scenario.

- 2.6.5 The lack of calibration of the HS2 Ltd analysis with the current situation has resulted in the Highway Authority requesting that HS2 Ltd to “*review capacity*” at this location.
- 2.6.6 Notwithstanding the above concern as to the validity of the results, the optimistic HS2 Ltd analysis of this junction produces extensive queue lengths on the A51. Table 281, identifies that the queue on the A51 Stone Bypass in the AM Peak period increases from 53 PCUs in 2023 baseline to 116 PCUs with HS2 traffic. This information has been reproduced and shown on a map (see Figure 2.7).
- 2.6.7 As stated previously, such large queue lengths will create unacceptable delays and drivers will naturally attempt to divert to less congested routes. It can be seen that as the queue starts to back up along the A51, drivers seeking to travel north along the A34 have only one alternative and that is to turn right into Lichfield Road. Again via this route they will travel through a residential area to gain access to Stone Centre gyratory system and then re-join the A34 via Newcastle Road.
- 2.6.8 Again this will simply compound the congestion and conflict with vulnerable road users within the Town Centre which may already be experiencing such problems from southbound traffic diverted due to long delays at Walton Island.

2.7 Summary of Junction Analyses

- 2.7.1 In a 2km stretch of the A34, HS2 Ltd has analysed three key junctions, i.e. at Yarnfield Lane, Walton Island and at the A51.
- 2.7.2 The Highways Authority (Staffordshire County Council) has raised concerns regarding the modelling and/or traffic data at two of these and the other, (Walton Island), does not appear to be calibrated against observed queue lengths.
- 2.7.3 The Highways authority has also confirmed that the A34/Walton Island cannot be improved to mitigate the unprecedented, and possibly under estimated, levels of congestion. This, coupled with the great possibility of the consequential impact of rat running through Stone town centre, Yarnfield Lane and other parts of the local highway network, means that it is therefore essential that wherever possible, HS2 construction traffic is deterred from utilising the local and primary network in this area.
- 2.7.4 All of the above again reinforces my concern that the performance of these and other key junctions within the CA3 area are not accurately reflected in HS2 Ltd’ s Transport Assessment.

2.8 Access/Safety issues regarding servicing the Railhead Compounds

Issues to consider

- 2.8.1 As outlined above, various construction/timescale scenarios dictate the various methods of construction traffic accessing/egressing the compounds around the Railhead site.
- 2.8.2 The existing Yarnfield Lane is to be realigned 50m to the north of the existing alignment. A new M6 motorway overbridge is to be constructed to enable Yarnfield Lane to remain whilst the realigned Yarnfield lane can be constructed under the Railhead/IMB-R and under the HS2 mainline. HS2 Ltd also proposes to realign a 500m section at the eastern end of the Lane where there is a steep deviation.
- 2.8.3 HS2 Ltd claims in paragraph 5.2.2 of its Sift analysis that these road alignment works “*matches or betters*” the existing geometry of Yarnfield Lane, and concludes that “*...there are departures from standard associated with the horizontal and vertical geometry of this road*”.

However, I am not clear as to just how, where and to what extent, HS2 Ltd propose to widen Yarnfield Lane.

- 2.8.4 In a series of e-mails that have been received from HS2 Ltd (Terry Stafford, Stakeholder Consultation Manager between 5 and 9 April) the proposals to widen have ranged from *“current plans do not include widening Yarnfield Lane or the bridge”* followed by *“localised widening where it would facilitate the safe passage of HGVs”* and finally to *“6.0m”*.
- 2.8.5 This raises immediate concerns, as Yarnfield Lane is on average around 5.6m in width. It would therefore be disproportionate to cause the devastation proposed by HS2 Ltd to the mature tree-lined verge near to the Wayfarer, together with 500m of hedgerows for less than an average of 0.5m of extra carriageway width, which would then still be sub-standard for two-way use by HGVs on a bus route. This point is illustrated by a series of photos in Figure 2.8.
- 2.8.6 The average width of a 20-tonne bulk material HGV is approximately 3m, including wing mirrors (see Dimensions Chart as Figure 2.9). A proposed carriageway width of only 6m would therefore result in a high conflict risk, with potential severe Health & Safety consequences.
- 2.8.7 In addition, HS2 Ltd does not propose to improve the steep gradient of the realigned eastern end of Yarnfield Lane, which is one of the reasons that Yarnfield Lane currently has a 7.5-tonne weight restriction.
- 2.8.8 I am also concerned how pedestrians and cyclists, which would have had to travel under the Stone Railhead/IMB-R and mainline railway via a deep cutting, and along a road with slightly wider carriageway, but with less verge than previously available, and be exposed to between 400-1200 HGVs per day, will feel in any way that the proposals *“betters the existing geometry”*. I therefore must take issue with HS2 Ltd’s claims, which I consider to be wrong in every respect.
- 2.8.9 As previously stated, for the initial construction period, which has now been confirmed will last for 15 months (January 2012 to March 2022), access to the compounds will only be via Yarnfield Lane, whilst new slip roads off the M6 are constructed. However, before HGV construction traffic can access/egress Yarnfield Lane, two additional issues have to be resolved.
- 2.8.10 Firstly, a suitable junction with the A34 will need to be constructed to facilitate the safe movement of HGVs into and out of Yarnfield Lane. This would probably be in the format of a signalised junction with dedicated right and left turning lanes from the A34. These would be required to minimise delay to the trunk road through traffic. Because of the lack of right turn storage length, it may well be necessary to close the central reserve gap adjacent to Trent Road to achieve this.
- 2.8.11 Secondly, the widening and, in part, the realignment of Yarnfield Lane over approximately 2km will involve the removal of trees and hedgerows, earth works and construction of the wider running lane. All of which will necessitate lane closures and at times full closure of Yarnfield Lane.
- 2.8.12 This work is estimated to take between 3-6 months to complete and will have a detrimental impact on all local and construction traffic utilising Yarnfield Lane. Of particular concern is the slight realignment and widening of Yarnfield Lane over the steep grade section, which starts about 120m from the A34. The severity of the grade at this location is such that the position of any temporary signals will have to be located some way from the hill in order that fully loaded HGVs can avoid crawling up the steep incline, thus necessitating a long green plus clearance period before reversing the flow.
- 2.8.13 Similarly the realignment and widening work at the top of the incline may have to be carried out at the same time to avoid a tail back of vehicles at the top of the incline resulting in HGVs queueing on the incline and having difficulty pulling away. This could result in substantial

- green-light plus clearance times, which conversely creates longer all red-light times for outbound vehicles. Such a scenario could lead to considerable delays for outbound traffic, particularly in the peak periods.
- 2.8.14 Of equal concern is risk of inbound traffic from the A34 queueing back towards the A34 running lanes.
- 2.8.15 All of the above will clearly necessitate the use of LGVs and smaller plant machines for work on Yarnfield Lane wherever possible and may reduce the ability to utilise HGVs further up Yarnfield Lane particularly in the first few months.
- 2.8.16 During this initial period of 15 months duration, lane closures on Yarnfield Lane will exacerbate the difficulties and the dangers pedestrians would face using the lane. Available space alongside shuttle workings will be very limited and expose pedestrians to a higher risk of conflict with vehicles.
- 2.8.17 As mentioned earlier, some villagers, for various reasons, have no option but to walk down Yarnfield Lane to gain access to Stone. The lack of any formal footway already makes this a difficult task, especially in winter. Residents are therefore rightly concerned that such a task will be considerably worsened due to the additional conflict with HGV and LGV construction traffic along the whole length of Yarnfield Lane. In addition, they are also concerned with having no option but to walk under the Stone Railhead/HS2 main line, once completed, in a deep cutting and via at least two new underpasses.
- 2.8.18 Once the motorway slip roads are completed large numbers of HGVs (will be able to access/egress the various compounds. With at least 50% of the total HGV traffic destined for the two satellite compounds and the transfer node located off Yarnfield Lane, this could amount to a peak of 735 HGV movements/day, based on what we now know are conservative numbers given the unquantified increases referenced in the SES/APES dated 23 March 2018. Even using this number this amounts to approximately 74/hour or 1 HGV every 49 seconds.
- 2.8.19 Since the new Yarnfield Lane overbridge will not be available until June 2023 all HGVs accessing/egressing the motorway will have to utilise the old bridge until its replacement is available, which now creates a further safety issue.
- 2.8.20 The current overbridge carriageway width is 5.45m wide and the approach ramps are 5.5m to 5.6m wide. Given that the standard width of a HGV including wing mirrors is on average 3m, as referred to above, it is not possible for two HGVs to cross this bridge simultaneously. The situation is compounded by the fact that the two approach ramps have approximately 1 in 20 uphill gradients, which effectively means that a vehicle at the base of the ramp cannot see a vehicle on the opposing ramp.
- 2.8.21 Taking into account that Yarnfield Lane is also a bus route, there is no way that such wide vehicles can be allowed to enter onto the bridge at the same time and this will necessitate shuttle working lights at either end of the bridge ramps. The overall length to be controlled is approximately 300m.
- 2.8.22 This will require a clearance time of at least 45 seconds, which will equate to between 2-3 long minute cycle times. This results in approximately 20-30 cycles per hour. Given that peak period traffic along Yarnfield Lane is around 300 PCUs per hour, each cycle will have to cater with between 10-15 PCUs per cycle.
- 2.8.23 This will result in considerable delays to enable just two-way working, HGVs may have to enter the lane from the slip roads and give way to queueing vehicles near the signal stop line. This could result in considerable delays both leaving and trying to access the motorway slips, i.e. trying to turn across queueing traffic. In such a scenario 3-way lights may be required. This could create severe delays for all road users and cause serious rat running onto the B5026 Eccleshall Road, which would have a further negative impact on the A34 at the Walton island.

- 2.8.24 It could also seriously impact arrival/departure rates of HGVs to the compounds and cause queuing delays in areas such as the transfer node. At the moment the peak number of HGVs accessing/egressing the Yarnfield North Embankment Transfer Node is predicted to be 1185/day. This is one a minute in each direction. It is very doubtful that the transfer node could turn around so many HGVs in such a short space of time, when it can take up to 5 minutes to unload or load an HGV. Whilst the limited space within the transfer node was likely to cause delays in its own right, problems entering the site due to traffic control measures on Yarnfield Lane will only compound the problem, which will make the whole operation unworkable.
- 2.8.25 Once the new overbridge is operational, it is unclear at this time as to how and when HGVs will utilise the proposed access/egress to/from the completed Railhead as shown on Map CT-06-223 from the CA 3 Community Area report onto the realigned Yarnfield Lane.
- 2.8.26 Since the earthworks for the Railhead/IMB-R are not scheduled to be completed until December 2024, and the Yarnfield North Embankment, which was originally due to start construction 12 months earlier (now 24 months) will require a greater number of HGV trips than originally estimated (although HS2 Ltd has provided no details to date), it is assumed that HGV access to Yarnfield lane may be at several locations on the eastern side of the overbridge.
- 2.8.27 Furthermore, when the Railhead/IMB-R access point in the cutting of Yarnfield Lane is being utilised, there are concerns regarding driver inter-visibility issues at this new junction. The new access is located half way down the incline from the new overbridge into the Yarnfield Lane underbridge. Without access to more detailed drawings it is difficult to accurately assess the gradient of the ramp but it is assumed that the gradient of the incline would be in the range of 5%-6%.
- 2.8.28 Drivers traveling east on the overbridge may well be distracted as their forward vision will be directly onto the operations yard of the Railhead/IMB-R. This issue, coupled with difficulty seeing and/or reacting to a slow moving vehicle accessing or egressing the Railhead/motorway slip, will create a potential conflict point. In my opinion an adequate visibility splay may not be achievable.
- 2.8.29 Conversely a westbound vehicle emerging from the IMB-R underbridge may encounter a stationary HGV waiting to turn right into this access. If several lorries are queuing waiting to carry out this manoeuvre then, depending on forward visibility, rear end shunt accidents are a possibility.
- 2.8.30 During construction and even when fully operational, access and egress at this facility, will create high numbers of conflicting movements. In consideration of the high HGV, LGV and worker related construction movements, conflicting with well in excess of 1000 vehicle trips per day generated by Yarnfield village, an access at this location is highly undesirable, and in my opinion would not be reviewed favourably when submitted for a safety audit.

Summary

- 2.8.31 In summary I am very concerned about the practicality and safety aspects of using Yarnfield Lane to access the multiple construction compounds located on Yarnfield Lane for the following reasons:
- Start up and remedial works on Yarnfield Lane and with its junction at the A34, will create considerable delays around these works, which could result in traffic transferring to other routes to gain access to the A34, particularly via Eccleshall Road which could compound congestion levels on this approach to the Walton Island in the PM peak, discussed earlier.
 - The proposal to widen the Yarnfield Lane to just 6m (where appropriate) is totally unacceptable for the anticipated levels of HGV flows.

- Vulnerable road users will be at further risk in both the construction and operational phases of the Railhead/IMB-R.
- Shuttle working of construction traffic across the existing M6 overbridge will again create long delays which may lead to traffic seeking alternative routes as discussed above.
- The location of the proposed main vehicle access to the Railhead/IMB-R is a potential safety hazard. The vertical alignment of Yarnfield Lane from the new M6 overbridge down to the railhead underbridge will reduce driver awareness of vehicles entering/leaving the facility.

3. Aldersey's Rough alternative Option 9.5*

3.1 Highways access/egress via Keele Services

Introduction

- 3.1.1 One of the fundamental considerations when selecting where to build a Railhead site is that, wherever possible, construction traffic should primarily utilise the strategic and primary roads and avoid impacting on the local highway network and the communities they serve. However, in trying to achieve this, it may have consequences for the Strategic and primary routes which, by default, permeate down onto the local highway network as is witnessed at Stone.
- 3.1.2 In HS2 Ltd's Engineering Feasibility analysis in the Option 9.5 Sift analysis "*The proposed IMB-R footprint would not require the modification of the existing highways other than new accesses off Three Mile Lane. However, the construction of the railhead and the IMB-R requires temporary access off the M6 around Keele*".
- 3.1.3 The temporary access referred to in this statement are shown in Appendix G is the Sift analysis. This illustrates the proposed access/egress routes from the M6 via 3 Mile Lane to the Alderseys Rough Railhead/IMB-R. These proposals were devised by HS2 Ltd and utilised for the purposes of the SIFT analysis, with the caveat that it would depend on agreement being reached with the Motorway Services Operator (MSO). Whilst this is understood, given the importance of the HS2 project, it should not be used as a potential show-stopper of the Aldersey's Rough option, especially as it will be also demonstrated by my colleagues in their evidence, that it represents the best option for all interested parties.
- 3.1.4 In view of the above, HS2 Ltd makes some statements within the Sift analysis that are therefore somewhat misleading. In Section 8.2.2 it states that "*Temporary access of the M6 is proposed by extending the existing Keele (Services) slip roads Northbound and the diverge Southbound. It is not feasible to construct a Southbound merge without effecting existing woodland to the north of Keele Services. In this instance controlled access is suggested using the existing back of services road*".
- 3.1.5 As will be demonstrated below, as well as utilising the "*back of service road*", another southbound merge option is available that effects a limited number of trees, but has no effect on the existing woodland.
- 3.1.6 In relation to these slip roads, the Sift analysis also compares accessibility for all options in the '*Environmental Options Comparison Matrix*', in the section entitled '*Transport accessibility and severance*' and states:- "*additional disruption will occur within this option along M6 with reduced speeds and restrictions around Keele*". In reality, even if restrictions were needed for new slip roads they would only be needed for a limited period.
- 3.1.7 It is also important to note that even if one of the access solutions at Keele Services included constructing new slip roads off the M6, which I do not think is necessary, this option would not require the provision of an equivalent new overbridge, which is proposed for Yarnfield Lane, and therefore this would eliminate the need for any full closures associated with it.

- 3.1.8 It should also be remembered that Stone does not have direct motorway access from the west side of the M6 and therefore in that respect effectively mirrors the situation at Aldersey's Rough with an overbridge being required to access the carriageway on the other side. However, the big differences are that unlike Yarnfield Lane that serves a significantly sized settlement with a population of approximately 2200 people and a major conference centre and important local football club, Three Mile Lane serves a much more rural setting. Furthermore, even though it does meet the A53 at Whitmore, it is very much a secondary means of accessing the small village, which is served by the A53. As a consequence it has a fraction of the daily movements that serve Yarnfield and its use over a distance of approximately 500m will have much less of impact.

Analysis of Access Options.

Introduction

- 3.1.9 The Parish Councils' have developed various options for gaining access/egress to/from Keele Services and these are shown on Figure 3.1 (northbound) and Figure 3.2 (southbound).
- 3.1.10 In order to minimise any delay to the through traffic on the M6, most of the options examined try to utilise the part of the existing diverging or merging lanes currently in operation at the site. The analysis will identify various options for each northbound and southbound egress, and access routes, although the optimum solution could be a permutation of any of the options that we have identified.

Northbound options

Northbound egress

Option NE1

- 3.1.11 Exit M6 via existing slip and follow HGV route past the pallet unit on left. At this point instead of bearing round towards fuel area, travel straight ahead. Create a new gap in boundary fence to travel forwards into the adjoining field. Construct a new link road across the field to create a new junction with Three Mile Lane. It is suggested that the location of junction be aligned to be opposite the Parish Council's preferred access point into the Aldersey's Rough Railhead/IMB-R.
- 3.1.12 The topography across the fields in which the connecting road would be located is reasonably level, so no gradient problems should be encountered. There would also be no loss of lorry bay spaces, with minimum impact on circulatory traffic and through flow on the M6. It is recommended that secure gates would be required for closure overnight.
- 3.1.13 The main cost relates to the construction of the new connecting single lane access road, together with the new junction on Three Mile Lane, together with land acquisition.

Option NE2

- 3.1.14 Exit the M6 in the same way as Option NE1 and follow the circulatory round to the Highway Maintenance depot area (operated by Highways England) on the western side of the service area to use the existing access point onto Three Mile Lane. Proceed through the rising bollards and egress left out of depot onto Three Mile Lane before turning tight into the Aldersey's Rough Railhead/IMB-R access point.
- 3.1.15 Option NE2 would have minimum impact on through flow in the lorry park. A slight modification to the radius of the entrance point into the depot would be required. There would also need to be an upgrade of the security arrangements as the depot and the type of barrier would need to be resolved, although the depot is gated at night. Therefore would be no loss of lorry bays.
- 3.1.16 This option is likely to have minimal cost implications, because this route is already used by snow ploughs/gritting lorries and other maintenance vehicles, so there should be few real problems

Option NE3

- 3.1.17 Exit the M6 in the same way as Options NE1 and NE2 and travel along the circulatory road towards far end of the lorry park. At the point where the road swings sharp right create a new gap in boundary fence into adjoining fence and create a new shorter access road link to the junction point proposed as part of Option NE1.
- 3.1.18 Option NE3 would result in minimal disruption to through flow, but would result in the loss of at least one lorry bay. The security arrangements would also be the same as Option NE1.
- 3.1.19 This option would have a reduced cost compared to NE1 due to the shorter link road.

Option NE4

- 3.1.20 This is the option that had been proposed by HS2 Ltd in its Option 9.5.
- 3.1.21 Option NE4 involves the construction of a new diverging lane off the hard shoulder of the M6 and the creation of a gap in the M6 boundary fence into adjoining field. It would then involve the construction of a long new link road to connect to Three Mile Lane.
- 3.1.22 The advantage of this option is that it would cause no interference with internal Keele Service lorry movements. However, the construction of new slip off hard shoulder requires temporary lane closure of the M6 and there would be a security issue at both ends of the slip road, with extra signage required to prevent vehicles heading for services taking wrong slip road.
- 3.1.23 Option NE4 would be substantially more expensive to implement than the other three options because of its additional length of link road and land acquisition, as well as M6 works.

*Northbound Access**Option NA1*

- 3.1.24 Option NA1 involves the reverse path of Option NE1 between Aldersey's Rough and the entrance to the lorry park. At this point the entry into the lorry park would need to be flared to facilitate a left turn.
- 3.1.25 There would be a low conflict risk, but this would be no more than the current exit arrangements from the pallet unit. With slow speeds at this point there would be minimal impact on through flow in the lorry park.
- 3.1.26 The main cost would relate to doubling the width of the link road to the lorry park to allow two-way HGV traffic, plus the extra width of the security gate.

Option NA2

- 3.1.27 Option NA2 would reverse path of NE2 between Three Mile Lane and the Highways Maintenance Depot, before turning left to join the lorry route of the circulatory onto the M6 northbound carriageway.
- 3.1.28 This options would result in minimum cost, and has the advantage that it could be used from almost the outset of construction operations. It could therefore be used a good short term solution and be replaced by one of the other options, or a long term option.

Option NA3

- 3.1.29 Option NA3 is the reverse path of NE3 as far as the entrance into the lorry park, although it would again require the single lane link road to be doubled and a wider security barrier provided. It would also result in the probable loss of another lorry bay.
- 3.1.30 The main cost relates to the double lane access link road.

Option NA4

- 3.1.31 Option NA4 represents the HS2 Ltd option presented in the Sift analysis.
- 3.1.32 The design involves the construction of a new access road and motorway connection from Three Mile Lane or directly from the internal Aldersey's Rough Railhead/IMB-R access road,

which would be better for security reasons. The option is hampered by poor topography, especially the downhill grade that would be required to join the M6, which is in cutting to the north of Keele Services. There would also be a possible conflict with slow moving vehicles just leaving main services slip road and it would require temporary lane closure to construct the link onto the main carriageway.

- 3.1.33 The option is likely to be expensive in land acquisition and construction costs.

Southbound Options

Southbound Egress

Option SE1

- 3.1.34 Option SE1 involves HGVs exiting the M6 using the existing service area slip road and then using the lorry lane at the point of entry. This route would then involve passing the first row of lorries to enter the lorry park through the existing gap to travel across the lorry park and up and through the rear service access and the rising bollard barrier to the existing junction with Three Mile Lane. Construction traffic would then turn left and continue across the existing M6 overbridge to the Aldersey's Rough Railhead/IMB-R access point.
- 3.1.35 There would be no impact on M6 through traffic or on lorry through flow, although there would be a slight risk of conflict that will require additional lane marking to be provided and low speeds to be adopted. The security system would need to be replaced, but the access is wide enough for slow two-way passing of HGVs. There would also need to be slight realignment or the loss of one lorry bay, together with the removal of lorries randomly parking on the circulatory road.
- 3.1.36 The main cost of implementation would be the replacement of the barrier system, which would be limited and so this represents the minimum cost option. It therefore could be used as a short-term option during site set-up, or perhaps as a longer term solution.

Option SE2

- 3.1.37 Option SE2 involves HGVs exiting the M6 and entering the lorry park at Keele Services in the same way as Option SE1 and therefore keep in the left hand lane past the lorry park, before heading for the outer circulatory exit road. However, the key change is that at the end of lorry park high dividing kerb, HS2 HGVs would carry straight on to exit through the boundary fence at a gap in the trees and join a new link road that would skirt past the existing woodland before travelling northwest to meet a new junction with Three Mile Lane. At this point HGVs would turn left onto Three Mile Lane to cross the existing M6 overbridge before entering the Aldersey's Rough access point.
- 3.1.38 Option SE2 would involve the slight removal of high kerb upstand at the end of the lorry park, which is required in order to guide lorries to the new link road. There would be no disruption of M6 through traffic and no impact on through lorry movements. White lining would be required to create give way for vehicles leaving the lorry park so as not to conflict with new HS2 construction traffic route. There would also be a need for a new barrier security system.
- 3.1.39 The main cost of Option SE2 relates to the excavation of a new link road through the existing slope between the northern side of the services and Three Mile Lane to achieve a maximum gradient of 1 in 12 grade, together with the cost of the link road itself, the new junction with Three Mile Lane and the accompanying land acquisition.

Option SE3

- 3.1.40 Option SE3 represents the HS2 Ltd option presented in the Sift analysis.
- 3.1.41 It involves the creation of a new diverging lane off the hard shoulder of the M6 located before the existing slip road for Keele Services. As such it would require the new road alignment to be excavated into the existing bank before constructing the link road across fields to connect with Three Mile Lane at a new junction, the exact location of which would be optional.

Construction traffic would then need to turn right across Three Mile Lane before crossing the M6 overbridge and connecting with the Aldersey's Rough Railhead/IMB-R access point.

- 3.1.42 Option SE3 would require a temporary lane closure of the M6 and overcoming the adverse topography. It would also have the same issues as HS2 Ltd's Option NE4, with the risk that vehicles leaving the motorway might attempt to utilise the wrong slip lane. However, there would be no impact on the operation of the services.
- 3.1.43 Option SE3 would be the most expensive option to enact due to the major excavation required and new connection to the motorway, as well as the cost of land acquisition.

Southbound Access

Option SA1

- 3.1.44 Option SA1 is the reverse of Option SE1 with HGVs exiting the Aldersey's Rough Railhead/IMB-R access road by turning left onto Three Mile Lane before crossing the existing M6 overbridge and entering Keele Services by the existing service access road. They would then pass through the new barrier system, down the ramp to join the existing circulatory route onto M6.
- 3.1.45 It may be necessary to define a no parking area near to the toe of the ramp due to occasional lorries parking here unofficially. However, there would be no real impact on circulatory traffic.
- 3.1.46 The main cost would be the barrier control system as per Option SE1, and therefore this represents the minimum cost option.

Option SA2

- 3.1.47 Option SA21 is the reverse of Option SE21 with HGVs exiting the Aldersey's Rough Railhead/IMB-R access road by turning left onto Three Mile Lane before crossing the existing M6 overbridge and entering Keele Services by the new access road located to the north of the services that would be created for option SE2. They would then pass through the new barrier system, and along the new link road before joining the existing circulatory route onto M6.
- 3.1.48 The main cost of this option would be shared with Option SE2 and relates to the construction of a full width link road between Three Mile Lane and the northern side of the service area

Summary of Access/Egress Options via Keele Services

- 3.1.49 Clearly all options that utilise the existing service slip roads have the advantage of being far cheaper to construct than the creation of new slip roads from the M6, which is the approach that has been advocated by HS2 Ltd in the Sift analysis for three (i.e. NE4, NA4 and SE3) out of the four connections. However, more importantly, the options that use the existing slips roads, would have virtually no impact on M6 through traffic.
- 3.1.50 In addition, some access/egress options to the service area can be combined to share the same link roads, thereby reducing/sharing construction and security costs. Furthermore some options also provide the opportunity for drivers to utilise the service station refuelling facilities.
- 3.1.51 In terms of cost and immediate availability, southbound egress/access via the highway depot service road (i.e. Options NE2 and NA2) and southbound egress/access via the rear service road (i.e. Options SE1 and SA1) are likely to be the preferred options, and this is what the Parish Councils believe should be the basis of the cost evaluation between Aldersey's Rough and Stone, rather than the most expensive options, which is what HS2 Ltd has based its approach on.
- 3.1.52 Notwithstanding the above, and subject to the proposed HGV usage of Aldersey's Rough, i.e. whether it was also used to provide internal access to the Whitmore Heath and Madeley satellite construction compounds instead of the currently proposed transport routes proposed by HS2 Ltd, (see below), then the additional traffic levels may well justify constructing the

alternative southbound egress/access routes of SE2 and SA2, as well as the northbound options (NE3 and NA3).

4. Construction facilities at Stone without Railhead/IMB-R

4.1 Proposed HGV access to the Yarnfield Lane construction compounds

Introduction

- 4.1.1 Consideration has also been given to the construction access requirements that would be required to support the construction of the remaining elements of the project if the Railhead/IMB was relocated from Stone to Aldersey's Rough.
- 4.1.2 In such a scenario, the construction facilities required from Yarnfield Lane should be able to be reduced in scale to match the reduced construction effort that would be required to build the remaining HS2 mainline related infrastructure. Unfortunately HS2 Ltd has not provided a transport logistics profile of the needs of each satellite compound. However, it is reasonable to assume that the removal of such a large earthmoving operation as the cut from the northern side of Yarnfield Lane and the fill above and on the southern side of the lane, together with the construction of the reception tracks and railhead facilities would substantially reduce the number of HGVs needing to access the Yarnfield North Satellite Compound and Transfer Node. This is because the remaining activities would simply relate to the construction of the Yarlet North Embankment, its crossing of Yarnfield Lane and the Filly Brook (Norton Bridge Viaduct).
- 4.1.3 As a consequence it is also assumed that construction workforce would reduce significantly and that the accommodation unit for 240 workers would no longer be required.
- 4.1.4 Notwithstanding the above, it is assumed that the M6 Meaford Viaduct Satellite Compound and accompanying launching yard would remain unchanged

Alternative access arrangements

- 4.1.5 HS2 Ltd has continually stressed the importance of minimising the use of local roads to access its Yarnfield Lane construction sites and has therefore advocated the construction of a new permanent southbound connection and temporary northbound connection to help achieve this. However, it has now finally acknowledged in its promoter's petition response to Swynnerton Parish Council that it will now need to use Yarnfield Lane for the duration of construction operations. This will be at a potential peak intensity of 735 HGVs per day, and this was based on the position prior to the submission of the SES/APES on 23 March 2018, which will inevitably lead to a further increase in construction traffic using Yarnfield Lane.
- 4.1.6 Whilst it is difficult to precisely estimate the reduction in HGV movements to and from the much reduced activity construction compounds, the removal of the need to construct the elevated Stone Railhead, with all its related earthworks and underbridge coupled with the earth works and construction requirements associated with the realignment and construction of the new Yarnfield Lane overbridge, will represent a considerable reduction in HGV traffic.
- 4.1.7 This reduction in HGV construction traffic creates the opportunity to re-assess how construction traffic will serve the remaining compounds with the aim of reducing or even eliminating the need for HGV traffic to utilise Yarnfield Lane through to the A34. This principle is not only a desire of the residents of Yarnfield, but is supported by both the County Council and the Borough Council.
- 4.1.8 The relocation of the Railhead/IMB-R at Aldersey's Rough removes of the need to provide a new overbridge on Yarnfield Lane and opens up the opportunity to minimise abortive work carried out with the introduction of the SMART widening of the M6 between junctions 13 and 15.

- 4.1.9 Work around Yarnfield on this section of the SMART scheme entailed reinforcement work to the existing overbridge and most importantly, the provision of new emergency slip roads onto Yarnfield Lane. Fortunately, the original bridge is constructed utilising four spans of decking (see Figure 4.1). It can also be seen that the two main spans are supported by three sets of bridge piers, with the other two spans (one either side) are in-part supported by the neighbouring embankment (graded back at approximately 1 in 2.5) and connected to the bridge piers behind the hard shoulder.
- 4.1.10 The introduction of the new Smart System proposals will, in effect, result in the hard shoulder becoming part of Lane1 and therefore creates a difficulty for emergency vehicles to safely enter or egress the existing emergency slip road that can be seen just past the bridge piers. To address this issue, Highways England is proposing to create new slip lanes behind the existing bridge piers. This will be achieved by digging out the toe of each embankment under the overbridge on each side of the M6, and replacing it with a new retaining wall.
- 4.1.11 The new slip roads would then connect to the two existing emergency access roads, which in turn will connect with Yarnfield Lane at the same locations as present (see Figure 4.2) aerial photo. This arrangement is being provided for both northbound and southbound carriageways although, with HS2 Ltd's planned construction of the new Yarnfield Lane overbridge, these facilities would be lost.
- 4.1.12 It has come to the Parish Council's attention on 19 April 2018 that the Highways England proposals also include full length slip lanes to create more appropriate motorway slip roads for emergency vehicle access. These upgraded slip roads will provide appropriate deceleration and acceleration lanes that could be used by construction traffic serving the HS2 mainline works without the Stone Railhead/IMB-R.
- 4.1.13 It will therefore be possible to supply the reduced activity construction sites by using the new emergency slips throughout the duration of the four-year construction period, subject to appropriate controls to minimise the effects of using Yarnfield Lane between the northbound connection and the satellite compounds, which would be over a distance of approximately 900m. However, there would still need to be shuttle working over the existing Yarnfield Lane overbridge, but the lower HGV arrival rate required by the HS2 mainline works will limit the impact.
- 4.1.14 This now removes the need to widen Yarnfield Lane along its entirety to Moss Lane, and in the process saving the destruction of numerous trees, including oaks, and 500m of hedgerows alongside Stone Golf Club and the Wayfarer public house at the eastern end of the lane.
- 4.1.15 A more realistic evaluation of the Yarnfield Lane junction with the A34 would also need to be carried out to assess appropriate modifications needed to cope with the anticipated reduced cars/LGV construction related traffic that would still need to utilise this junction.

4.2 Alternative access to the B5026 Eccleshall Road compounds

- 4.2.1 The relocation of the Stone Railhead/IMB-R will also substantially reduce the work that would be required to be carried out from the Yarlet North Satellite compound that would be accessed from the B5026 Eccleshall Road. Furthermore the Stone Connection compound would not be required at all. This is because the sidings, reception tracks and headshunt of the Stone Railhead/IMB-R and the large amount of excavations associated with their construction would no longer be required. The realigned B5026 Eccleshall Road and accompanying overbridge, which would now only be required to cross the HS2 mainline could also be reduced in length by approximately 40%.
- 4.2.2 These changes present an opportunity of accessing these facilities via alternative routes, at least for part of the construction operations. This could be achieved by constructing a haul road parallel and alongside the HS2 mainline from the Yarlet South Cutting Satellite Compound located on the A34, which is an idea supported by Staffordshire County Council.

- 4.2.3 This would then be able to connect to the A34 via the Yarlet South Cutting Transfer Node, with HGV traffic from the transfer node then travelling south to the new signalised roundabout at Beaconside before turning right to continue to J14 of the M6.
- 4.2.4 This scenario would not only remove all HGV movements from Yarnfield Lane but will also greatly reduce construction traffic from the key A34 junctions around Stone thereby minimising congestion and subsequently reduce rat running on the local highway network.

5. Other Road Transport Benefits from using Aldersey's Rough

5.1 Introduction

- 5.1.1 As mentioned previously in this proof of evidence, Aldersey's Rough also offers the potential to provide direct access to the Whitmore Heath and Madeley HS2 mainline construction compounds. Figure 5.1 shows its relative location to these sites, together with the main construction routes proposed by HS2 Ltd, which all originate from J15 of the M6.
- 5.1.2 There is therefore an opportunity to reduce the impacts on numerous local roads including the A519, A5182, A53, A51, A525 and the A500. However, the main focus of my evidence at this point will be J15 of the M6.

5.2 Review of Junction 15 of the M6

Description

- 5.2.1 From the details shown on Figure 5.1, at M6 J15, the northbound and southbound off slip roads converge via a signalised junction and are then directly connected by a short link into a major roundabout known as the Hanchurch Interchange. This roundabout, coupled with the adjoining signalised A519/A5182 junction in effect controls all the movements of the construction traffic.

Review of HS2 Ltd's Junction analysis

- 5.2.2 Tables 274 and 300 of the Transport Assessment that accompanied the ES July 2017 show the 2016/ 2023 Baseline and 2023 +HS2 assessments, respectively, of the converging north and southbound exit slips at M6 Junction 15 which is signalised. This trip data is based on the M6 J13-15 SATURN Model, and the queues shown are average link queues. HS2's analysis using this data produces virtually no queueing on these off slips for all three scenarios.
- 5.2.3 Furthermore, examination of the data/flows utilised by HS2 Ltd raises some dramatic errors in its analysis, and this is illustrated in Figure 5.2.
- 5.2.4 As mentioned above, the two off slips at Junction 15 converge and ultimately enter the Hanchurch roundabout by a short link road. Therefore all traffic leaving the M6 via these slip roads has to arrive at the give way on this link road approach to the roundabout. However examination of this arrival flow off the motorway (Table 274) compared with the same flow arriving at Hanchurch island utilised in Table 262 shows differences of up to 515 PCUs, which represents an error of 27%.
- 5.2.5 Such errors are a result of examining junctions in isolation without any reference to the adjoining junction. These errors are so fundamental that HS2 Ltd has totally underestimated the real level of congestion on the slip roads. However, given that the Hanchurch Interchange comprises three junctions and their co-ordination is critical if they are to function effectively, this has very serious consequences for HS2 Ltd's assessment.
- 5.2.6 Figures 5.3, 5.4 and 5.5 show the predicted queues for all three scenarios at the Hanchurch Roundabout and the A519/A5182 signal junction respectively. These results are extracted from Tables 262, 271, 273, 287, 296 and 300 of the HS2 Transport Assessment.

- 5.2.7 When examined in isolation, as produced in HS2 Ltd's Transport Assessment, the predicted queue lengths for each individual junction are of great concern. However, if the Transport Assessment had analysed this information more effectively, the magnitude of these individual queue lengths on the adjoining highway would have been immediately apparent, as the effects in combination are significantly greater.
- 5.2.8 The critical factor in the operation of the interchange is the storage capacity of the link road between the Hanchurch Interchange roundabout and the A519/A5182 signals. The predicted queue lengths far exceed the capacity of this road and the ultimate consequence of this will be gridlock.
- 5.2.9 This will occur each day for the entire construction period of four years, and has far reaching implications in terms of the inability for commuters, commercial vehicles, construction traffic and the emergency services to access/egress all the main destinations in the area, as well as all of the HS2 construction compounds located in the Whitmore Heath and Madeley areas.

6. Conclusions

- 6.1.1 It is concluded from the evidence that I have presented that the HS2 Ltd approach to the assessment of road transport related issues at both Stone and Aldersey's Rough is flawed. A summary of the key comparison points is provided in the table in Appendix 1.
- 6.1.2 With respect to the HS2 Ltd's assessment of the transport effects of the construction of the Stone Railhead/IMB-R, there has been no accurate calibration of the baseline analysis to accurately reflect the current congestion levels. However, even when considering its very optimistic analysis, it is clear that key junctions in the Stone area will be subject to daily congestion during both the peak periods.
- 6.1.3 In addition, the failure to examine the cumulative impact of the congestion created at these individual junctions has also completely underestimated the impacts on the local highway network in terms of both congestion and highway safety.
- 6.1.4 HS2 Ltd has also been in denial about the impacts of its construction operations and traffic on Yarnfield Lane, but now has belatedly accepted that this road will be subject to high levels of HGV traffic for the full four-year long duration of the construction of the Stone Railhead IMB-R. However, the relocation of the facility to Aldersey's Rough would greatly reduce the impacts on Yarnfield Lane and the people that use it, not least because access could be gained by the controlled use of the new emergency slip roads provided as part of the Smart Motorway upgrade.
- 6.1.5 With respect to Parish Councils' proposed alternative Railhead/IMB-R at Aldersey's Rough, this offers much easier, quicker and less disruptive access to the M6 motorway via Keele Services than can be achieved at Stone, together with much less impact on the local road network, which is far less intensively used than in the Stone area.
- 6.1.6 The use of Aldersey's Rough also offers the opportunity to significantly reduce the impact on J15 of the M6, together with other important roads in the local area, which HS2 Ltd is proposing to use as haul routes to its construction compounds in the Whitmore and Madeley areas. This will also benefit other village and towns along these routes, including Woore in Shropshire. This can be achieved by using Aldersey's Rough to provide direct access to the numerous HS2 mainline construction sites at these locations, with access from the highway network being provided from Keele Services.
- 6.1.7 Given the evidence that I have presented, it is absolutely clear to me that the proposed Railhead/IMB-R at Stone should be relocated to Aldersey's Rough to the benefit of stakeholders across North Staffordshire, together with HS2 Ltd itself.

Appendix A – Figures

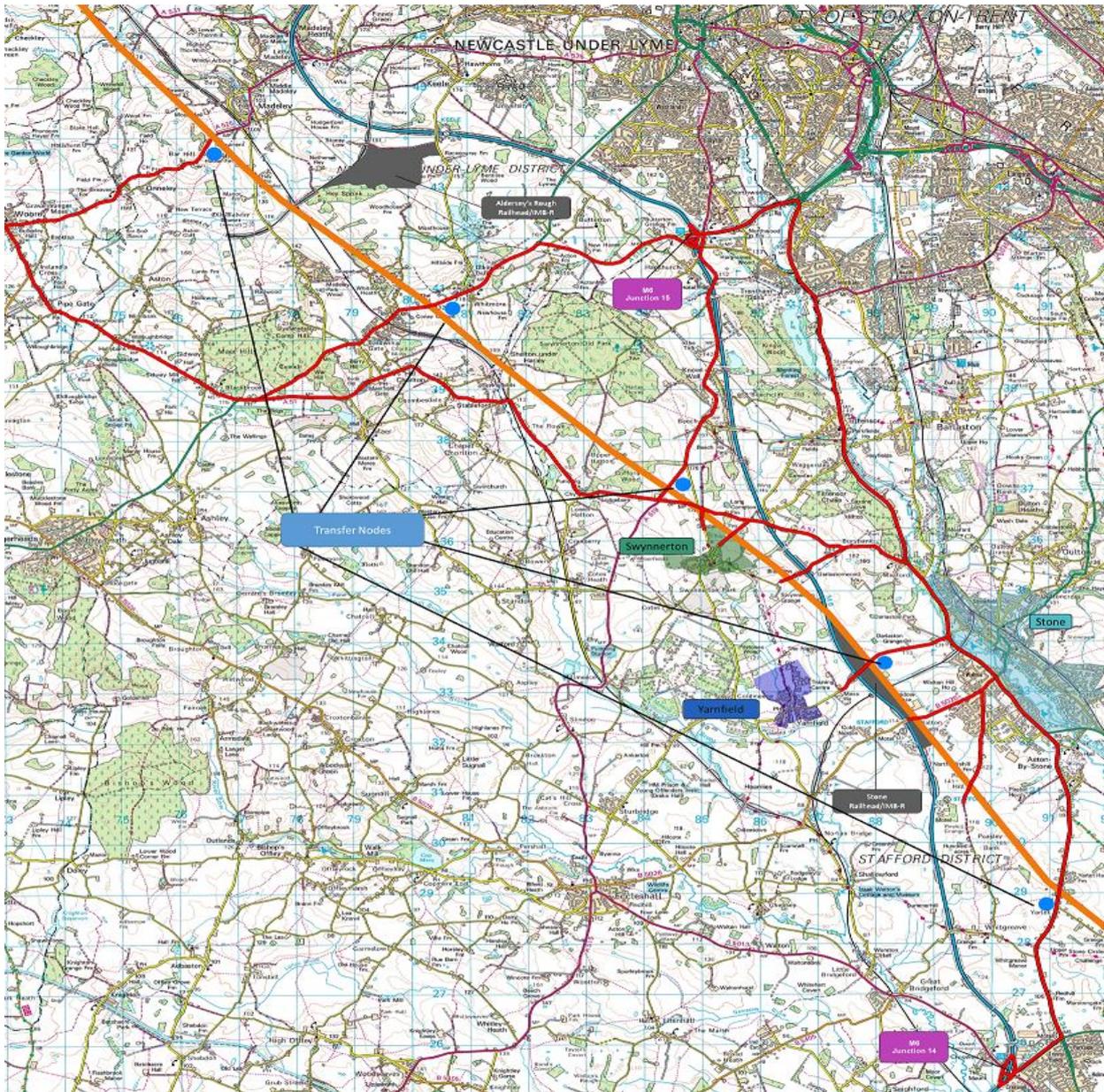


Figure 2.1 - HS2 Phase 2a North Staffordshire

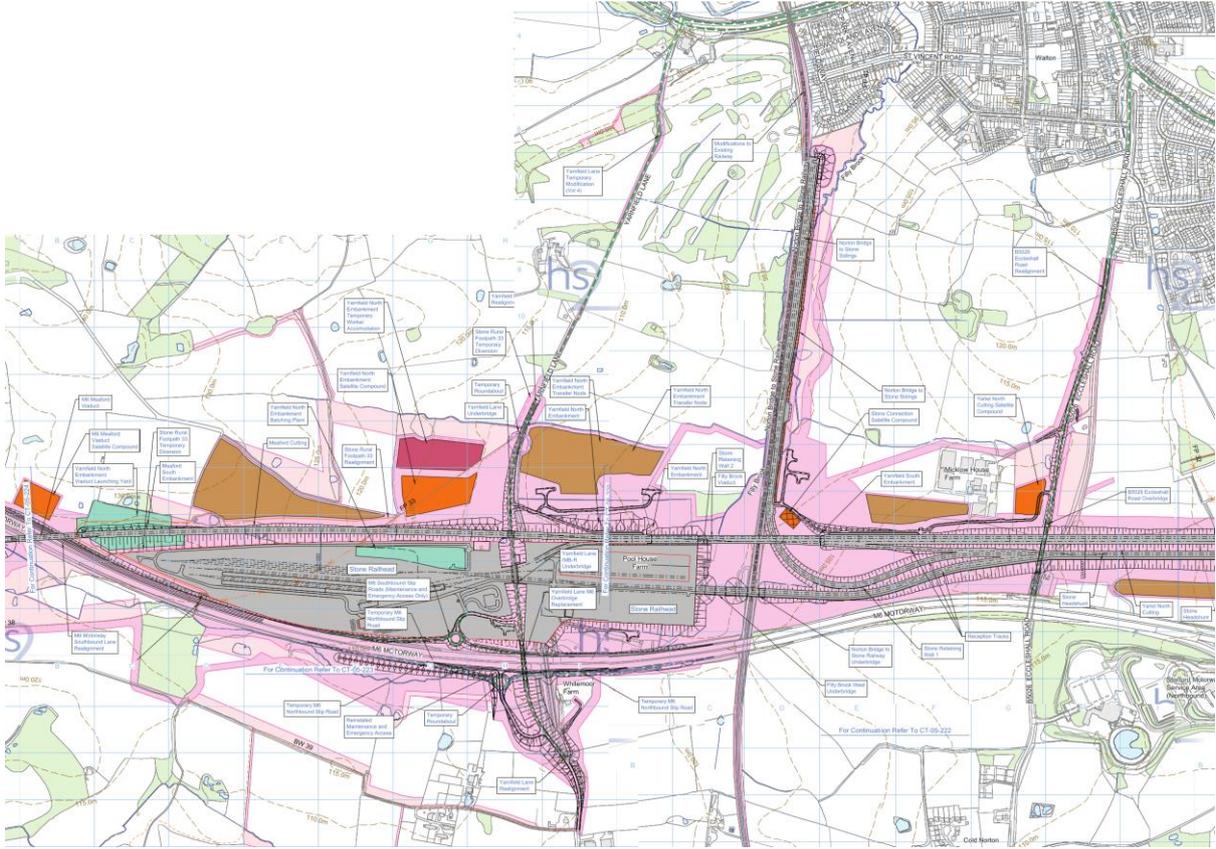


Figure 2.2 - Moss Lane to A34



Figure 2.3 - Yarnfield Lane A34 Junction

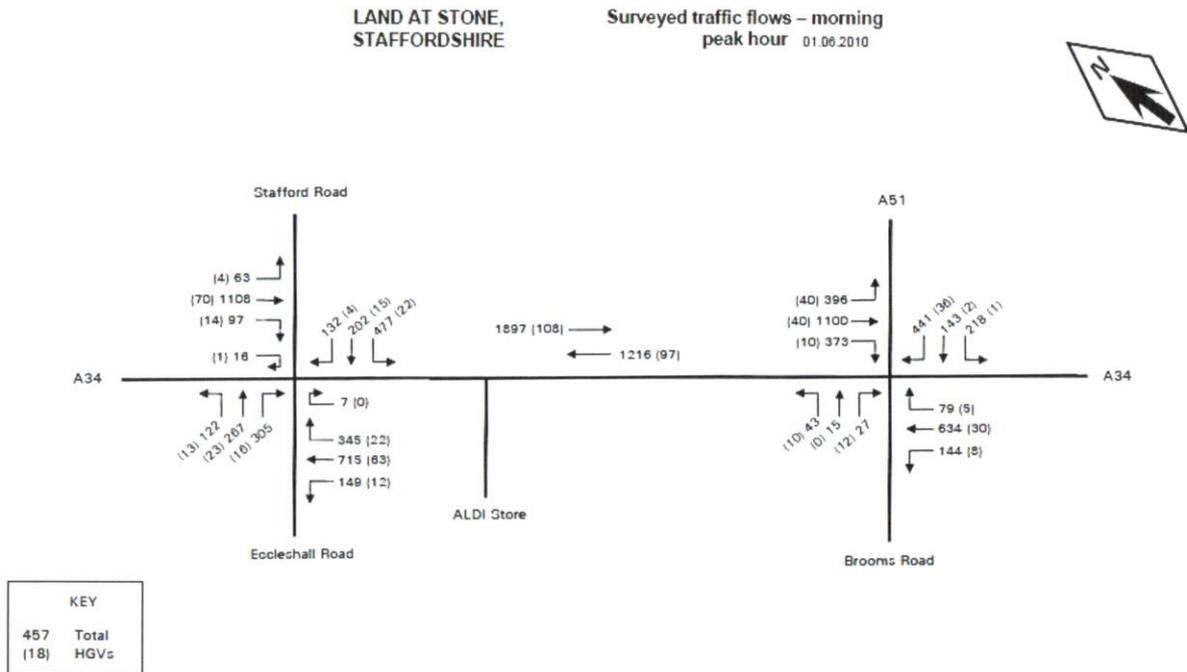


Figure 2.4 - Traffic Flow 2010

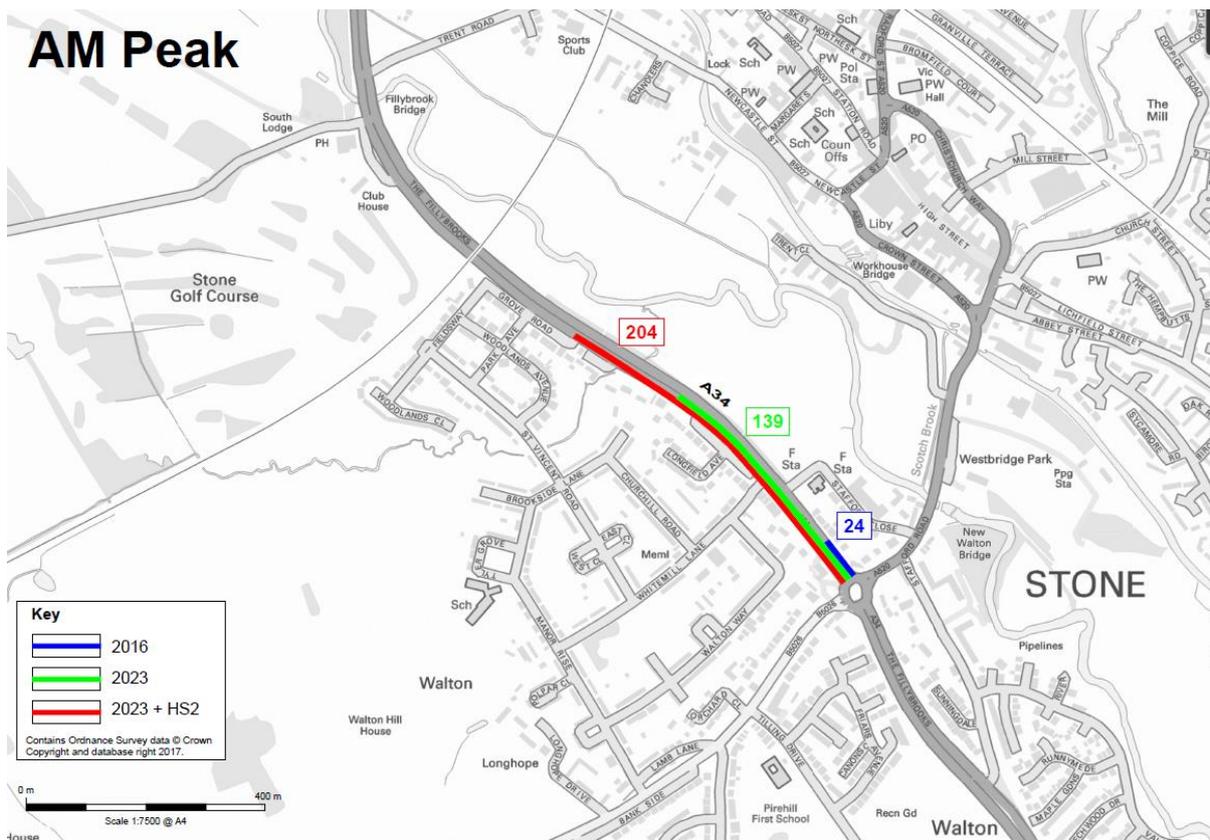


Figure 2.5 - A34 Walton Island-AM 7500

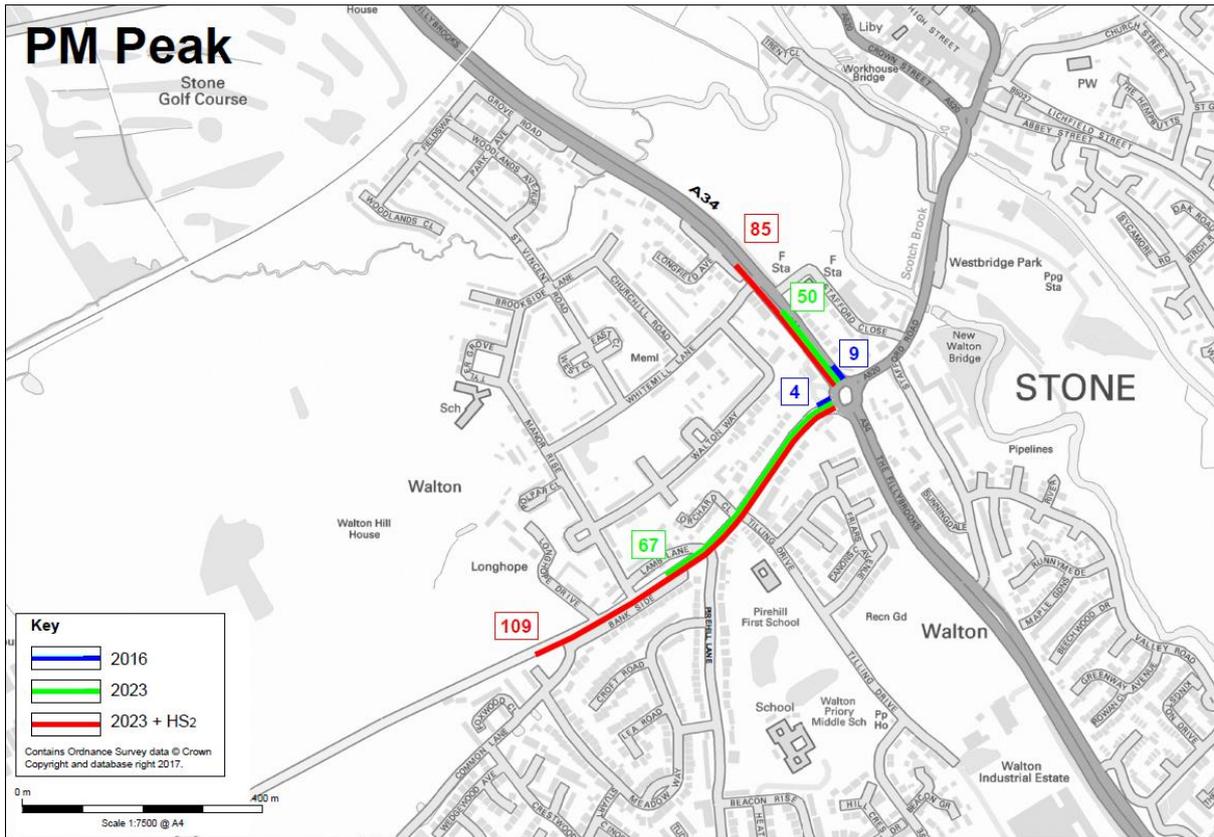


Figure 2.6 - A34 Walton Island-PM 7500

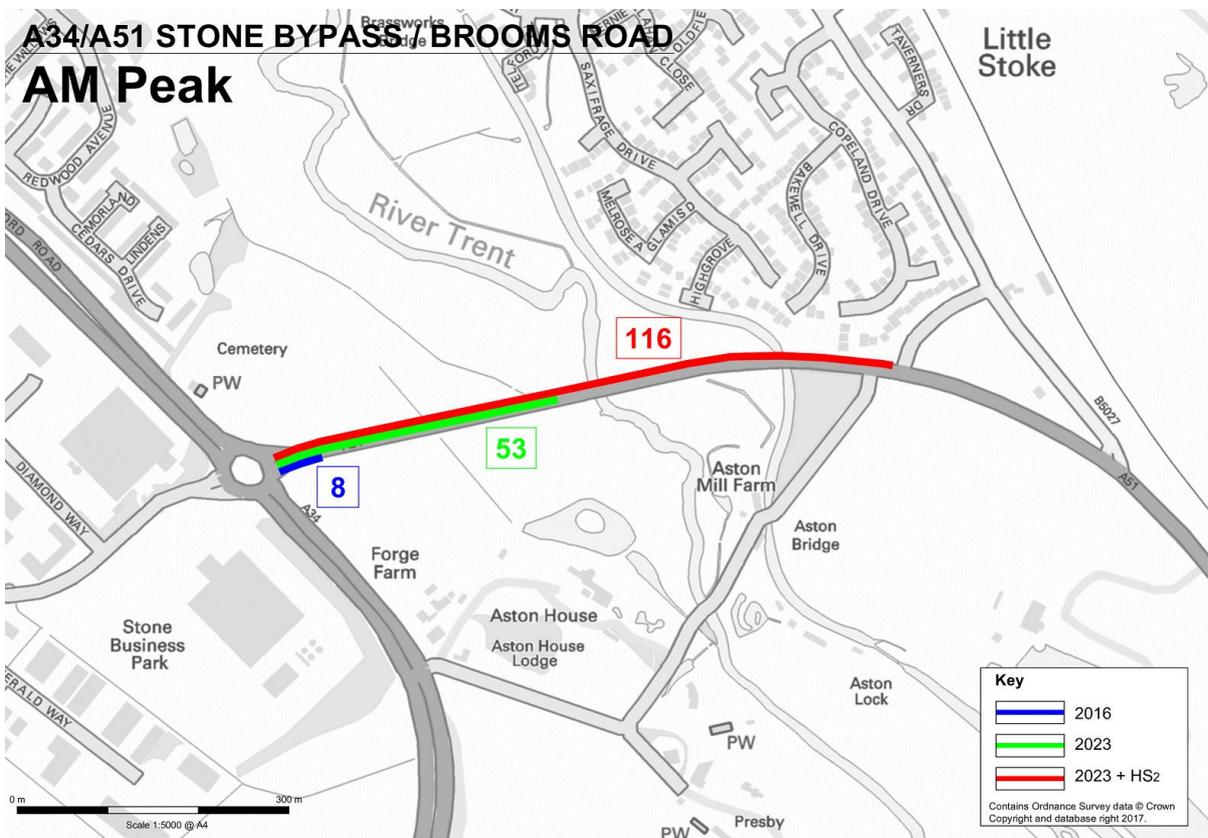


Figure 2.7 - A51-A34 AM-Peak

Vehicle Dimensions - 6 Wheeler

Chassis	Vehicle Size T	Width inc. mirrors m	Chassis length inc body overhang m	Chassis and trailer height lowered* m
Scania	26	3.37	8.03	3.08
DAF	26	2.65	7.9	3.78
Mercedes	26	3.51	8	3.23
Renault	26	3.15	7.7	3.53
Foden	26	3.07	8.19	4.19
MAN	26	2.53	8.1	2.89
Volvo	26	3.18	7.99	4.06
Average		3.07	7.99	3.54

* unladen height and includes exhaust outlet and beacon. As a rough guide the maximum tip height is 7m

Figure 2.9 - Dimensions Chart

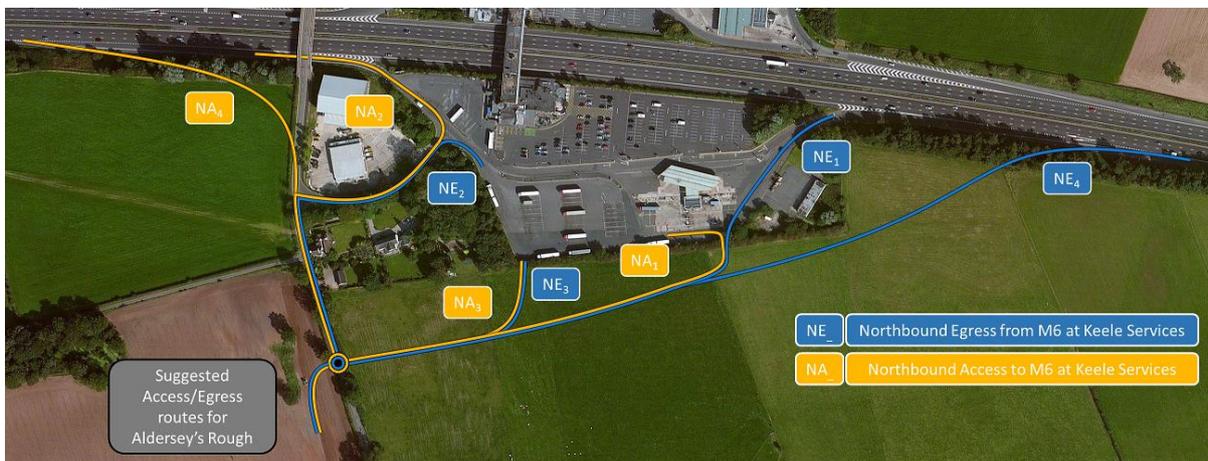


Figure 3.1 - Keele Services Northbound Access Options



Figure 3.2 - Keele Services Southbound Access Options



Figure 4.1 - Existing Yarnfield Lane Overbridge



Figure 4.2 - Yarnfield Lane New Slips Smart Motorway

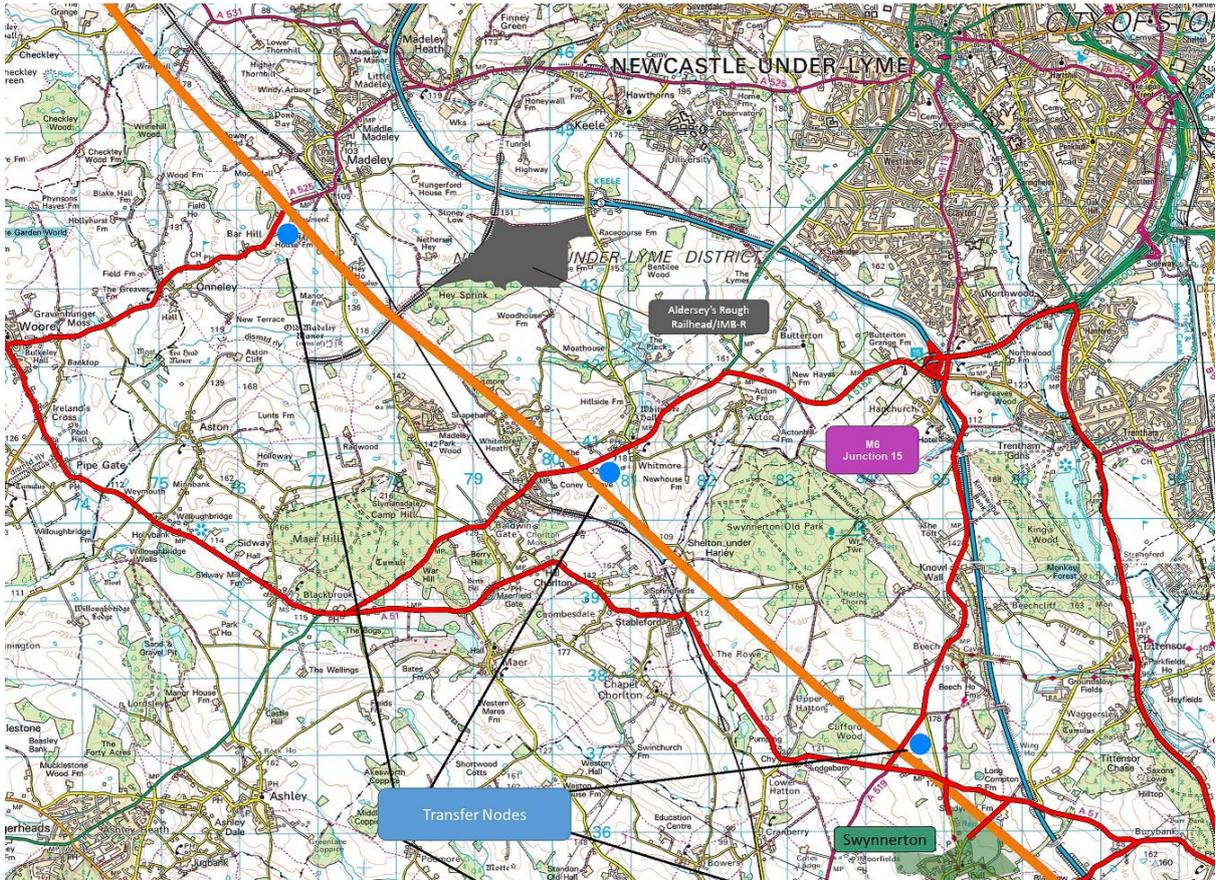


Figure 5.1 - M6 J15 and Haul Roads

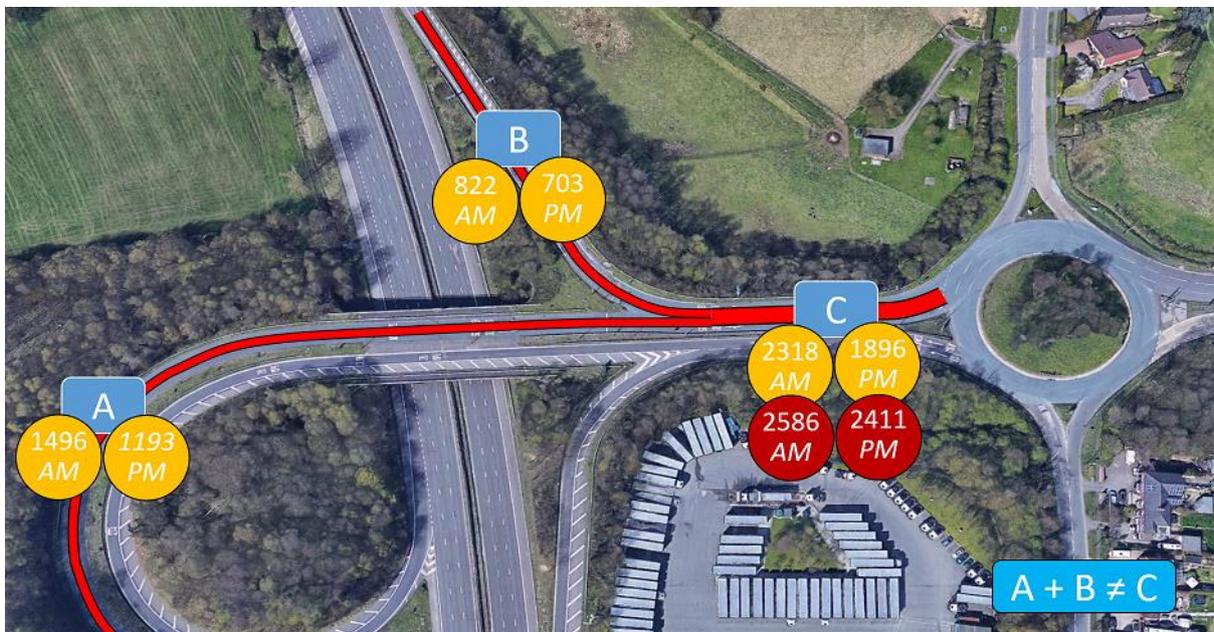


Figure 5.2 - A+B does not equal C

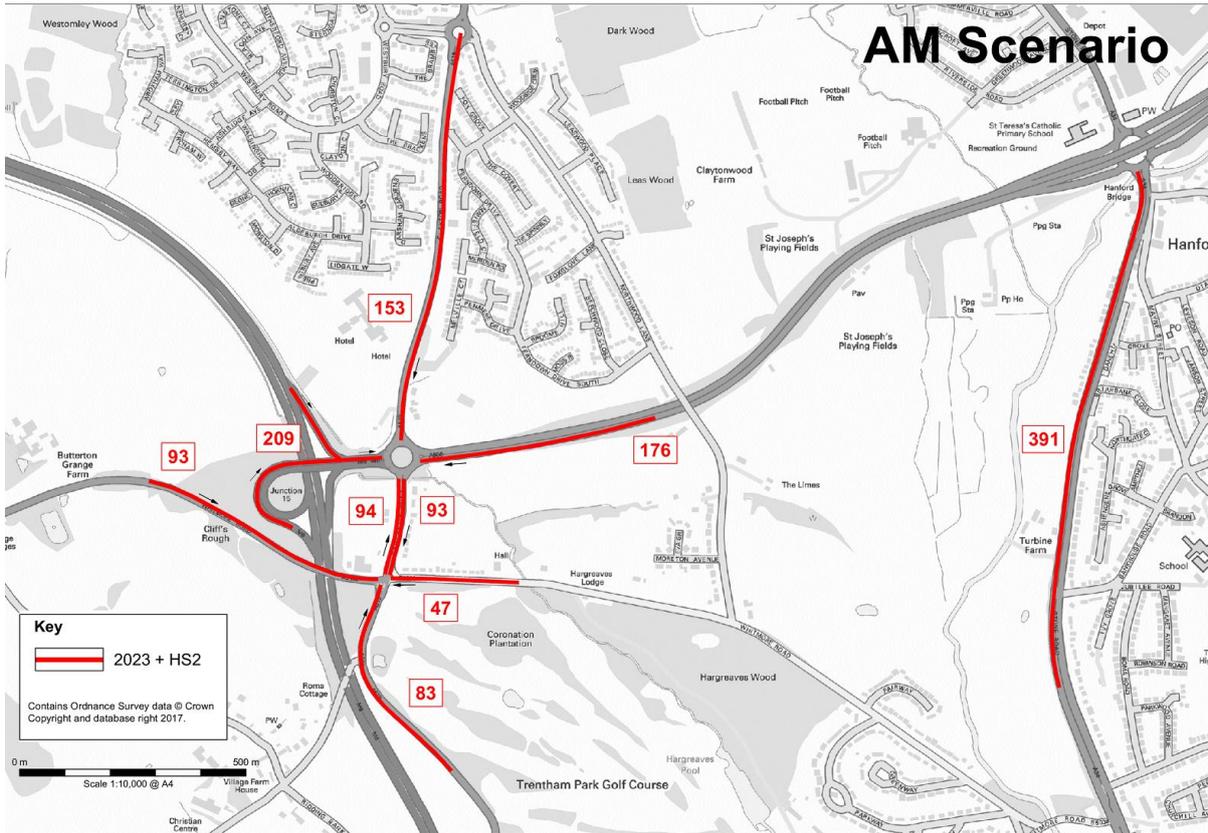


Figure 5.3 - J15 Traffic Queues AM

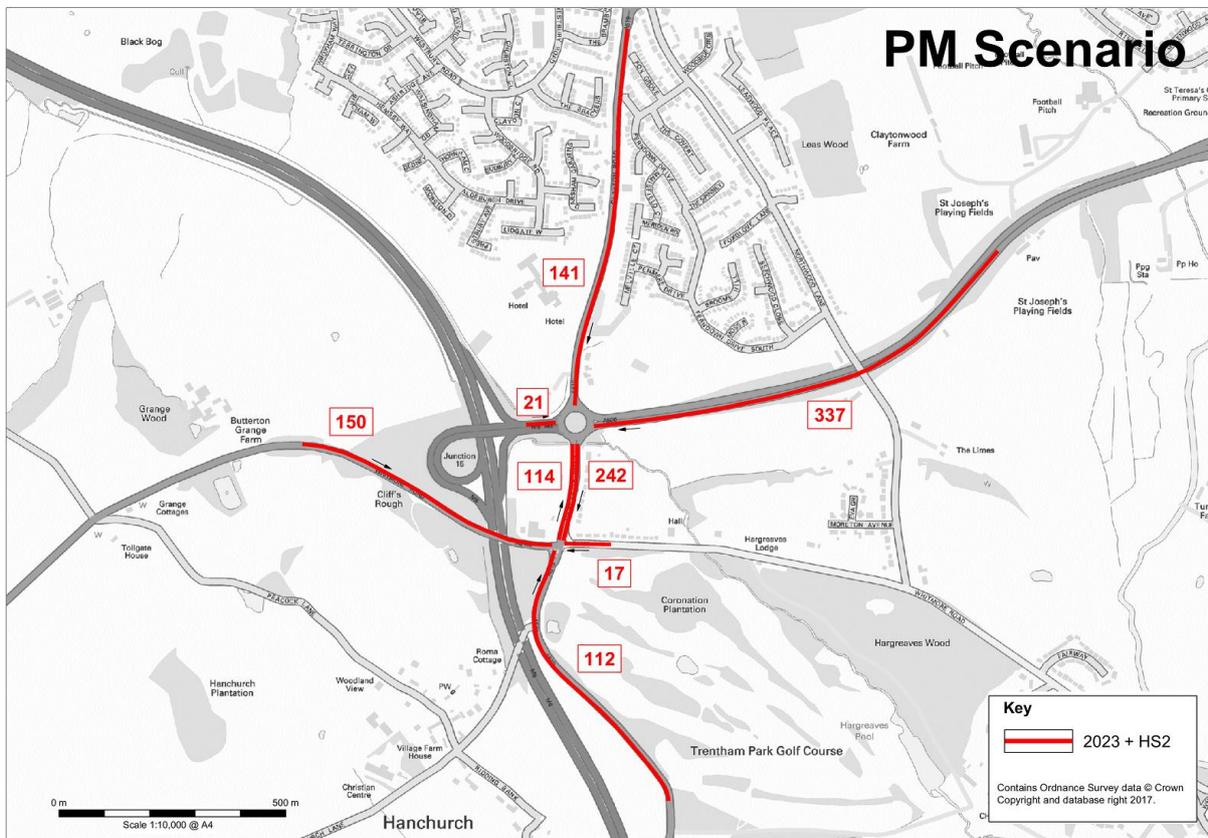


Figure 5.4 - J15 Traffic Queues PM

High Speed Rail (West Midlands to Crewe): Summary proof of evidence of Gordon Wilkinson

1. Introduction

1.1 Background

1.1.1 My name is Gordon Wilkinson, aged 68, and I have been a resident of Yarnfield village for over 27 years.

1.1.2 I am a retired Chartered Transportation Engineer, with a Master's Degree in Transportation Engineering and Planning. My career spans 41 years, of which 35 were spent in Local Government, of which the last 15 were at Staffordshire County Council, where I was Head of Urban Transport Projects.

2. Objections to Stone Railhead/IMB-R

2.1 Introduction

2.1.1 My evidence will begin by an overview of the local highway network in the Stone area; examining the proposed vehicular access routes to the proposed Railhead/IMB R site, both temporary and permanent.

2.1.2 I will also provide a geometric and performance analysis of Yarnfield Lane, its junction with the A34, and other key junctions on or joining the A34 construction route corridor. My analyses will examine HS2 Ltd's Transport Assessment of the above junctions in some detail and identify any issues of concern where appropriate.

2.1.3 I will then focus my evidence on the constraints/safety issues that face both vehicular and vulnerable road users during/post the construction of the Stone Railhead/IMB-R.

2.2 Description of Local Highway Network

A34 Stone Road

Overview

2.2.1 The A34 is the key route that connects to junctions 14 and 15 of the M6, to which it runs parallel at approximately 1.5km (1 mile) to the east **[Slide 1]**. As such, the A34 represents the only feasible alternative route to the M6 when incidents occur between these junctions, and the route used by the West Midland Ambulance Service between the two main hospitals (the County Hospital at Stafford, and the Royal Stoke Hospital). It is also the key route used by the other emergency services, including notably the Staffordshire Fire and Rescue Service, which has a main fire station located at the Fillybrooks on the A34 at Stone.

2.2.2 There are two further junctions on this section of the A34 corridor that are directly impacted by HS2 construction traffic, i.e. A34/A520/B5026 and the A34/A51/Brooms Road. An individual assessment of these junctions will be examined later in this proof of evidence.

Yarnfield Lane

Overview

- 2.2.3 Yarnfield Lane is the primary means of access for the village to/from the town of Stone, which is the nearest main town to Yarnfield, and where many people will work, or children (older than the age of nine - Year 6) will attend school. .
- 2.2.4 It is also the main access for the village to the primary road network, i.e. the A34, which (in this area) is the main A-Class road that connects Stafford (in the south) to Stoke-on-Trent and Newcastle-under-Lyme on the north. The junction of Yarnfield Lane with the A34 is in the format of a priority junction.
- 2.2.5 For first 15 months of construction, Yarnfield Lane will become the primary access route to Railhead compounds while new M6 access slip roads constructed.
- 2.2.6 During that initial period it may be necessary for lane closures and even temporary closures of Yarnfield Lane. In such situations access towards the A34 and Stone will be restricted to two alternatives, both of which will be subject to interruptions by the construction of the HS2 mainline.

Section of Yarnfield Lane affected by HS2 construction traffic

- 2.2.7 The section of Yarnfield Lane affected by HS2 construction traffic extends from approximately 400m east of the village boundary, near Moss Lane, and then rises over the M6 before dropping down to form a priority junction with the A34 trunk road. **[Slide 2]**
- 2.2.8 This narrow country lane, which is between 5.3m and 5.7m wide, has a 7.5 tonne weight restriction throughout its length. **[Slide 3 and 4]** This is due in part to its width, but also has poor alignment and a steep 150m section at the eastern end near the A34. Its priority junction with the A34 is totally unsuitable to facilitate the movement of HGVs.
- 2.2.9 It should be noted that despite the lack of footways, the limited bus service results in residents having to seek access to and from Stone on foot, which is a somewhat hazardous task on certain sections of the lane.

2.3 Yarnfield Lane/A34 Junction Analysis

Junction description

- 2.3.1 Whilst the HS2s Transport Assessment at this location focuses solely on the interaction of Yarnfield Lane and the A34, it is important that an adjoining side road on the east side of the A34 (Trent Road), which is located 70m north of this intersection, is included in this appraisal. **[Slide 5]**
- 2.3.2 Yarnfield Lane forms a priority junction with the A34 which is a dual carriageway. It cannot facilitate the safe movement of HGVs either into or out of Yarnfield Lane due to its geometric shortfalls.
- 2.3.3 It has a poor accident record, all involving right turners from Yarnfield Lane.
- 2.3.4 Depth of central reserve gap and sub-standard length of acceleration and deceleration lanes are all factors that are well below the standards required within TD42/95 of the Design Manual for Roads and Bridges (DMRB).
- 2.3.5 In my opinion the layout of the Yarnfield Lane /A34 junction is totally unsuitable for HGV traffic.

Review of HS2 Ltd Junction Analysis

- 2.3.6 Concerns over the relevance of the original count data coupled with optimistic geometric data input, mean that the capacity results are not reliable. There are also errors in construction traffic input data (Ref Tables 279 & 290).

- 2.3.7 I concur with the Highway Authority (Staffordshire County Council), who also raised some of the above issues, that this form of junction is not fit for the purpose of facilitating the safe movement of HGVs.

2.4 Junction analysis at A34 Walton island

- 2.4.1 The junction analysis carried out by HS2 Ltd, again underestimates the current traffic congestion at this junction, with only limited queues predicted in the 2016 peak periods. This is at odds with the Highway Authority's view that the junction is already at capacity and a count **[Slide 6]** submitted in a recent planning application shows flows through this junction in 2010 to be far higher than those utilised in the 2016, and almost equal to the 2023, baseline analysis in Table 282.
- 2.4.2 The future year scenarios also fail to include committed development of up to 500 houses at Walton Hill, which is currently under construction, and accesses directly onto Eccleshall Road.
- 2.4.3 Notwithstanding the above underestimation of the situation, the 2023+HS2 AM Peak hour queue lengths of up to 204 PCUs are predicted on the A34, with a 109 PCU PM peak queue predicted on the Eccleshall Road approach. **[Slides 7 and 8]**
- 2.4.4 Such unprecedented levels of congestion will cause rat running around Stone town centre, and via Yarnfield Lane to avoid long delays.
- 2.4.5 Given that the Highway Authority has already stated that this junction is "*over capacity during peak hours*" (Ref. para.13.1.4 SCC Petition) and that there is no "*scope for improvement*", it is therefore vital that HS2 Ltd should seek alternative routes for its construction traffic to avoid this junction.

2.5 B5026 Eccleshall Road/Pirehill Lane

Junction description

- 2.5.1 The B5026 Eccleshall Road provides construction routes to a compound and transfer node associated with Yarnfield South Embankment and Yarlet North Cutting and Pirehill Lane will be a construction route to the Yarlet Embankment Satellite compound.
- 2.5.2 Pirehill Lane is a residential street that has access to the B5026 via a slightly staggered left/right priority junction with Lamb lane. It provides access to Walton residential estate and is the main access to Walton Priory Middle School.

Review of HS2 Ltd Junction analysis

- 2.5.3 HS2 Ltd's analysis of this junction is misleading. Table 289 shows that the 2023+HS2 will result in a substantial queue on Pirehill Lane in the AM peak but in the PM peak virtually no queue. Whilst one would assume, on examining these figures, that you will be delayed in the morning and will have no problem exiting Pirehill Lane in the evening, nothing could be further from the reality.
- 2.5.4 As referred to above, the queue back along Eccleshall Road from the Walton Island in the PM peak 109 PCUs, which effectively means that it will be beyond the exit of Pirehill Lane. Not the scenario that is presented by HS2 Ltd in analysing this junction in isolation.
- 2.5.5 The whole process of examining junctions in isolation, as undertaken by HS2 Ltd, is that it fails to highlight issues such as this, and does not take into account the impact on the local network which will result from rat running to avoid such delays. As will be demonstrated later this issue is a key flaw in the Environmental Statement's Transport Assessment.
- 2.5.6 SCC has stated that this residential street is totally unsuitable for HGV construction traffic,

2.6 A34/A51 Stone Bypass/Brooms Road Junction analysis

- 2.6.1 Yet again the 2016 baseline assessment produced in Table 256 produces queue lengths that do not correspond to the current situation at this location.
- 2.6.2 There has been concern over the years regarding the ability for Brooms Road traffic to gain access onto the roundabout particularly in the PM Peak. However as can be seen in Table 256, no queues are predicted on this arm in 2016, and even in Table 281, a queue of only 3 PCUs is predicted for the 2023+HS2 scenario.
- 2.6.3 The lack of calibration of the HS2 Ltd analysis with the current situation has resulted in the Highway Authority requesting HS2 Ltd to “review capacity” at this location.
- 2.6.4 Notwithstanding the above concern as to the validity of the results, the optimistic HS2 Ltd analysis of this junction produces extensive queue lengths on the A51. Table 281, identifies that the queue on the A51 Stone Bypass in the AM Peak period increases from 53 PCUs in 2023 baseline to 116 PCUs with HS2 traffic. ie a 100% increase in the queue length. **[Slide 9]**
- 2.6.5 As stated previously, such large queue lengths will create unacceptable delays and drivers will naturally attempt to divert to less congested routes. It can be seen that as the queue starts to back up along the A51, drivers seeking to travel north along the A34 have only one alternative and that is to turn right into Lichfield Road. Again via this route they will travel through a residential area to gain access to Stone Town Centre gyratory system and then re-join the A34 via Newcastle Road.
- 2.6.6 Once again this will simply compound the congestion and conflict with vulnerable road users within the Town Centre which may already be experiencing such problems from southbound traffic diverted due to long delays at Walton Island.

2.7 Summary of Junction Analyses

- 2.7.1 In a 2km stretch of the A34 trunk road HS2 has analysed 3 key junctions, i.e. at Yarnfield Lane, Walton Island and at the A51.
- 2.7.2 SCC has raised concerns regarding the modelling and/or traffic data at two of these and at the other, Walton Island, states that it is already at capacity with no real scope to improve it.
- 2.7.3 To this end, I therefore concur with the Highway Authority’s repeated requests as documented in both its formal Response and now at the petitioning stage, that Yarnfield Lane, Eccleshall Road, Pirehill Lane and even this section of the A34, are totally unsuitable for use as HGV construction routes and that HS2 Ltd construct a haul route at an early stage to allow access to compounds served by the above routes and look to access them through the adjacent motorway services or other alternative options.
- 2.7.4 In the absence of such a solution, I conclude that the proposal to site a Railhead/IMB-R at Stone is unacceptable in transport terms.

2.8 Access/Safety issues regarding servicing the Railhead Compounds

Issues to consider

- 2.8.1 As outlined above, various construction/timescale scenarios dictate the various methods of construction traffic accessing/egressing the compounds around the Railhead site.
- 2.8.2 For the first 15 months, access to the compounds will only be via Yarnfield Lane whilst new slip roads off the M6 are constructed.
- 2.8.3 However, before HGV construction traffic can access/egress Yarnfield Lane, two additional issues have to be resolved.

- 2.8.4 First, a suitable junction with the A34 has to be constructed to facilitate the safe movement of HGVs into and out of Yarnfield Lane
- 2.8.5 Secondly, Yarnfield Lane has to be widened to accommodate safe two-way movement of HGVs. HS2 Ltd's proposal to widen to 6m is totally unacceptable. It would be disproportionate to cause the devastation of trees verge and hedgerows for less than an average of 0.5m width increase for two-way HGV trips on a bus route.
- 2.8.6 The minimum carriageway width on a local distributor with a bus route and/or high levels of HGVs is 6.75m. To provide less will create unacceptable safety issues. **[Slides 10 and 11]**
- 2.8.7 The widening of Yarnfield Lane will necessitate, lane closures and shuttle working, which will exacerbate the difficulties and dangers pedestrians face using the lane. Available space alongside shuttle workings will be very limited and expose vulnerable road users to a higher risk of conflict with vehicles.
- 2.8.8 In addition, HS2 Ltd does not propose to improve the steep gradient of the realigned eastern end of Yarnfield Lane, which is one of the reasons that Yarnfield Lane currently has a 7.5 tonne weight restriction.
- 2.8.9 I am also concerned how pedestrians and cyclists, which would have had to travel under the Stone Railhead/IMB R and mainline railway via a deep cutting, and along a road with slightly wider carriageway, but with less verge than previously available, and be exposed to between 400-1200 HGVs per day, will feel in any way that the proposals "*better the existing geometry*". I therefore must take issue with HS2 Ltd's claims, which I consider to be wrong in every respect.
- 2.8.10 Since the new Yarnfield Lane overbridge will not be available until July 2023, all HGVs accessing/egressing the motorway will have to utilise the existing overbridge until its replacement is available.
- 2.8.11 The existing bridge over the motorway (and possibly the new one) is only 5.45m wide, which is too narrow for the safe two-way passage of HGVs. Shuttle working with traffic lights will be required at bottom of ramps for first 2.5 years. This will create long delays on Yarnfield Lane particularly when up to 735 HGVs per day are arriving at the Railhead compounds. This delay will impact on access to the Yarnfield North Embankment Transfer Node. with the possibility of queueing on Yarnfield Lane.
- 2.8.12 The proposed location of the main vehicle access point into the Railhead from Yarnfield Lane is a major safety concern. The vertical alignment of Yarnfield Lane from the new M6 overbridge down to the railhead underbridge will reduce driver awareness of vehicles entering/leaving the facility. As (and when) available, the awareness of this access point, for drivers on Yarnfield Lane, either on the new bridge or emerging from under the Railhead, will be limited.
- 2.8.13 In my opinion, the required visibility for the access will not be achieved, resulting in a high risk of vehicle conflict and this would not be reviewed favourably when submitted for a safety audit.

3. Aldersey's Rough alternative Option 9.5*

3.1 Highways access/egress via Keele Services

Introduction

- 3.1.1 One of the fundamental considerations when selecting where to build a Railhead site, is that, wherever possible, construction traffic should primarily utilise the strategic and primary roads and avoid impacting on the local highway network and the communities they serve.

- 3.1.2 However, in trying to achieve the above, it may have consequences for the Strategic and primary routes which, by default, permeate down onto the local highway network as is witnessed at Stone.
- 3.1.3 The Sift analysis, produced by HS2 Ltd, identifies two new egress routes from the M6 onto Three Mile Lane, which will create considerable disruption to the M6 running lanes, whilst being constructed.
- 3.1.4 These options, along with our own alternatives, are described below. **[Slides 12 and 13]**
- 3.1.5 With regard to northbound construction traffic on the M6, four egress (NE) and four access (NA) options are identified and for the Southbound, three egress (SE) options and two access (SA) options were identified.
- 3.1.6 Highways England has a motorway maintenance depot on the perimeter of the northbound side of the Keele Services site, which has direct access onto Three Mile Lane. **[Slide 14]** There is also a rear service access to the southbound lorry park from Three Mile Lane.
- 3.1.7 Various permutations of access and egress can be utilised and the optimum would, in part, depend on discussions between Highways England and the operators of Keele Services.
- 3.1.8 Clearly all options that utilise the existing service slip roads have the advantage of being far cheaper to construct, but more importantly, have virtually no impact on M6 through traffic.
- 3.1.9 Some access/egress options to the service area can be combined to share the same link roads, thereby reducing/sharing construction and security costs. Some options also provide the opportunity for drivers to utilise the service station refuelling facilities.
- 3.1.10 In terms of cost and immediate availability, southbound egress/access via the highway depot service road (NE2 and NA2) and southbound egress/access via the rear service road (SE1 and SA1) would be the preferred option.
- 3.1.11 However, if Aldersey's Rough was utilised to provide construction access to the HS2 compounds at Whitmore and Madeley Compounds (see below), then the additional traffic levels may well justify constructing the alternative southbound egress/access routes of SE2 and SA2, as well as the northbound routes via NE3 and NA3.

4. Construction facilities at Stone without Railhead/IMB-R

4.1 Proposed HGV access to the Yarnfield Lane construction compounds

Introduction

- 4.1.1 Consideration has also been given to the construction access requirements that would be required to support the construction of the remaining elements of the project if the Railhead/IMB was relocated from Stone to Aldersey's Rough.
- 4.1.2 In such a scenario, the construction facilities required from Yarnfield Lane should be able to be reduced in scale to match the reduced construction effort that would be required to build the remaining HS2 mainline related infrastructure.
- 4.1.3 New emergency slip roads constructed for the SMART motorway improvement Junctions 13-15, will be immediately available for HGVs to access Yarnfield Lane at the start of the contract period. **[Slides 15, 16 and 17]**
- 4.1.4 The re-location of the railhead results in no requirement to construct a new overbridge or demolition of the existing one, and therefore no motorway lane restrictions or closures required regarding these issues.

- 4.1.5 The major reduction in HGV movements now presents the opportunity to restrict construction traffic utilising Yarnfield Lane, between the A34 and the HS2 mainline compounds to vehicles under 7.5tonnes, i.e. in line with the current restriction. All HGV movements would only be permitted via the M6 slips. This would significantly reduce the high risk of vehicle conflicts due to restricted carriageway widths.
- 4.1.6 This would also remove the necessity to demolish trees, verges and hedgerows, thereby enabling the rural environment of this lane to be retained. The impact on vulnerable road users would also be dramatically reduced.
- 4.1.7 The Yarnfield Lane/A34 junction would need to be re-assessed in terms of future requirements to ascertain the most appropriate junction format, and the reduction in construction traffic via the A34 would also assist in reducing its impact on the Walton Island and A34/A51 junction.
- 4.1.8 The relocation of the Stone Railhead/IMB-R will also substantially reduce the work that would be required to be carried out from the Yarlet North Satellite Compound that would be accessed from the B5026 Eccleshall Road. The realigned B5026 Eccleshall Road and accompanying overbridge, which would now only be required to cross the HS2 mainline could also be reduced in length by approximately 40%.
- 4.1.9 These changes present an opportunity of accessing these facilities via alternative routes, at least for part of the construction operations. This could be achieved by constructing a haul road parallel and alongside the HS2 mainline from the Yarlet South Cutting Satellite Compound located on the A34, which is an idea supported by Staffordshire County Council.

5. Other Road Transport Benefits from using Aldersey's Rough

5.1 Introduction

- 5.1.1 As mentioned previously in this proof of evidence, Aldersey's Rough also offers the potential to provide direct access to the Whitmore Heath and Madeley HS2 mainline construction compounds. **[Slides 18 and 19]**
- 5.1.2 There is therefore an opportunity to reduce the impacts on numerous local roads including the A519, A5182, A53, A51, A525 and the A500. However, the main focus of my evidence at this point will be J15 of the M6.

5.2 Review of Junction 15 of the M6

Description

- 5.2.1 From the details shown on Figure 5.1, at M6 J15, the northbound and southbound off slip roads converge via a signalised junction and are then directly connected by a short link into a major roundabout known as the Hanchurch Interchange. This roundabout, coupled with the adjoining signalised A519/A5182 junction in effect controls all the movements of the construction traffic.

Review of HS2 Ltd's Junction analysis

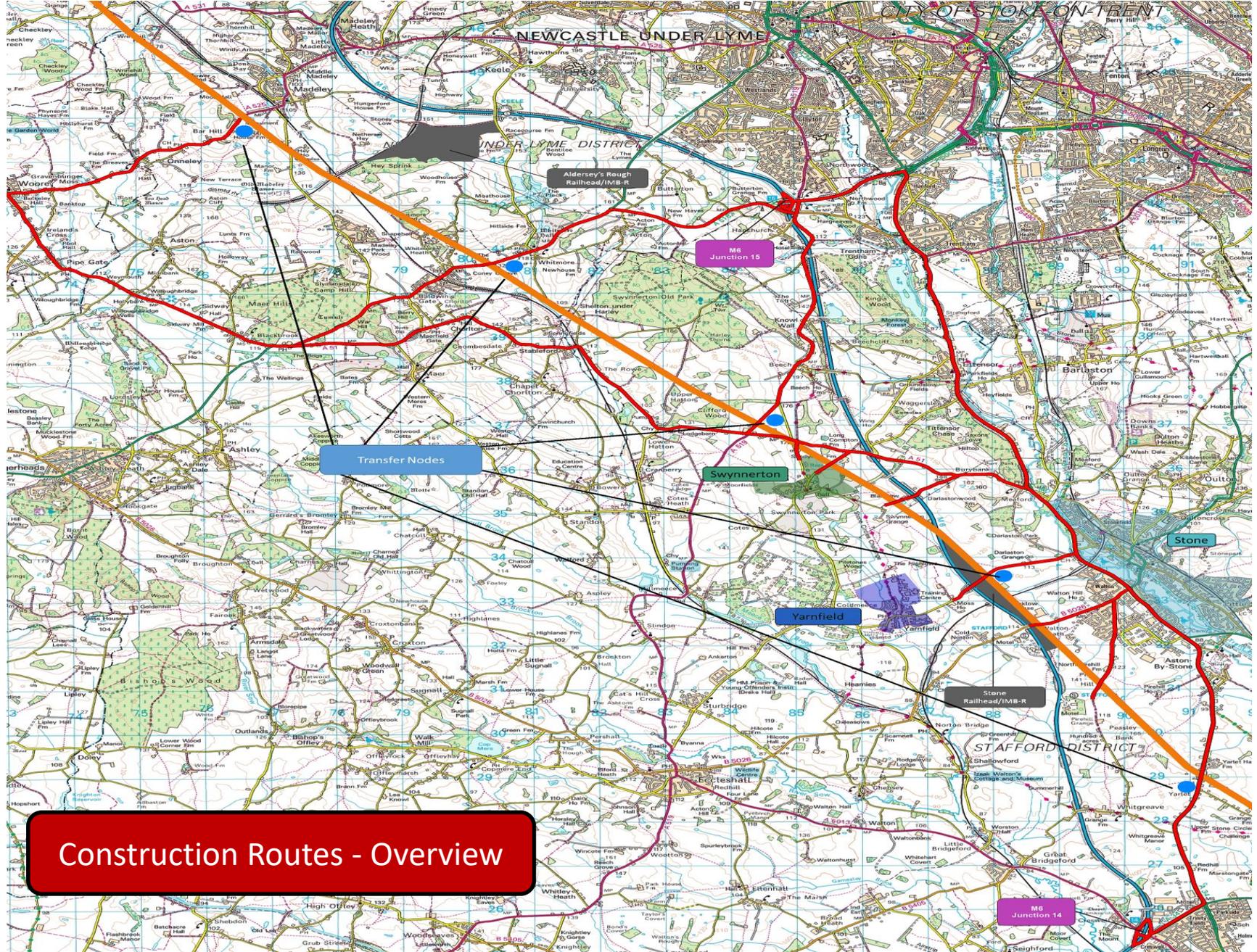
- 5.2.2 Tables 274 and 300 of the Transport Assessment that accompanied the ES July 2017 show the 2016/ 2023 Baseline and 2023 +HS2 assessments, respectively, of the converging north and southbound exit slips at M6 Junction 15 which is signalised. This trip data is based on the M6 J13-15 SATURN Model, and the queues shown are average link queues. HS2 Ltd's analysis using this data produces virtually no queueing on these off slips for all three scenarios.
- 5.2.3 Furthermore, examination of the data/flows utilised by HS2 Ltd raises some dramatic errors in its analysis.

- 5.2.4 The predicted queues for all three scenarios at the Hanchurch Roundabout and the A519/A5182 signal junction respectively have been extracted from Tables 262, 271, 273, 287, 296 and 300 of the HS2 Transport Assessment. **[Slide 20-22]**
- 5.2.5 When examined in isolation, as produced in HS2 Ltd's Transport Assessment, the predicted queue lengths for each individual junction are of great concern. However, if the Transport Assessment had analysed this information more effectively, the magnitude of these individual queue lengths on the adjoining highway would have been immediately apparent, as the effects in combination are significantly greater. **[Slide 23-24]**
- 5.2.6 The critical factor in the operation of the interchange is the storage capacity of the link road between the Hanchurch Interchange roundabout and the A519/A5182 signals. The predicted queue lengths far exceed the capacity of this road and the ultimate consequence of this will be **gridlock**.
- 5.2.7 This will occur each day for the entire construction period of four years, and has far reaching implications in terms of the inability for commuters, commercial vehicles, construction traffic and the emergency services to access/egress all the main destinations in the area, as well as all of the HS2 construction compounds located in the Whitmore Heath and Madeley areas. This problem could be offset by using Aldersey's Rough as a means of providing direct access to these construction sites.

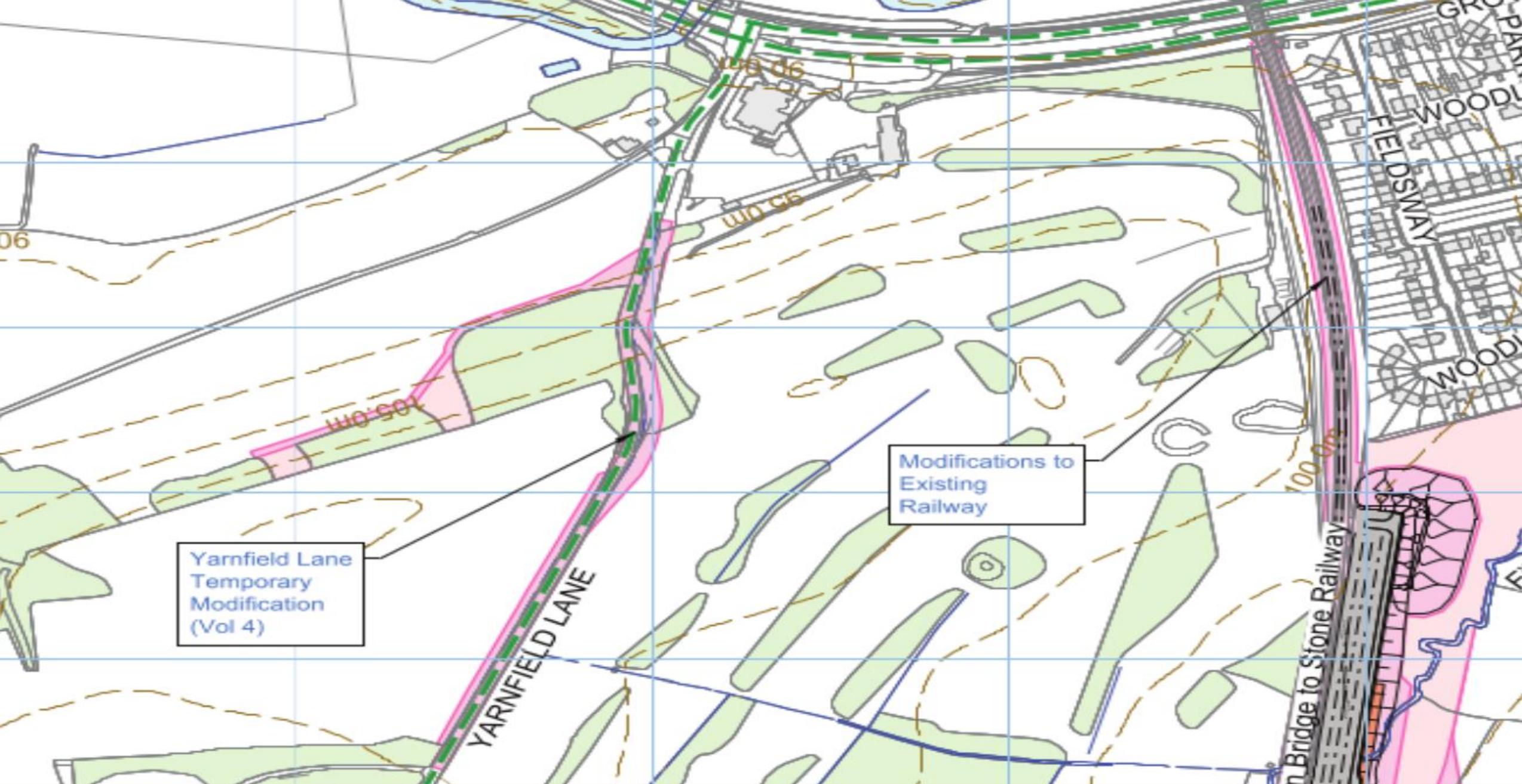
6. Conclusions

- 6.1.1 It is concluded from the evidence that I have presented that the HS2 Ltd approach to the assessment of road transport related issues at both Stone and Aldersey's Rough is flawed.
- 6.1.2 With respect the HS2 Ltd's assessment of the transport effects of the construction of the Stone Railhead/IMB-R, there has been no accurate calibration of the baseline analysis to accurately reflect the current congestion levels. However, even when considering its very optimistic analysis, it is clear that key junctions in the Stone area will be subject to daily congestion during both the peak periods.
- 6.1.3 In addition, the failure to examine the cumulative impact of the congestion created at these individual junctions has also completely underestimated the impacts on the local highway network in terms of both congestion and highway safety.
- 6.1.4 HS2 Ltd has also been in denial about the impacts of its construction operations and traffic on Yarnfield Lane, but now has belatedly accepted that this road will be subject to high levels of HGV traffic for the full four-year long duration of the construction of the Stone Railhead IMB-R. However, the relocation of the facility to Aldersey's Rough would greatly reduce the impacts on Yarnfield Lane and the people that use it, not least because access could be gained by the controlled use of the new emergency slip roads provided as part of the Smart Motorway upgrade.
- 6.1.5 With respect to Parish Councils' proposed alternative Railhead/IMB-R at Aldersey's Rough, this offers much easier, quicker and less disruptive access to the M6 motorway via Keele Services than can be achieved at Stone, together with much less impact on the local road network, which is far less intensively used than in the Stone area.
- 6.1.6 The use of Aldersey's Rough also offers the opportunity to significantly reduce the impact on J15 of the M6, together with other important roads in the local area, which HS2 Ltd is proposing to use as haul routes to its construction compounds in the Whitmore and Madeley areas. This will also benefit other village and towns along these routes, including Woore in Shropshire. This can be achieved by using Aldersey's Rough to provide direct access to the numerous HS2 mainline construction sites at these locations, with access from the highway network being provided from Keele Services.

- 6.1.7 Given the evidence that I have presented, it is absolutely clear to me that the proposed Railhead/IMB-R at Stone should be relocated to Aldersey's Rough to the benefit of stakeholders across North Staffordshire, together with HS2 Ltd itself.



Construction Routes - Overview



Yarnfield Lane
Temporary
Modification
(Vol 4)

Modifications to
Existing
Railway





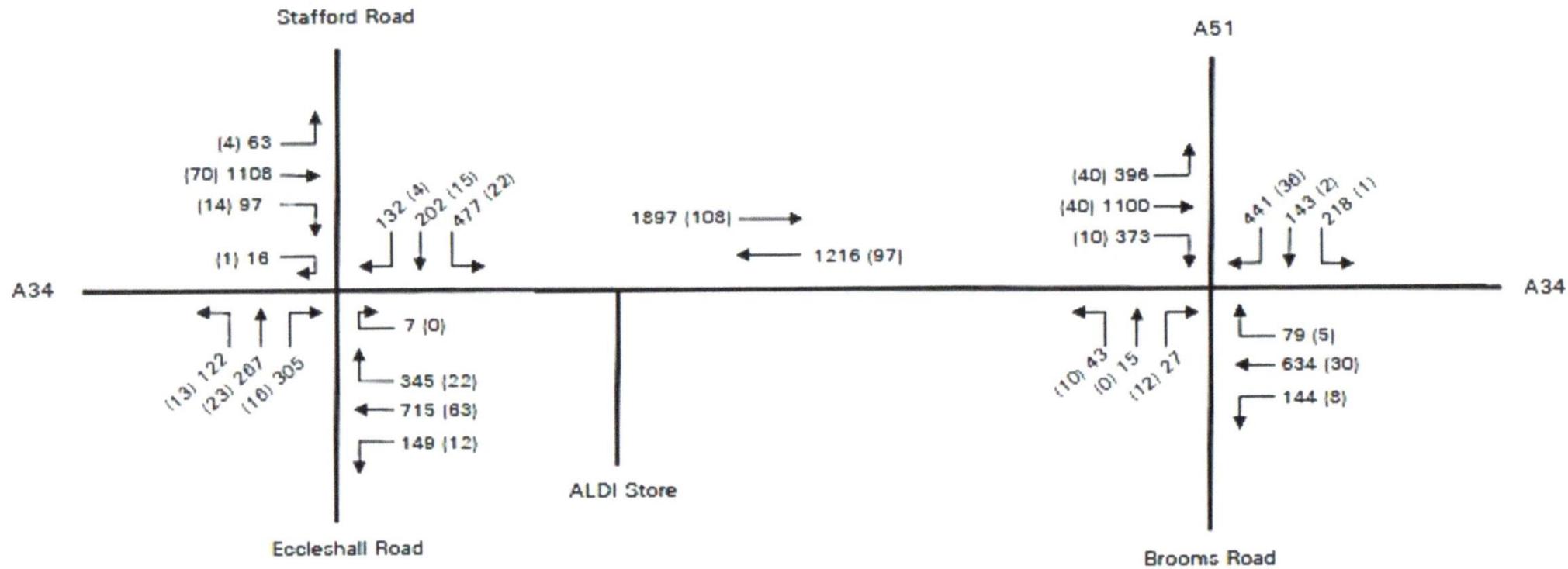
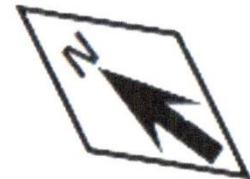


A34

A34

Yarnfield Lane

Yarnfield Lane / A34 Junction



KEY	
457	Total
(18)	HGVs

PM Peak

Stone
Golf Course

Key

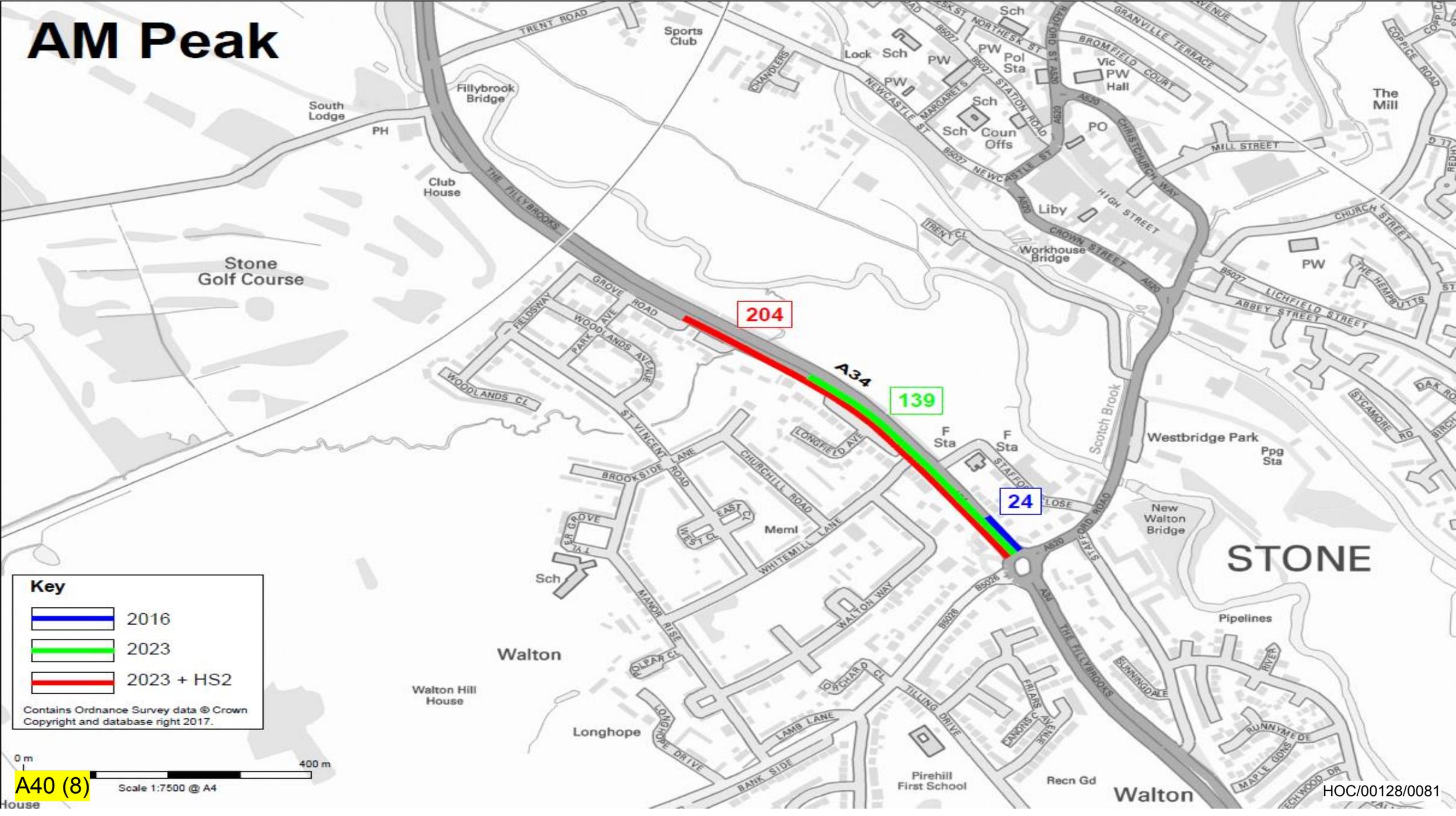
	2016
	2023
	2023 + HS2

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A40 (7)  400 m
Scale 1:7500 @ A4



AM Peak



Stone Golf Course

STONE

Walton

Walton

Key

-  2016
-  2023
-  2023 + HS2

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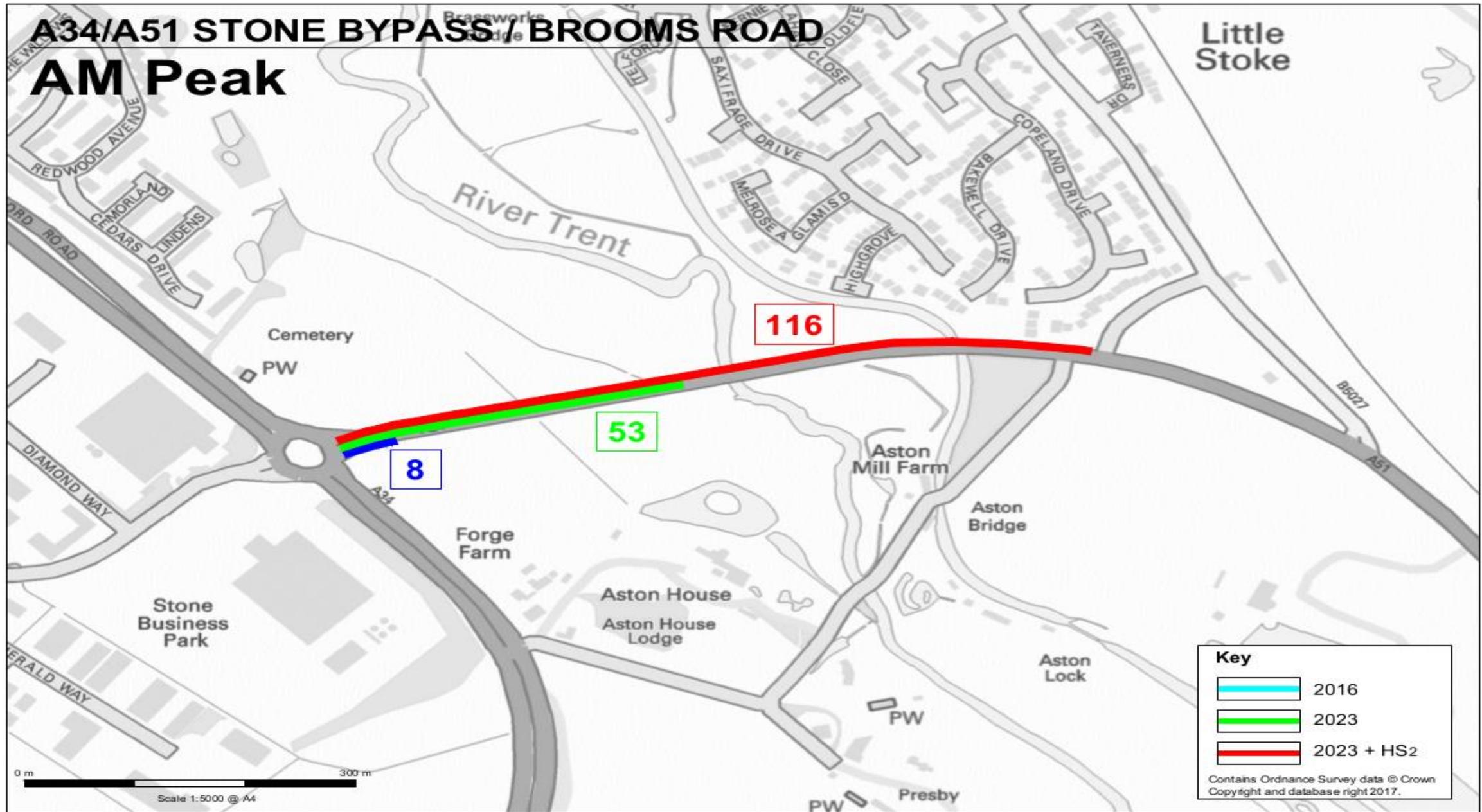
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A40 (8)

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HOC/00128/0081

A34/A51 STONE BYPASS / BROOMS ROAD AM Peak



Key

- 2016
- 2023
- 2023 + HS2

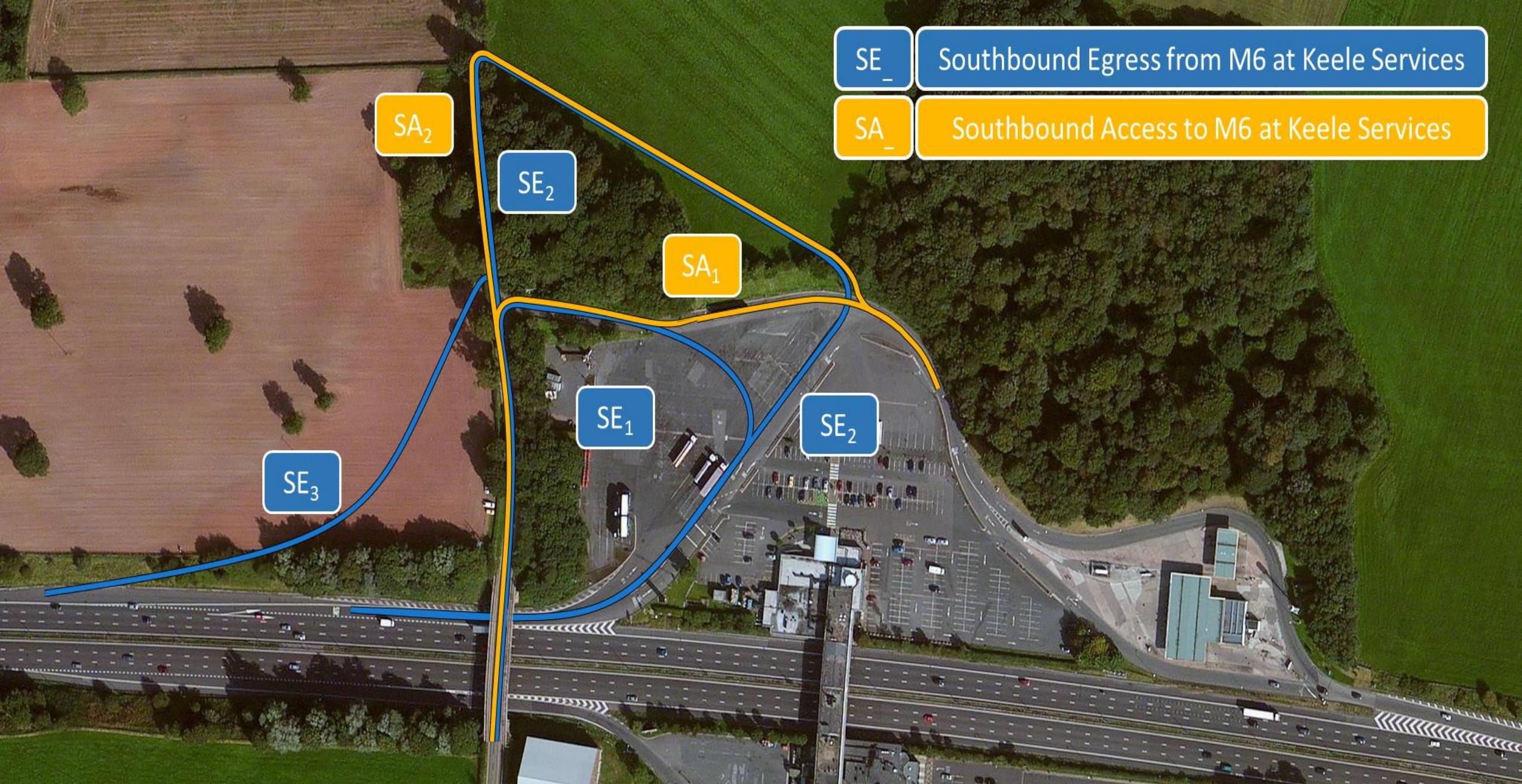
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Vehicle Dimensions - 6 Wheeler

Chassis	Vehicle Size T	Width inc. mirrors m	Chassis length inc body overhang m	Chassis and trailer height lowered* m
Scania	26	3.37	8.03	3.08
DAF	26	2.65	7.9	3.78
Mercedes	26	3.51	8	3.23
Renault	26	3.15	7.7	3.53
Foden	26	3.07	8.19	4.19
MAN	26	2.53	8.1	2.89
Volvo	26	3.18	7.99	4.06
Average		3.07	7.99	3.54

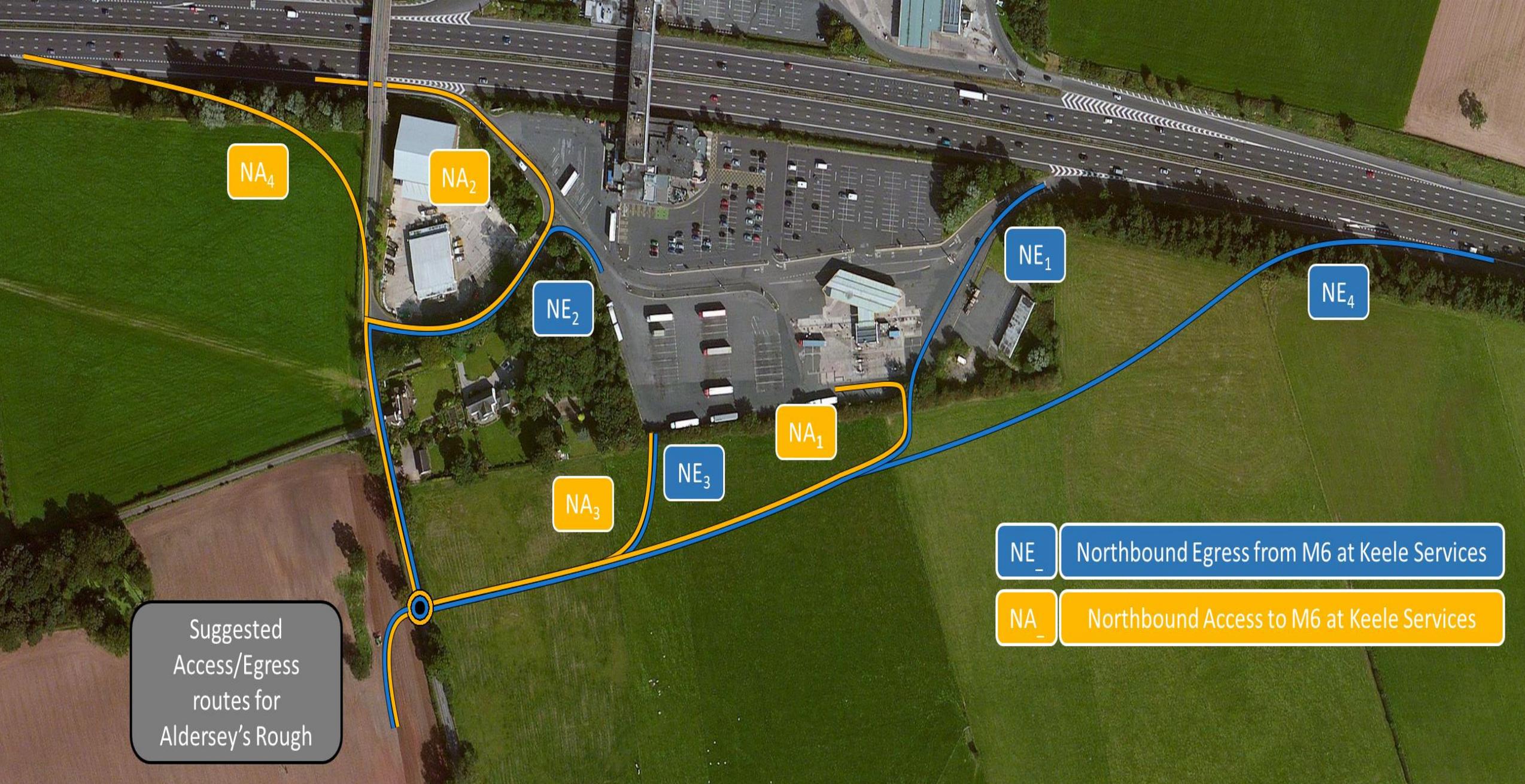
* unladen height and includes exhaust outlet and beacon. **As a rough guide the maximum tip height is 7m**





SE₋ Southbound Egress from M6 at Keele Services

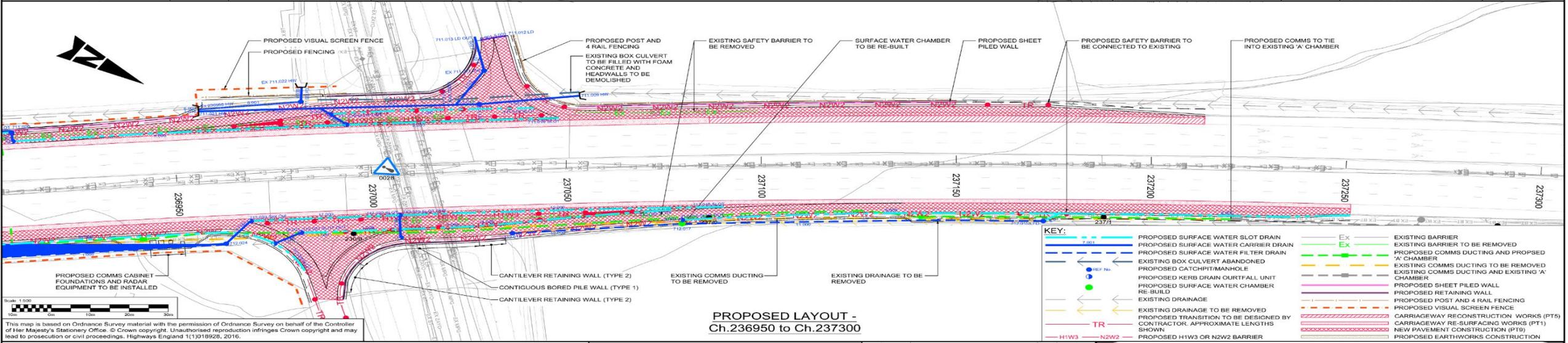
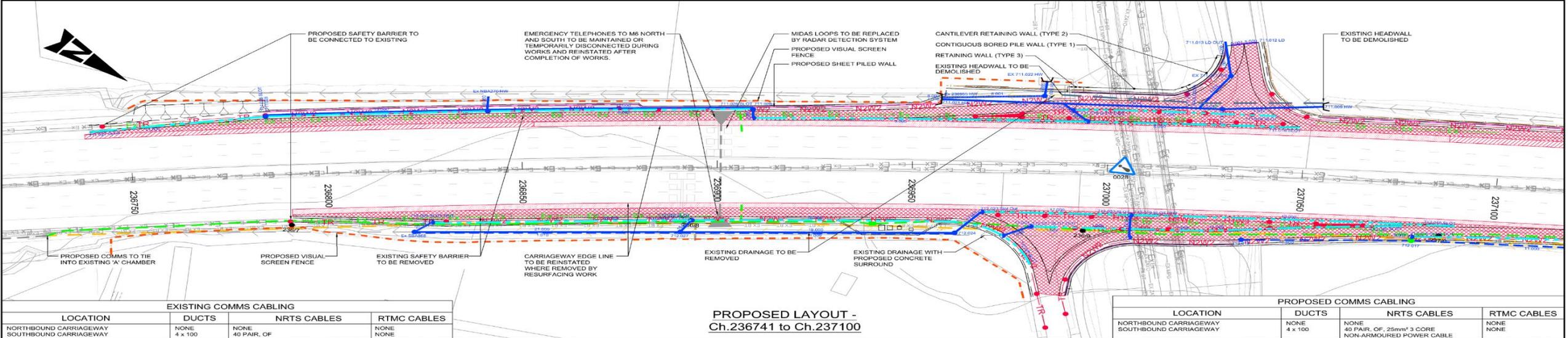
SA₋ Southbound Access to M6 at Keele Services





Three Mile Lane /
Keele Services Access





NOTES:

- WHERE PROPOSED COMMUNICATION CHAMBERS ARE POSITIONED ADJACENT TO THE POSITIVE DRAINAGE SYSTEM, THE CONTRACTOR SHALL PROVIDE A CONNECTION FROM THE CHAMBER WHERE PRACTICABLE. WHERE THE POSITIVE DRAINAGE SYSTEM IS NOT PRESENT THE CONTRACTOR SHALL INCLUDE A SUMP SOAKAWAY DETAIL IN ACCORDANCE WITH MCX 0815. WHERE A CONNECTION TO THE HIGHWAY DRAINAGE NETWORK OR DRAINAGE TO A DITCH IS PRACTICABLE THE CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE IN ACCORDANCE WITH DRAWING NO. HA549346-JUV-TGN-SG-MULTI-DR-TE-1001.
- BEFORE COMMENCEMENT OF WORKS THE CONTRACTOR SHALL VERIFY THE ROUTE OF ALL MOTORWAY COMMUNICATIONS (POWER AND COMMUNICATIONS, LOCAL AND LONGITUDINAL) AND THE LOCATION OF ALL MOTORWAY COMMUNICATIONS EQUIPMENT. THE CONTRACTOR SHALL NOTIFY THE DESIGNER OF ANY DISCREPANCIES TO DETAILS SHOWN ON THE ADVANCE WORKS DRAWINGS OR SITE INFORMATION PROVIDED. THIS SHOULD BE BY THE PROVISION OF COPIES OF PHOTOGRAPHS AND RED LINED, DIMENSIONED 'AS-BUILT' OR 'RECORD DRAWINGS', HIGHLIGHTING ANY IDENTIFIED DISCREPANCIES.
- REFER TO STRUCTURAL DRAWING NOS. HA549346-JUV-SRW-S9-ES2423-DR-S-0003 AND HA549346-JUV-SRW-S9-ES2423-DR-S-0004 FOR RETAINING WALL CONSTRUCTION AND GENERAL ARRANGEMENT.
- FOR DRAINAGE STANDARD DETAILS REFER TO DRAWING NOS. HA549346-JUV-HDG-SG-DE-DR-D-0001 TO 0010.
- CONTRACTOR TO ARRANGE TEMPORARY DIVERSION AND FINAL RE-INSTALLMENT OF CABLES, IN AGREEMENT WITH NRTS AND RTMC, WHERE REQUIRED TO SUIT METHOD OF WORKING FOR ADVANCE WORKS.
- ALL PERMANENT FENCING AND ENVIRONMENTAL BARRIERS SHALL COMPLY WITH CLAUSE 306 OF THE SPECIFICATION FOR HIGHWAY WORKS UNLESS STATED OTHERWISE IN THE 300 SERIES APPENDICES FOR SPECIAL STRUCTURES.
- REFER TO PIPE SCHEDULES HA549346-JUV-HDG-S9-NWK711P-SH-D-0002 HA549346-JUV-HDG-S9-NWK712M-SH-D-0002, HA549346-JUV-HDG-S9-NWK712P-SH-D-0002 AND HA549346-JUV-HDG-S9-NWK711M-SH-D-0002 FOR DRAINAGE REQUIREMENTS.
- FOR PAVEMENT TYPES REFER TO PAVEMENT DRAWING NO. HA549346-JUV-HPV-SG-MULTI-DR-C-1000 AND 700 SERIES APPENDICES OF THE SPECIFICATION FOR HIGHWAY WORKS.

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

The significant residual risks detailed on this drawing are linked to the referencing system within the Design Hazard Log (HA549346-JUV-GEN-SG_PRODUCOV-HS-C-0001). Each risk is given a unique number followed by a letter that corresponds to one of the six stages affected.

Significant Residual Risks

- 0028 ACCESS TO YARNFIELD TURNAROUND - EXISTING TIGHT RADIAT AT MERGE AND DIVERGES MAY CAUSE VEHICLES ENTERING/EXITING THE DEPOT TO MISJUDGE THE ROAD LAYOUT AND COLLIDE WITH ADJACENT HAZARDS OR OTHER VEHICLES.
- REFER TO ENVIRONMENTAL CONSTRAINTS PLAN SHEETS 17 AND 18 FOR ENVIRONMENTAL IMPACT MITIGATION REQUIREMENTS, REMOVAL OF EXISTING VEGETATION ONLY IN AREAS OF NEW CONSTRUCTION.

KEY:

- PROPOSED SURFACE WATER SLOT DRAIN
- PROPOSED SURFACE WATER CARRIER DRAIN
- PROPOSED SURFACE WATER FILTER DRAIN
- EXISTING BOX CULVERT ABANDONED
- PROPOSED CATCHPIT/MANHOLE
- PROPOSED KERB DRAIN CURB/FALL UNIT
- PROPOSED SURFACE WATER CHAMBER RE-BUILT
- EXISTING DRAINAGE
- EXISTING DRAINAGE TO BE REMOVED
- PROPOSED TRANSITION TO BE DESIGNED BY CONTRACTOR, APPROXIMATE LENGTHS SHOWN
- PROPOSED H1W3 OR N2W2 BARRIER
- EXISTING BARRIER
- EXISTING SAFETY BARRIER TO BE REMOVED
- PROPOSED COMMS DUCTING AND PROPOSED 'A' CHAMBER
- EXISTING COMMS DUCTING TO BE REMOVED
- EXISTING COMMS DUCTING AND EXISTING 'A' CHAMBER
- PROPOSED SHEET PILED WALL
- PROPOSED RETAINING WALL
- PROPOSED POST AND 4 RAIL FENCING
- PROPOSED VISUAL SCREEN FENCE
- CARRIAGEWAY RECONSTRUCTION WORKS (PT5)
- CARRIAGEWAY RE-SURFACING WORKS (PT1)
- NEW PAVEMENT CONSTRUCTION (PT6)
- PROPOSED EARTHWORKS CONSTRUCTION

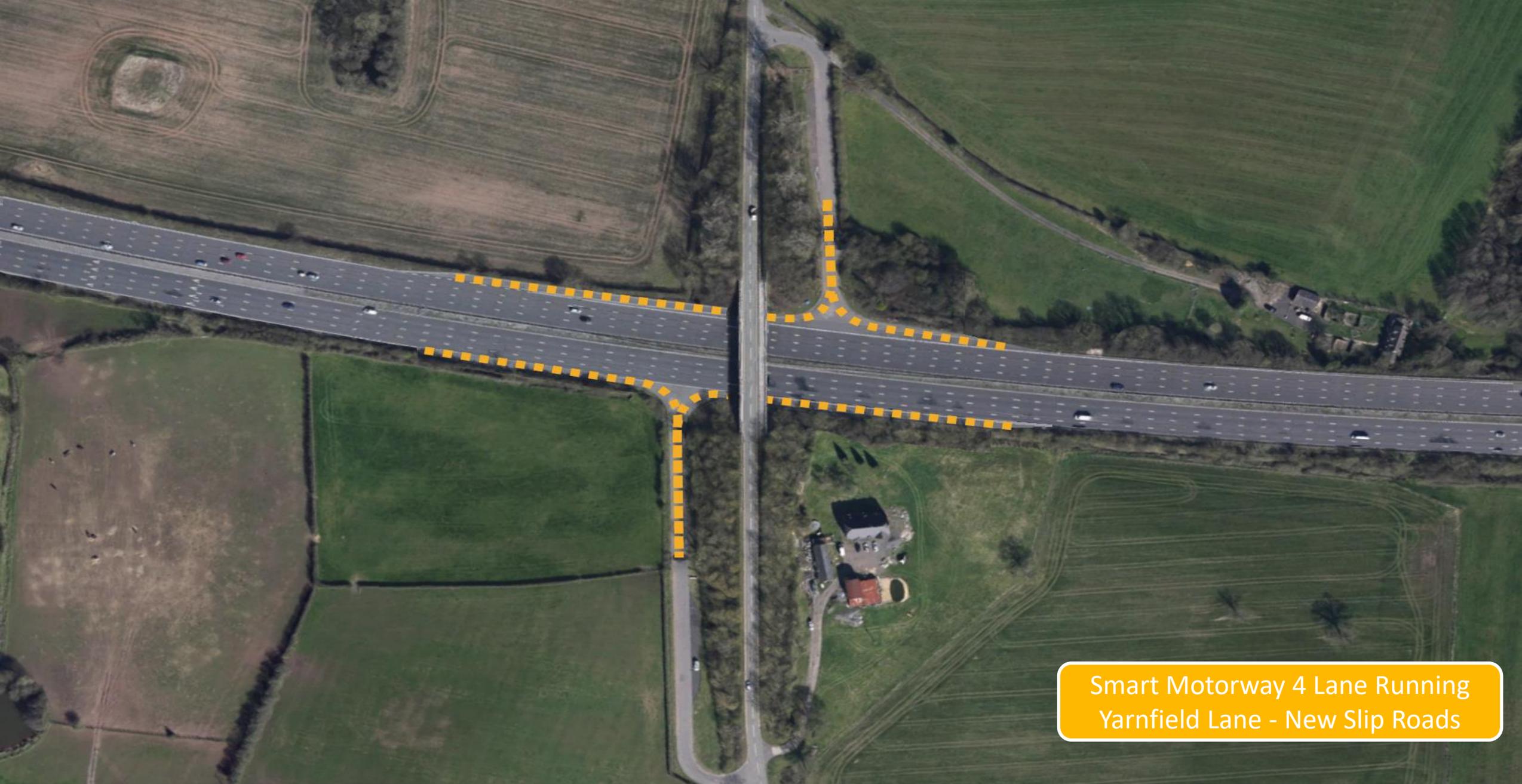
PROPOSED LAYOUT - Ch.236950 to Ch.237300

Scale 1:500

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Rev.	Date	Description	SH	JAG	MSR
PN1	10/10/16	FIRST ISSUE	SH	JAG	MSR
By	Chk'd	App'd			

Smart Motorway 4 Lane Running
Yarnfield Lane - Schematic



Smart Motorway 4 Lane Running
Yarnfield Lane - New Slip Roads



Construction Routes
- M6 Junction 15

Transfer Nodes

Swynnerton

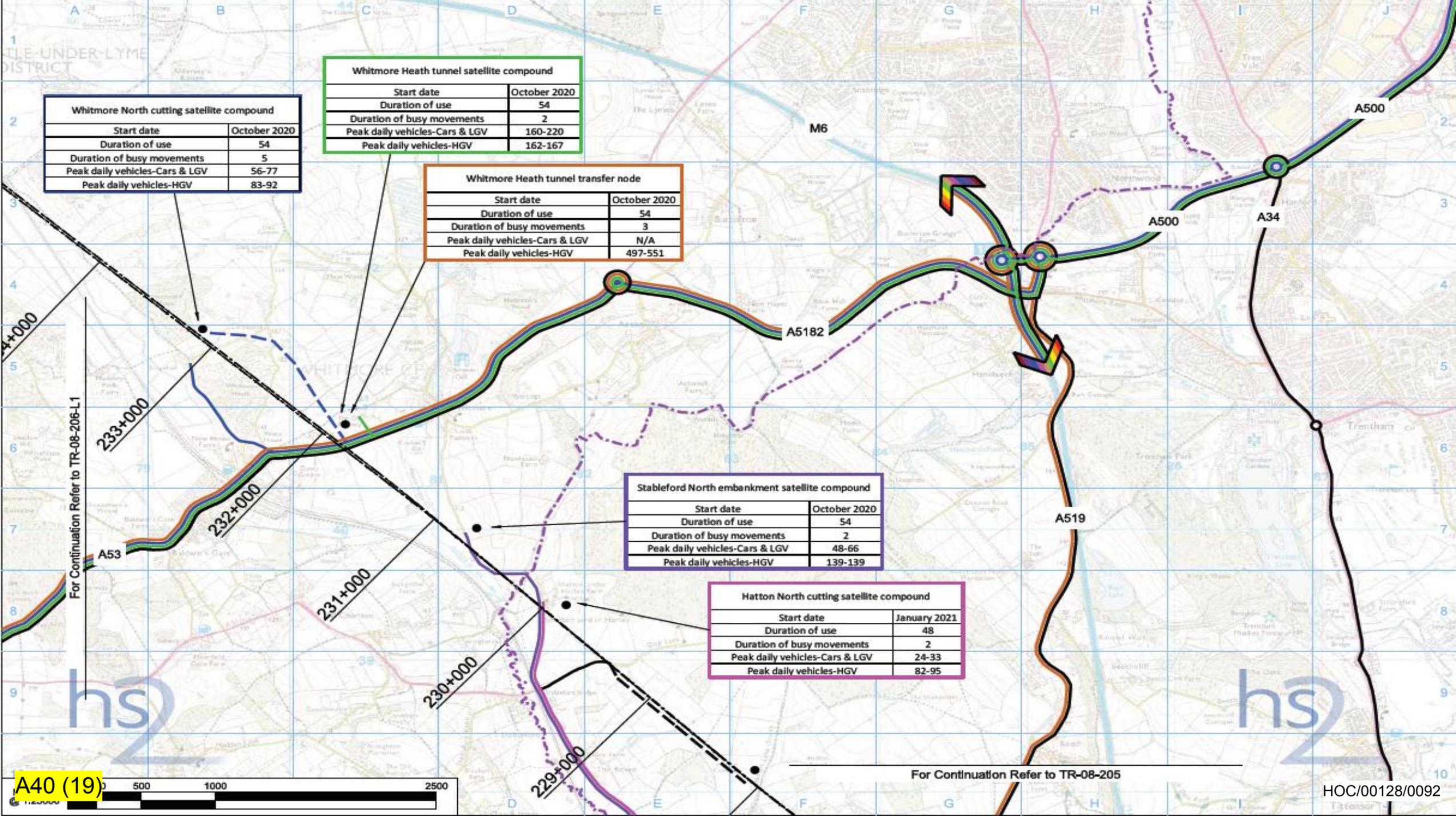
Whitmore North cutting satellite compound	
Start date	October 2020
Duration of use	54
Duration of busy movements	5
Peak daily vehicles-Cars & LGV	56-77
Peak daily vehicles-HGV	83-92

Whitmore Heath tunnel satellite compound	
Start date	October 2020
Duration of use	54
Duration of busy movements	2
Peak daily vehicles-Cars & LGV	160-220
Peak daily vehicles-HGV	162-167

Whitmore Heath tunnel transfer node	
Start date	October 2020
Duration of use	54
Duration of busy movements	3
Peak daily vehicles-Cars & LGV	N/A
Peak daily vehicles-HGV	497-551

Stableford North embankment satellite compound	
Start date	October 2020
Duration of use	54
Duration of busy movements	2
Peak daily vehicles-Cars & LGV	48-66
Peak daily vehicles-HGV	139-139

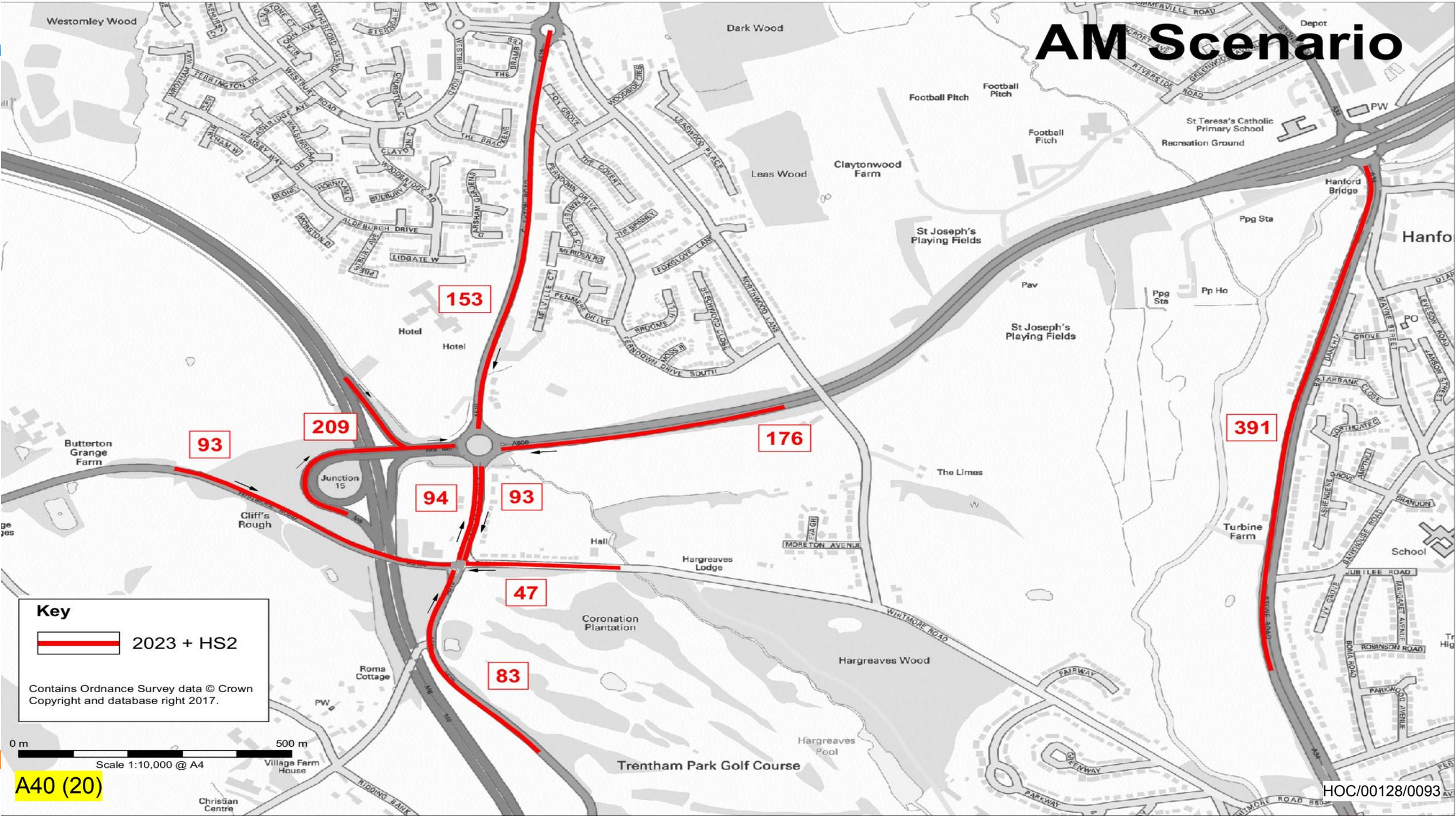
Hatton North cutting satellite compound	
Start date	January 2021
Duration of use	48
Duration of busy movements	2
Peak daily vehicles-Cars & LGV	24-33
Peak daily vehicles-HGV	82-95



For Continuation Refer to TR-08-206-L1

For Continuation Refer to TR-08-205

AM Scenario



Key

 2023 + HS2

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0 m 500 m

Scale 1:10,000 @ A4

A40 (20)

