

EXHIBIT LIST

Reference No: HOC/10008

Petitioner: Stone IMBR

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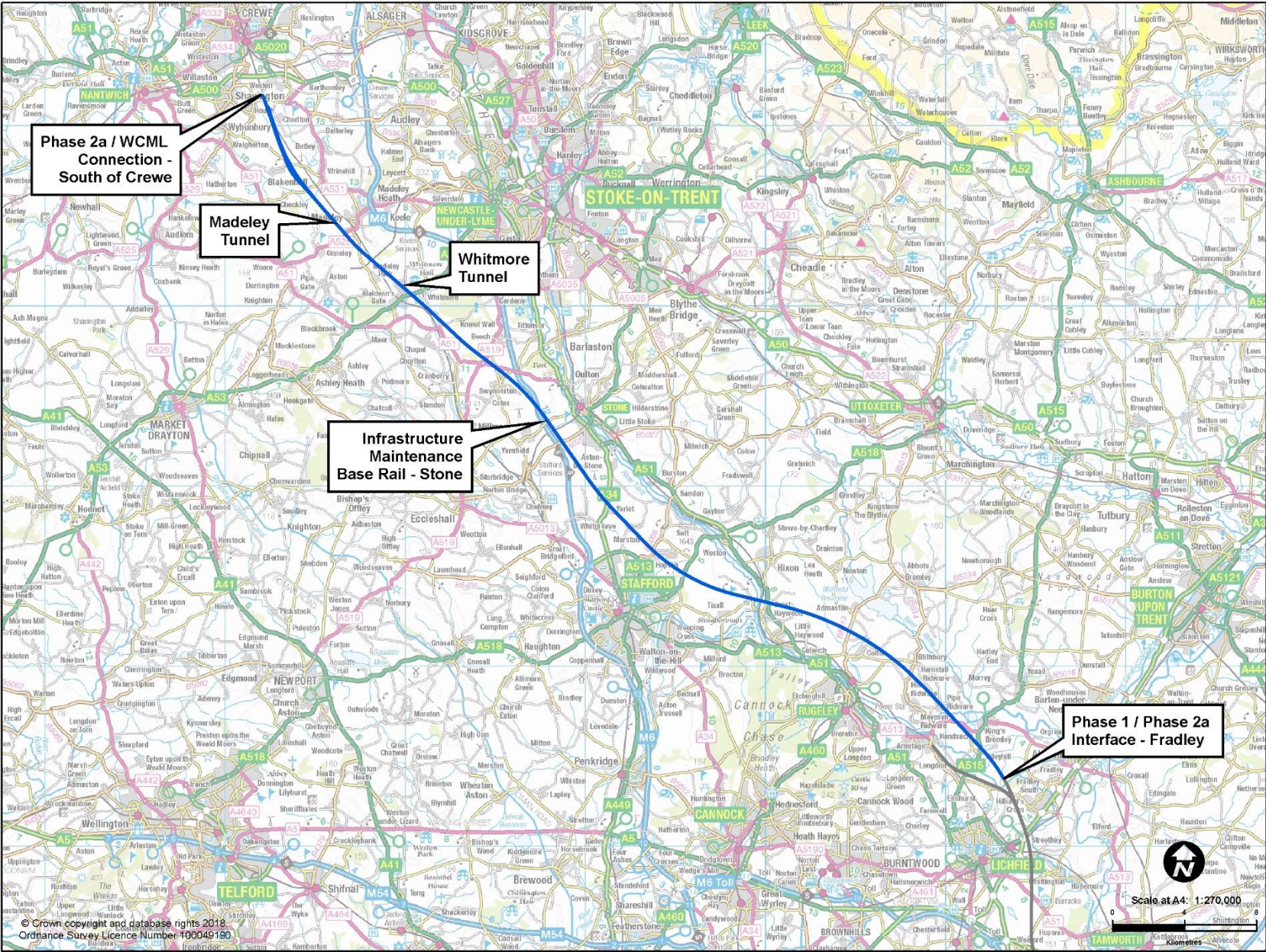
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HS2

Stone Infrastructure Maintenance Base-Rail (IMB-R) & Aldersey's Rough alternative

April 2018

Phase 2a Route Overview



Construction railhead requirements

- Connection to the conventional railway network with capacity for freight trains
- Located away from complex / high risk civil engineering works to allow for a robust construction programme
- Connection to the HS2 main line (preferably in both directions)
- Good connection to the road network
- Suitable space to:
 - i) load and unload trains
 - ii) store construction plant and trains
 - iii) handle and store materials
 - iv) provide management support for the rail systems installation works

Key advantages of Stone Railhead

- Railhead connects to the Norton Bridge to Stone railway. Direct connection to the existing rail network with good train path availability. Limited impact on existing passenger and freight services, with low associated cost.
- Reduced construction programme risk. Railhead located away from complex civil engineering works at mid point on the Phase 2a route.
- Direct access to the strategic road network via the new permanent and temporary M6 slips.

Key disadvantages of Aldersey's Rough location for Railhead

- Extensive works required on West Coast Main Line with high disruption to passenger and freight services.
- Significant works required to bring Stoke to Market Drayton line back into use (rebuild railway to modern standards, overbridge replacement).
- Located between two most complex civil engineering elements on Phase 2a (Whitmore Heath tunnel and Madeley tunnel).
- New road access to / from M6 required through Keele Motorway Service Area.
- Road access to / from M6 through Keele Motorway Service Area would require consent from Highways England and departure from Government policy.
- Road access to / from M6 requires upgrade of Three Mile Lane and construction of a new access road.

Maintenance Base requirements

- Connection to the conventional railway network with capacity for freight trains
- Connection, in both directions, to the HS2 main line
- Good connection to the road network
- Suitable space to:
 - i) load and unload trains
 - ii) store construction plant and trains
 - iii) handle and store materials

Key advantages of Stone location for Maintenance Base

- Direct access to / from Phase 2a railway with limited shunting movements.
- Direct access to / from M6 via permanent southbound slip roads.
- Local access via Yarnfield Lane for staff and suppliers from the local area.
- Location at mid point of Phase 2a route minimises travel time to maintenance works.
- Bounded by existing transport infrastructure and Phase 2a railway.

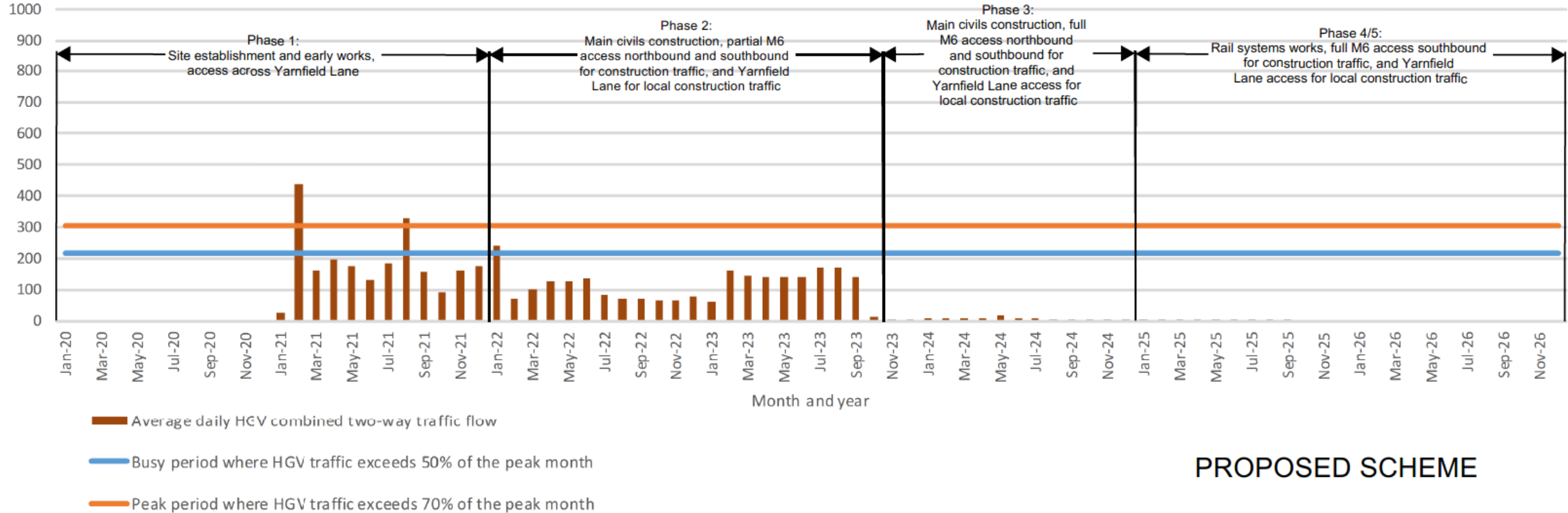
Key disadvantages of Aldersey's Rough location for Maintenance Base

- Rail connection between Maintenance Base and West Coast Main Line.
- Increased requirement for shunting movements.
- Road access to / from M6 Motorway through Keele Motorway Service Area.
- Local road access via Three Mile Lane.

Yarnfield Lane

- Offline realignment of Yarnfield Lane, incorporating new bridge over M6, allowing public highway to remain open during both construction and operation of the Proposed Scheme.
- Temporary lane restrictions for three months and tie-in works over two weekend closures.
- Short weekend closures will be notified to the local community well in advance.

Yarnfield Lane traffic histogram

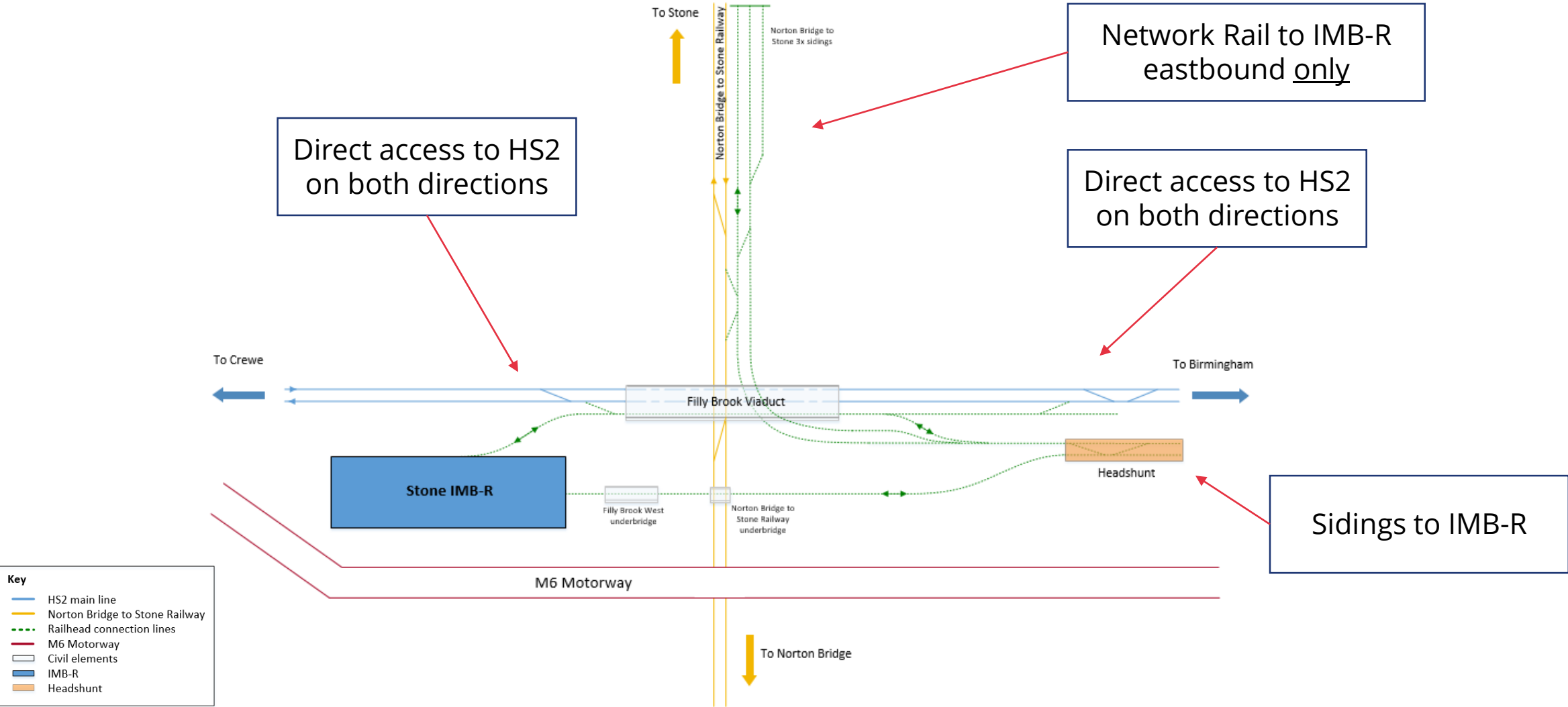


PROPOSED SCHEME

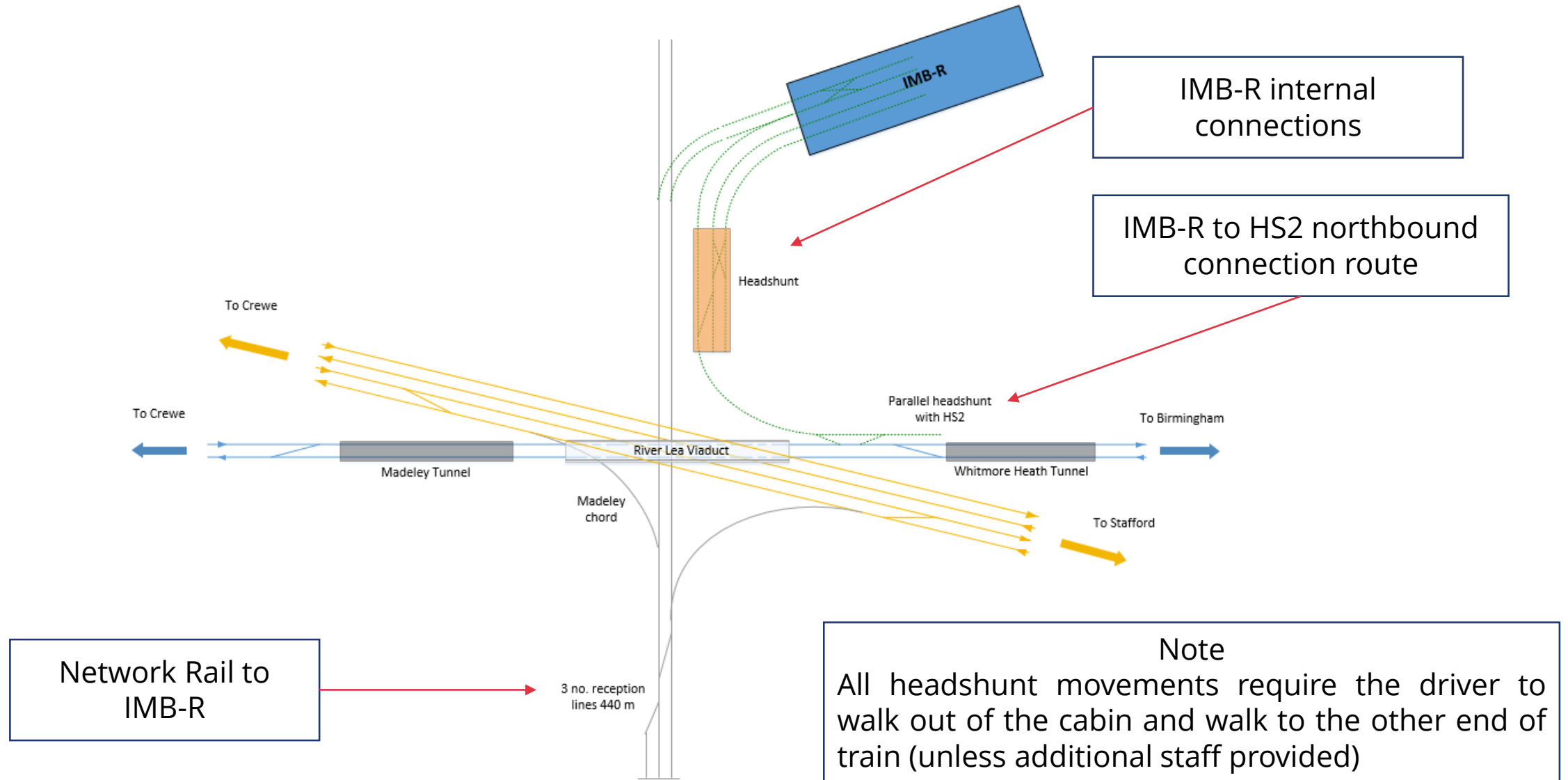
Key avoidance and mitigation measures for Stone Railhead/Maintenance Base

- Landscape bunds and associated planting will be used to mitigate visual impacts, including views from Stone, Yarnfield, nearby roads and Public Rights of Way
- Earthwork bunds will be graded helping to integrate the Proposed Scheme into the surrounding landscape
- Low level, automated lighting will be used in all external lighting in the Maintenance Base
- Operational noise will be mitigated through the design of buildings and plant
- Noise barrier, up to 2m in height, on eastern side of Norton Bridge to Stone sidings
- Woodland, grassland and wetland habitat creation to compensate for habitat loss
- Flood mitigation, including replacement floodplain storage areas

Stone – Rail Access



Aldersey's Rough – Rail Access



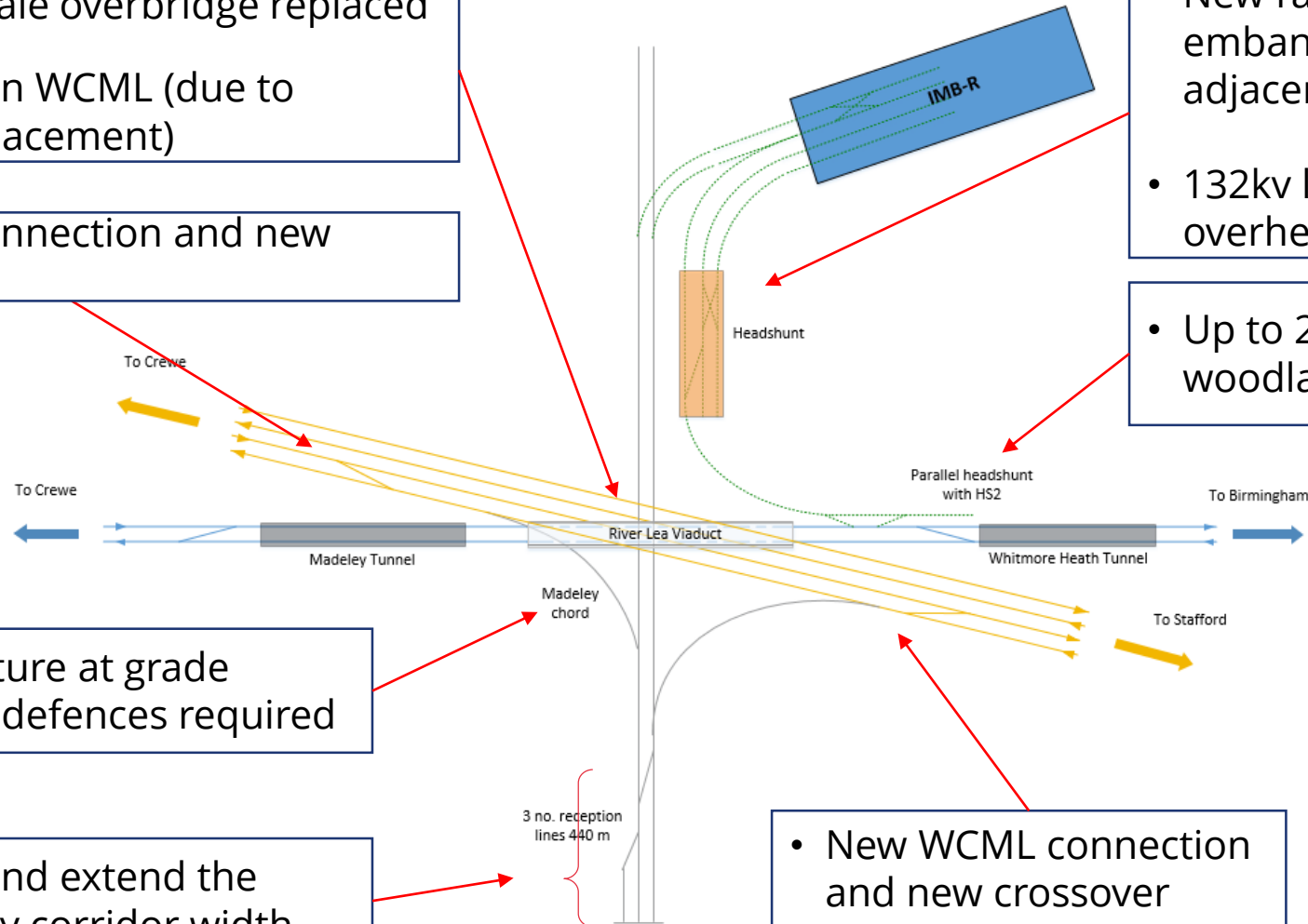
Aldersey's Rough – Construction Elements

- Existing Silverdale overbridge replaced
- Gantry works on WCML (due to overbridge replacement)

- New WCML connection and new crossover

- New railway corridor on embankment 10m higher than adjacent line
- 132kv lattice tower High Voltage overhead line diversion required

- Up to 25m retaining wall (12m into woodland)



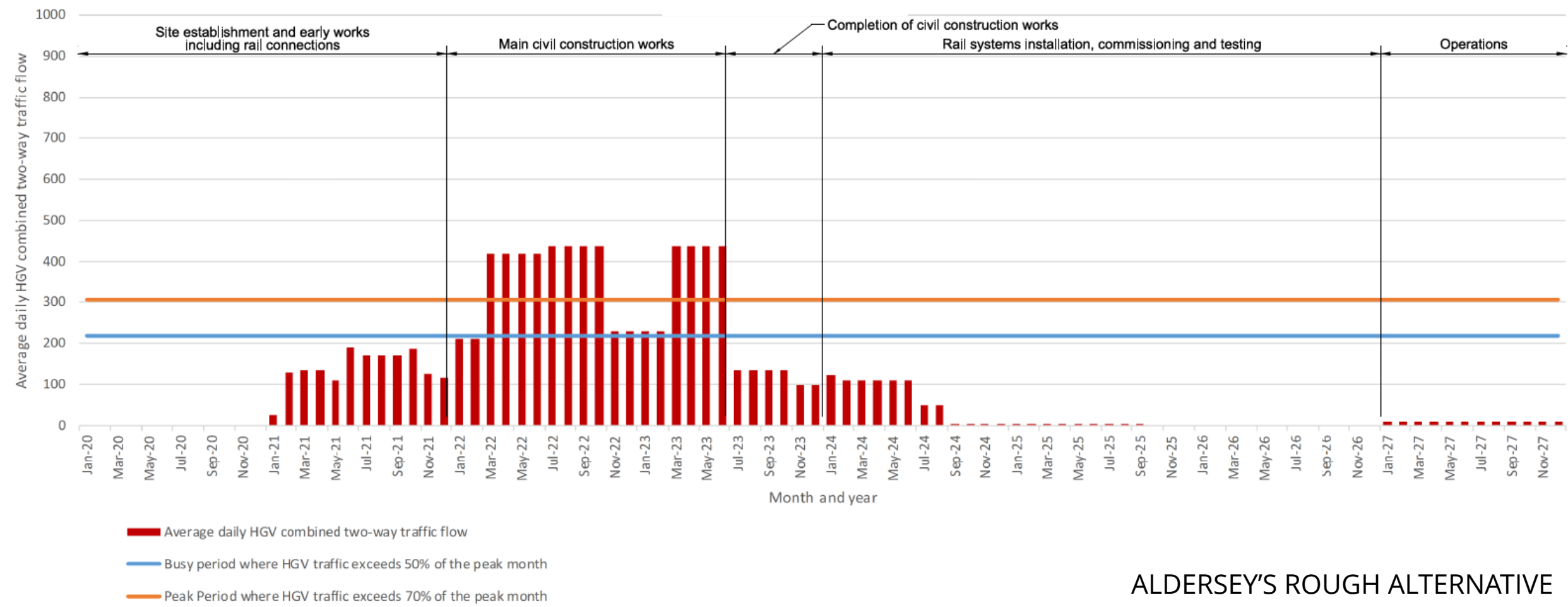
- New WCML connection and new crossover

- New infrastructure at grade
- Potential flood defences required

- 2m deep cut and extend the existing railway corridor width

Key	
	HS2 main line
	WCML
	Disused railway line
	Railhead connection lines
	Tunnel
	Railhead
	Headshunt

Keele Motorway Services Area traffic histogram



ALDERSEY'S ROUGH ALTERNATIVE

Environmental impacts comparison

	Major improvement		Major worsening
	Moderate improvement		Moderate worsening
	Minor improvement		Minor worsening
	Neutral		N/A

Topic	Construction		Operation	
	Stone Railhead & Maintenance Base	Aldersey's Rough Railhead & Maintenance Base	Stone Railhead & Maintenance Base	Aldersey's Rough Railhead & Maintenance Base
Landscape & Visual	Impact on LCAs & visual impacts	Major worsening on LCA & visual effects	Adverse effects on landscape character and visual receptors. Lighting impact at night.	Greater adverse effects on landscape character and visual receptors. Lighting impact at night.
Ecology & Biodiversity	Impact on 2 LWS, loss of important hedgerows & approx. 7 ponds and potential impact on EPS	Increased loss of ancient woodland and broadleaved woodland, impact on 2 LWS, potential impact on EPS	Impacts on bats and barn own due to lighting and operation of maintenance trains	Greater impacts on bats and barn own due to lighting and operation of maintenance trains
Water Resources & Flood Risk	Impact on culverts, provision of flood compensation & channel modification	Potential impacts on culverts, increased flood risk & WFD watercourses	No impacts anticipated	No change compared to baseline
Demolitions	Two residential properties	No demolitions & removal of demolitions at Stone	n/a	n/a
Traffic & Transport	Disruption to M6 and Yarnfield Lane	Additional 158,954 HGV movements. Disruption to M6.	M6 southbound access required. FP33 diverted. Optimal maintenance journey times	Additional operational traffic through Aldersey's Rough, longer journey times for maintenance.
Cultural Heritage	Adverse impact on heritage features	Adverse impacts on heritage features	No impacts anticipated	Increased setting impact
Agriculture, Forestry & Soils	Permanent loss of approx. 80ha of BMV 10 holdings affected	40ha of agricultural land required. Impact on forestry land. 5 holdings affected.	No impacts anticipated	No change compared to baseline
Community	Demolition of two residential properties	Potential new and increased in-combination impacts. Removal of demolitions.	Limited in-combination effects	Potential new and increased in-combination effects
Sound, Noise & Vibration	Impacts on approx. 10 properties	Potential new impacts at approx. 20 properties. Impacts at Stone remain	No impacts anticipated	No change compared to baseline
Socio-Economics	One business unit affected by demolition	Potential indirect effects on sensitive receptors. Removal of demolition at Stone.	No impacts anticipated	No change compared to baseline
Land Quality	Potential contamination sources within footprint	Potential contamination sources in surrounding area	Potential that contamination wold require management during operation.	No impacts anticipated
Air Quality	Construction dust and traffic emission impacts	Potential for increased impacts on ecological and residential receptors	Impacts from operational traffic emissions	Impacts from operational traffic emissions
Planning Policy	Railhead/Maintenance Base located within Green Belt	Railhead/Maintenance Base and new access road located within Green Belt	n/a	n/a

Railhead / Maintenance Base Sift Cost Analysis (1)

Phase 2a Combined Railhead / IMB-R Sift Cost Analysis

Aldersey's Rough cost breakdown

The table below shows the cost differences of the Aldersey's Rough alternative (Option A9.5*) compared to the Proposed Stone Infrastructure Maintenance Base-Rail (IMB-R) Scheme. It should be noted that costs are likely to change following further design development.

Item	Proposed Scheme	Aldersey's Rough
	Stone I-MBR (£ million)	Option A9.5* (£ million)
Civil engineering (excluding earthworks)	49.3	38.0
Depots & stabling (including earthworks)	79.5	77.1
Rail Systems	9.2	12.2
Indirect Costs	22.8	29.6
Sub-total: Construction & Indirect Costs:	160.8	156.9
Sub-total difference:		-3.9
Land & Property (increase against Proposed Scheme)		1.2
Aldersey's Rough – structures & roadworks and associated possession costs (increase against Proposed Scheme)		33.0
Aldersey's Rough – utility diversions, landscaping & planting (increase against Proposed Scheme)		18.9
Efficiency Adjustment		-9.8
Total Difference:		39.4
Contingency (40%)		15.7
Total cost difference from Proposed Scheme:		55.1

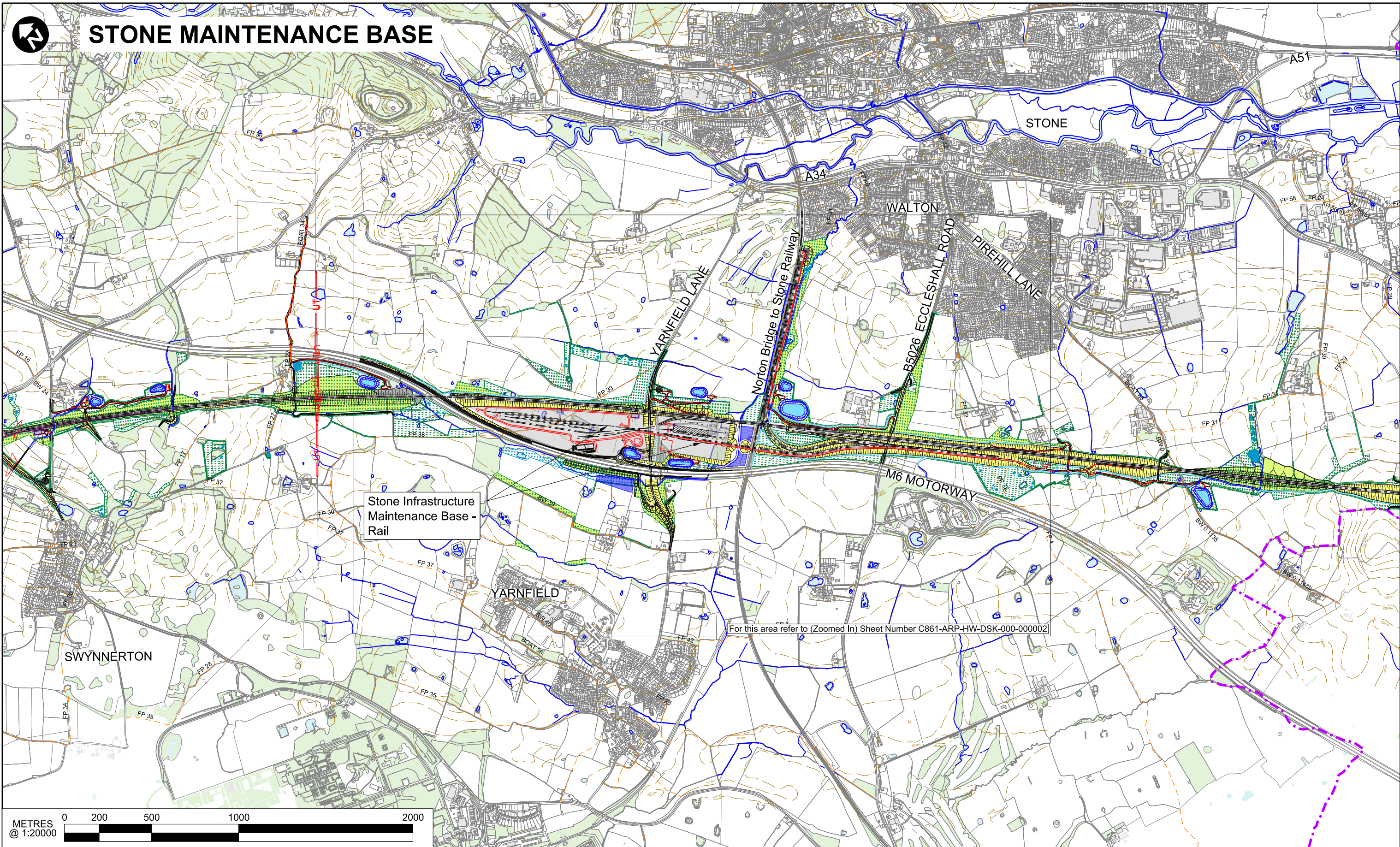
Railhead / Maintenance Base Sift Cost Analysis (2)

Notes:

- Aldersey's Rough Option 9.5* assumes that additional maintenance loops at Pipe Ridware would not be required,
- It is assumed that the landscaping, planting and utility diversion costs included in the hybrid Bill scheme at Stone would still be required for HS2 mainline works if the railhead and IMB-R were to be located at Aldersey's Rough,
- Civil engineering costs include bridges, viaducts & other structures, roads and utility diversions,
- Indirect Costs include HS2 corporate costs, project management, design development & insurances. They are calculated on a % basis,
- The Efficiency Adjustment represents expected opportunity cost savings associated with the direct and indirect costs,
- Contingency (40%) is consistent with the Proposed Scheme and is applied to the Total Difference,
- All costs are stated at base date 1Q 2015,
- Possession costs for connections to WCML are not included.



STONE MAINTENANCE BASE



Stone Infrastructure
Maintenance Base -
Rail

For this area refer to (Zoomed In) Sheet Number C861-ARP-HW-DSK-000-000002

METRES
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Scale with caution as distortion can occur.

LEGEND

- | | |
|--|------------------------------|
| Balancing pond | Ditches - new |
| Grassland habitat creation | Hedgerow habitat creation |
| Landscape mitigation planting (scrub / woodland) | Existing public right of way |
| Grassed areas | Rail alignment |
| Engineering earthworks | HS2 Access road |
| Landscape earthworks | |
| Rail alignment | |
| Rail alignment formation | |



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