
High Speed Two Phase 2b
Crewe to Manchester
West Midlands to Leeds
Route Refinement Consultation 2016
Consultation document



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Department for Transport

High Speed Two (HS2) Limited has been tasked by the Department for Transport (DfT) with managing the delivery of a new national high speed rail network. It is a non-departmental public body wholly owned by the DfT.

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Contents

Foreword	3
1 Introduction	4
1.1 Background	4
1.2 Refinement of the Phase 2b route	5
1.3 The seven route refinements we are consulting on	5
1.4 Interface between Phase 2a and 2b at Crewe	7
1.5 Other refinements to the Phase 2b route not for consultation	7
1.6 Implications of route refinements for safeguarding	9
1.7 HS2 Phase 2b property scheme consultation	9
1.8 Next steps	9
2 The seven route refinements subject to consultation - details	11
2.1 Relocating the western leg rolling stock depot	11
2.2 Route between Middlewich and Pickmere	14
2.3 Manchester Piccadilly approach	17
2.4 Route around Measham, Leicestershire	20
2.5 Route along A42 around East Midlands Airport	23
2.6 Changes to East Midlands Hub approach through Long Eaton	26
2.7 Derbyshire to West Yorkshire (M18 / Eastern route)	29
3 How to respond to the consultation and next steps	43
3.1 Closing date	43
3.2 Who can respond to this consultation	43
3.3 How to respond	43
3.4 Information events	43
3.5 Confidentiality and data protection	44
3.6 What happens next?	44
3.7 Freedom of Information	44
Annex A: Summary of refinements not subject to consultation	45
Figure 1: Map showing location of proposed refinements on Phase 2b route	8
Figure 2: Proposed location of the western leg Rolling Stock Depot (RSD) north of Crewe	13
Figure 3: Proposed re-alignment of the route as it passes through Cheshire	16
Figure 4: Proposed re-alignment of the approach to Manchester Piccadilly station	19
Figure 5: Proposed re-alignment of the route to the east of Measham	22
Figure 6: Proposed re-alignment of the route on the approach to East Midlands Airport	25
Figure 7: Proposed alignment of the route through Long Eaton	28
Figure 8: Overview of the proposed re-alignment of the route through South Yorkshire	35
Figure 9: Detail of the proposed re-alignment of the route through South Yorkshire	36

Foreword



Demand for rail travel is growing and the number of inter-city rail journeys has doubled since the late 1990s. Demand is forecast to keep rising, putting more pressure on the existing rail network.

High Speed Two (HS2) will tackle this by providing much needed new capacity and improving connectivity. HS2 Phase Two will extend the high speed rail network from the West Midlands to Manchester and Leeds - a total of 174 miles. Connections between this new network and the existing one will allow HS2 trains to continue to other cities including Newcastle, Edinburgh and Glasgow. This will significantly reduce journey times to the North and Scotland, and dramatically improve connectivity between the Midlands and the North. Improved connectivity will support growth and regeneration, and bring new opportunities to millions of people - providing better access to jobs and markets as well as increasing freight capacity in some locations on the existing rail network.

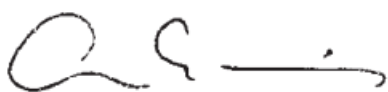
HS2 Phase Two will be built in two phases. In November 2015, the Government confirmed the route from Fradley to Crewe (Phase 2a). Phase 2a will open in 2027, six years earlier than planned, bringing the benefits to the North sooner.

Today, I am confirming the majority of the Government's preferred route from Crewe to Manchester in the west, and from West Midlands to Leeds in the east, with junctions to the existing network (Phase 2b). Since the Government consulted on the Phase 2b scheme in 2013/14 (the 2013 consultation), there have been some changes to the route, and in a number of areas where these changes are substantial, I am seeking the views of affected communities and other interested parties to inform a decision next year. This consultation document outlines the Government's route refinements proposals for Phase 2b.

The changes or route refinements we are consulting you about include our response to representations from individuals and organisations affected by the HS2 route, ongoing engineering design development or wider strategic issues such as Transport for the North's aim to improve journey times and train frequencies between major cities in the North. For each refinement I have considered the options available and indicated where I have a preferred proposal, but I want to give people the opportunity to make their views known and also provide further evidence to inform a decision.

Following this consultation, in 2017 I will decide which route refinements to include in the ongoing design of the railway. HS2 Limited will then, on the basis of my decisions, go ahead with preparing the HS2 Phase 2b hybrid Bill that is going to be introduced into Parliament in 2019.

The Government has also published a Command paper and a Property Consultation for Phase 2b¹. The Command Paper sets out the Government's response to the 2013 route consultation and progress we have made in delivering the project. The Property Consultation document sets out the compensation and assistance schemes that are available from today, on an interim basis, and that we propose should be offered to those along the Phase 2b section of the network. Alongside these documents, additional materials have also been published providing technical background to support the consultation.

A handwritten signature in black ink, appearing to read 'Chris Grayling'.

The Rt Hon Chris Grayling MP
Secretary of State for Transport

¹ Both can be found at www.gov.uk/government/collections/hs2-phase-two-from-the-west-midlands-to-leeds-and-manchester

1 Introduction

1.1 Background

- 1.1.1 High Speed Two (HS2) is a new high speed railway proposed by the Government to connect major cities in Britain. It will be built in phases. Phase One of the HS2 network will run from London to the West Midlands, with a connection to the West Coast Main Line near Lichfield, and will start operating in 2026. Phase Two will extend HS2 to the north of England with trains running to Manchester via Crewe, and to Leeds via the East Midlands and South Yorkshire. Connections to the East Coast and West Coast Main Lines would enable HS2 services to travel onwards on the existing rail network. A connection to the Midland Mainline would also provide HS2 services to Sheffield city centre.
- 1.1.2 You can find more about Phase Two of HS2 in the January 2013 Command Paper *High Speed Rail: Investing in Britain's Future – Phase Two: The route to Leeds, Manchester and beyond*². You can find details of the 2013 consultation on the Phase Two route in the Ipsos MORI Report³.
- 1.1.3 In November 2015, the Government published *High Speed Two: East and West: The next steps to Crewe and beyond*⁴. This outlined the Government's plan to accelerate part of the Phase Two route from the West Midlands to Crewe, and set out the preferred line of route for what is now known as Phase 2a. Phase 2a is due to start running in 2027, one year after the opening of Phase One. This is six years earlier than originally planned, bringing more of the benefits of HS2 to the North sooner.
- 1.1.4 Since then, Department for Transport (DfT) and HS2 Limited have carried out further consultations on the Phase 2a scheme. These sought views on some changes to the route announced in November 2015, as well as on the working draft Environmental Impact Assessment and Equality Impact Assessment for Phase 2a. The consultations closed on 7 November 2016, and responses are now being analysed. The outcome of the consultations will inform further development of the Phase 2a scheme. So that part of the Phase Two route between the West Midlands and Crewe is excluded from this document.
- 1.1.5 This consultation sets out seven of the proposed changes to the other parts of the Phase Two route, referred to as 'Phase 2b' - from Crewe to Manchester and West Midlands to Leeds.

You can find out more about HS2 Phase 2b in these reports, all available at <https://www.gov.uk/government/collections/hs2-phase-two-from-the-west-midlands-to-leeds-and-manchester>

- High Speed Two: Phase 2b Command Paper
- Strategic outline business case
- Route engineering reports
- Sustainability statement
- Ipsos MORI report on the 2013 consultation on the Phase Two route
- HS2 Phase 2b: Summary of route refinements

²https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69738/hs2-phase-two-command-paper.pdf

³<https://www.gov.uk/government/consultations/hs2-phase-two-proposed-line-of-route-from-west-midlands-to-manchester-and-leeds>

⁴https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/480712/hs2-east-and-west.pdf

1.2 Refinement of the Phase 2b route

- 1.2.1 After considering all feedback from the public consultation on the Phase Two route, stations and depots in 2013, we have further developed and refined the route.
- 1.2.2 Some of the changes draw on responses to the 2013 Phase Two route consultation, and ongoing engagement with local communities and other interested parties like local authorities, environmental bodies, Network Rail and utility companies. Other of the changes draw on learning from developing the Phase One and Phase 2a design. We've reviewed the route as the strategic picture evolves – like taking into account the vision of Transport for the North (TfN) for a faster, more frequent and more reliable rail network across the North.

1.3 The seven route refinements we are consulting on

- 1.3.1 A significant proportion of the refinements that we are proposing to the Phase 2b route are within the overall corridor we presented in 2013, or have been adopted in direct response to the 2013 route consultation. However, in a number of locations where more substantial changes are recommended which introduce new or different impacts (both positive and negative) on people, environment or property, the Secretary of State has decided to consult on these proposed Phase 2b route refinements before making a decision on whether to include them within his preferred route for the Phase 2b hybrid Bill. This consultation document sets out the options examined and the Secretary of State's proposed refinements.
- 1.3.2 The seven proposed route refinements are summarised below and presented in more detail in Section 2:

Relocating the western leg rolling stock depot

- Move the proposed western leg rolling stock depot (RSD) from a site near Golborne to a site north of Crewe between the A530 Nantwich Road and the West Coast Main Line (WCML) near Wimboldsley. This site would sit between the HS2 route and the WCML where the two lines diverge north of Crewe. This would result in fewer environmental impacts and would enable us to remove the northern chord of the Manchester Junction.

Route between Middlewich and Pickmere

- Change the route over 26km in the Middlewich-Northwich area to avoid brining and gas storage infrastructure and to minimise the risk of subsidence due to underlying geological conditions. This builds on intelligence received during the 2013 consultation.

Manchester Piccadilly approach

- Change the alignment of the route on the approach to Manchester Piccadilly Station to improve the operational efficiency of the station and avoid direct impacts on residential properties and a school at West Gorton.

Route around Measham, Leicestershire

- Move the route to the east of Measham in Leicestershire to avoid some of the significant impacts on the town, businesses and a major development site.

Route along A42 around East Midlands Airport

- Avoid the need to tunnel under East Midlands Airport by instead passing to the east of the A42, east of the M1, east of the airport runway, under the access to the proposed East Midlands Gateway development and then past Kegworth in a cutting.

East Midlands Hub approach around Long Eaton

- Amend the alignment of the route as it passes through Long Eaton to address local concerns about the creation of a physical barrier, impacts on the highway network and to reflect our improved understanding of flood risk in this area. The Secretary of State is considering two options for the alignment in this area. Both options pass through Long Eaton directly to the east of the existing low level rail lines, either on a high level viaduct or on an embankment at a lower level.

Derbyshire to West Yorkshire (M18 / Eastern route)

- Move the alignment of the route from Derbyshire to West Yorkshire over 70km to reflect a change in the proposals for serving Sheffield, as proposed by Sir David Higgins in his report, Sheffield and South Yorkshire⁵, published on 7 July 2016. Instead of travelling along the Rother Valley to a station at Meadowhall before heading north into West Yorkshire, the newly proposed route follows the M1 and then the M18, passes between Conisbrough and Mexborough, and crosses more open country passing Thurnscoe, South Kirkby, Hemsworth and Crofton. This change in alignment also requires a change to the access to the proposed rolling stock depot at New Crofton. To enable high speed services to serve Sheffield city centre and Chesterfield, a spur off the HS2 line is included between Huthwaite and South Normanton. This links into the existing railway network south of Chesterfield by joining the Erewash Valley line near Clay Cross. Changing the way Sheffield is served also opens up the potential to meet Transport for the North's aspirations for city centre to city centre connectivity if a junction onto the HS2 line north of Sheffield was to be built. The Secretary of State is therefore seeking views on the potential for an additional junction at Clayton to provide a northern connection to the high speed line.

1.3.3 The location of these proposed refinements are shown on Figure 1.

⁵https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/535307/CS550A_South_Yorkshire_Report_WEB.pdf

1.4 Interface between Phase 2a and 2b at Crewe

1.4.1 It should be noted that the recently published Phase 2a design refinement consultation separately sought views on a number of changes to the Phase 2a route, which could have an impact on the area around Crewe and the Phase 2b route.

1.4.2 In summary, the proposed changes in the vicinity of Crewe involved:

- Extending the tunnel under Crewe south by approximately 2100m and moving the tunnel portal south of the A500 and Weston Lane. This would have the advantage of reducing the complexity of construction and result in the lowering of the through lines on the approach to Crewe, which would have a lower visual impact on the surrounding area. The cost of constructing the longer tunnel is estimated to be broadly comparable to that of constructing the surface route option in this case because of the bridge and other works avoided.
- Moving the spur lines that connect HS2 to the West Coast Main Line (WCML) south of Crewe, further south and to extend their length. This change would reduce disruption during construction, result in lower visual and noise impact to residents of Chorlton, as well as ensuring that the spurs are long enough to transfer trains from HS2 systems to conventional rail systems.
- Build a temporary construction facility (railhead) near Stone, in-between the proposed HS2 route and the M6, which has the potential to subsequently become a permanent maintenance facility to replace the Infrastructure Maintenance Depot currently being proposed immediately south west of Crewe.

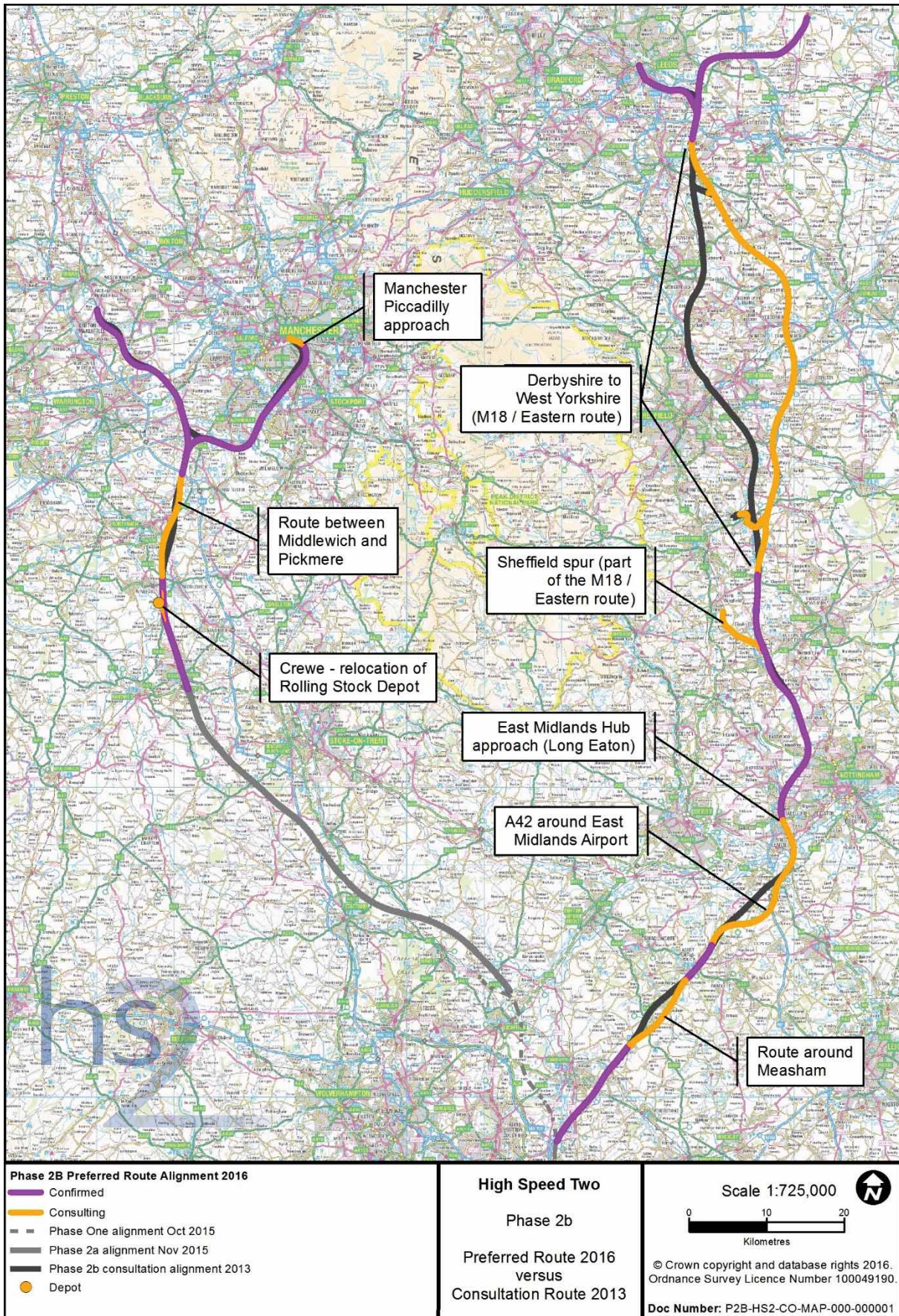
1.4.3 Design refinement is part of the ongoing process to ensure the route meets operational requirements and reduces impacts on people and the environment. We expect to undertake similar design refinement work and associated consultation on the Phase 2b route.

1.5 Other refinements to the Phase 2b route not for consultation

1.5.1 As well as the changes on which we are consulting, a number of further refinements have been made to the Phase 2b route. These refinements reflect feedback from the 2013 consultation on Phase Two and lessons learned from the development of the Phase One and Phase 2a design. The changes to the route on which we are not consulting are summarised in Annex A to this report and are described in greater detail in the Phase 2b Summary of Route Refinements document.

1.5.2 Although these refinements are not subject to consultation at this stage, we will undertake further engagement and consultation where considered appropriate as the design of the Phase 2b route develops. This will enable us to consider issues such as the design and mitigation of the route, and how we can best work with local aspirations for development and regeneration in locations such as Leeds, Manchester and the East Midlands.

Figure 1: Map showing location of proposed refinements on Phase 2b route



1.6 Implications of route refinements for safeguarding

- 1.6.1 Although there are some parts of the Phase 2b route that are subject to further consideration as part of this consultation, the Secretary of State has decided to issue Safeguarding Directions for the entire preferred Phase 2b route, including those areas where we are consulting on refinements. The aim of safeguarding is to protect land needed to construct and operate the railway from potentially conflicting developments, and thereby prevent excessive additional cost to the project.
- 1.6.2 Safeguarding Directions require local planning authorities to consult HS2 before determining planning applications affecting any land within the safeguarded area, except where exemptions apply. Safeguarding can affect either surface or sub-surface development.
- 1.6.3 Because Safeguarding Directions have been issued the Government is now proposing to introduce a series of property compensation and assistance schemes along the Phase 2b route.

1.7 HS2 Phase 2b property scheme consultation

- 1.7.1 We recognise that this announcement will have an impact on homeowners and those close to the line of route. As with Phase 2a, we remain committed to compensating people affected by infrastructure projects such as HS2. Where land is compulsorily acquired, compensation is based on the principle of equivalence, meaning that a person should be no worse off in financial terms after the acquisition than they were before.
- 1.7.2 In parallel with this consultation, we are also consulting on the property compensation and assistance schemes that the Government is proposing to introduce along the Phase 2b section of the route. The Government recognises that some property owners may need to resolve questions around their future before the end of the consultation. We have therefore decided to introduce the Express Purchase and Need to Sell schemes on an interim basis with immediate effect.
- 1.7.3 Further information on the HS2 Phase 2b Property Scheme Consultation, including details of the Express Purchase, the Need to Sell schemes and a full set of maps showing plans and profiles for the Phase 2b route, can be found at www.gov.uk/hs2

1.8 Next steps

- 1.8.1 The responses to this consultation will inform the Secretary of State's decision on the design for the Phase 2b route.
- 1.8.2 In order to provide as much certainty as possible to stakeholders and communities as soon as practicable, work on the design will continue and we will commence the environmental assessment work so both evolve in parallel with this consultation. This will ensure momentum and programme are maintained. For example, this will require seasonal surveys to take place in 2017 to inform environmental assessments and for the design to be developed taking account of construction logistics. Of course, should the route change in any way following consultation, the aim would be to undertake similar work on those changes where necessary.

- 1.8.3 The Government aims to reach a decision in 2017 on the design of the Phase 2b route that will be incorporated in the hybrid Bill. This will then allow the Bill to be deposited in Parliament by the end of 2019 along with the formal Environmental Impact Assessment report.
- 1.8.4 As we develop the hybrid Bill we will need to further develop the design of the scheme, including options for mitigating the impacts of the route on local communities. As part of this work we will consult on the draft and final Environmental Impact Assessment Report for Phase 2b, as well as any further substantial design refinements. There will therefore be further opportunities for people affected by the railway to influence the design of the route.

2 The seven route refinements subject to consultation - details

2.1 Relocating the western leg rolling stock depot

Proposed change

The Secretary of State is minded to relocate the proposed western leg rolling stock depot from Golborne to a site north of Crewe.

Summary of the 2013 consultation proposal

- 2.1.1 The 2013 consultation proposal included a Rolling Stock Depot (RSD) located north of Golborne, near the West Coast Main Line (WCML) junction at the top of the western leg of the Phase 2b route.
- 2.1.2 The RSD would be accessible from both ends and is designed for overnight stabling, cleaning and light maintaining of trains. Further details on the RSD can be found in HS2 Phase Two Crewe to Manchester Route engineering report 2016⁶.
- 2.1.3 The Golborne site was previously identified as it provides a large, flat site, meets the operational requirements of the western leg of the Phase 2b route and provides a connection to the existing network (WCML).

Issues identified with the 2013 consultation proposal

- 2.1.4 Respondents to the 2013 consultation raised a number of concerns about the potential impact of the RSD on the local community and environment and community, including impacts on the setting of the Grade II* Listed Lightshaw Hall, Grade II Listed Byrom Hall and Abram Flashes Site of Special Scientific Interest (SSSI).

Route refinement options

- 2.1.5 As a result of the feedback from the 2013 consultation a review of potential locations for the RSD was undertaken. For a site to be potentially suitable it needs to meet the following requirements:
- a large, flat site;
 - accessible to workforce and local transport network;
 - located as close as feasible to where HS2 services will terminate or begin to minimise empty train movements; and
 - connection to the existing network.
- 2.1.6 A range of locations across the western section of the route were identified which met these requirements and were, therefore, potentially suitable locations for a RSD. In assessing these

⁶ <https://www.gov.uk/government/collections/hs2-phase-two-from-the-west-midlands-to-leeds-and-manchester>

locations we considered the balance between a range of factors including environmental impact, cost, and engineering complexity.

- 2.1.7 Following an initial level of design development, a number of locations were discounted as unsuitable including sites near Lowton, Leigh, Ashley and Whatcroft.
- 2.1.8 Consideration was given to an alternative site at Golborne. However, this was assessed as unlikely to significantly improve on the sustainability impacts identified in relation to the site proposed during the 2013 consultation.
- 2.1.9 A series of options to locate the RSD along the HS2 route in the vicinity of Knutsford were assessed as potentially suitable, and therefore considered in more detail. These options were assessed as likely to have greater landscape and visual impacts and would present difficulties in connecting to the existing rail network.
- 2.1.10 Consideration was also given to locating the RSD to a site north of Crewe which the Secretary of State is minded to take forward.

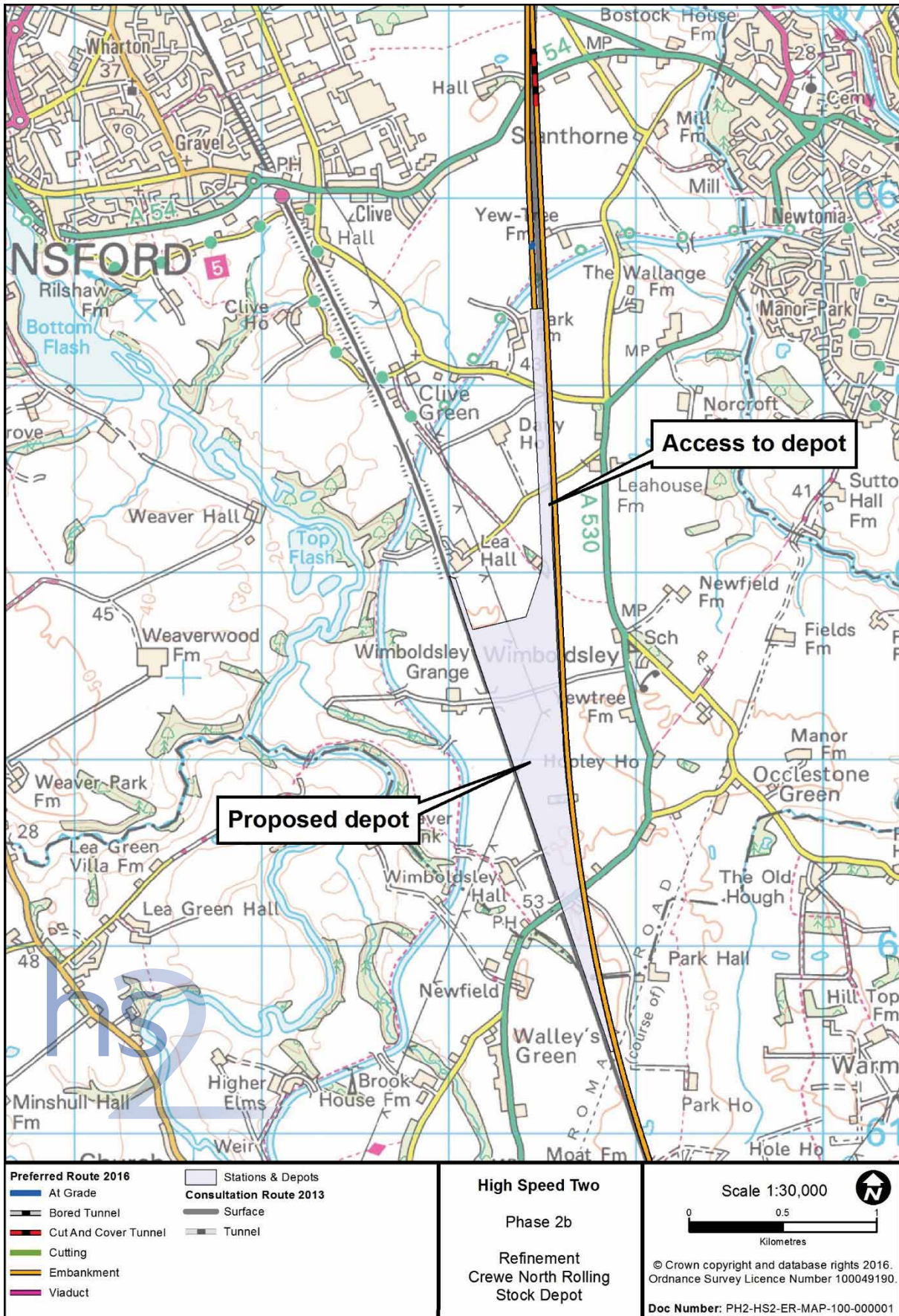
Proposed route refinement and why the Secretary of State is minded to make this change

- 2.1.11 The Secretary of State is minded to relocate the RSD from Golborne to a site north of Crewe. The site is a large area of flat land between the A530 Nantwich Road and the West Coast Main Line (WCML) near Wimboldsley which, following the construction of HS2, would sit between the HS2 route and the WCML. A depot in this location was assessed as likely to have fewer landscape and visual impacts than the site at Golborne proposed in the 2013 consultation.
- 2.1.12 The site has good connections to the existing network and would be able to facilitate access to the depot for HS2 trains serving destinations such as Liverpool, Manchester and Preston. Direct road access to the depot is possible from the A530.
- 2.1.13 We will seek to minimise any localised impacts including the impact on the setting of nearby listed properties. The use of this site would require the demolition of five properties located between the WCML and the proposed HS2 mainline.
- 2.1.14 Locating the RSD near Crewe means that the northern chord of the Manchester Junction at Golborne, which had previously been designed to enable trains to travel to and from the RSD from Manchester, is no longer required. A similar connection, albeit designed for trains travelling at faster speeds remains an option as part of Transport for the North's proposals for serving Liverpool from Manchester Piccadilly via HS2.
- 2.1.15 In order to provide access to the RSD from the HS2 main line, a grade separated junction is proposed in the area between Winsford and Middlewich. This junction would require a viaduct up to 16m high over the HS2 mainline in order to enable trains to access the depot.

Question 1

- 2.1.16 *Do you support the proposal to locate the western leg Rolling Stock Depot on the site north of Crewe? Please indicate whether or not you support the proposal together with your reasons.*

Figure 2: Proposed location of the western leg Rolling Stock Depot (RSD) north of Crewe



2.2 Route between Middlewich and Pickmere

Proposed change

The Secretary of State is minded to change the alignment between Middlewich and Pickmere and raise the route as it passes through the Cheshire salt plains.

Summary of the 2013 consultation proposal

- 2.2.1 The route consulted on in July 2013 passed between Middlewich and Winsford onto a long viaduct over the River Dane floodplain and crossed the Trent and Mersey Canal. On its way north-east, the route ran mainly on embankment passing approximately 3km to the east of Northwich before crossing the Altrincham to Chester railway line, the A556 and the A559.

Issues identified with the 2013 consultation proposal

- 2.2.2 Since consultation on the proposed route in 2013, we have conducted further work to better understand the controlled-brining and gas storage operations in the area. Consultation responses highlighted that the proposed route may have an impact on the infrastructure related to these operations. Concerns were also raised about the potential risk of ground movement and subsidence. The feedback gained during the consultation has enabled us to gain a much clearer view of the potential risks to construction and operation of the railway in this area associated with the underlying geology.
- 2.2.3 Concerns were also raised during the 2013 consultation about the proximity of the proposed route to Lostock Green, Lostock Gralam and Pickmere Telescope. Impacts on the Trent and Mersey Canal Conservation Area, the River Dane, Peover Eye, Leonards and Smokers Wood and Winnington ancient woodlands were also highlighted.

Route refinement options

- 2.2.4 As a result of the additional information obtained and concerns raised during the 2013 consultation, a number of alternative routes between Crewe and Manchester were considered with the aim of avoiding the greatest concentration of risks associated with the underlying geology, while also taking into account the other issues such as the highlighted impacts on local communities and the environment.
- 2.2.5 Throughout this area, options for putting the route into cuttings or tunnels were not progressed due to the risks associated with a sub-surface route through salt.
- 2.2.6 Options were considered for alternative alignments to the east and west of that presented during the 2013 consultation. Options further east towards Manchester via Mobberley were assessed as likely to have greater environmental impacts and higher costs than routes via Knutsford. Options via Knutsford which pass to the east of Middlewich (towards Sandbach and Holmes Chapel) were not progressed due to sustainability impacts, including demolition of around 50 properties.
- 2.2.7 Three options were taken forward for more detailed design development. The first involved raising the route consulted on in 2013 onto a series of embankments and viaducts. This alignment avoids the main settlements but passes close to a number of smaller communities. The second option involved moving the route to the west of Lostock Green and raises the

route by around 1m to address issues associated with the salt and drainage. The final option follows an alignment similar to that consulted on in 2013/14, but moves the route further east of Lostock Gralam while also raising the alignment by up to 8m to address the issues associated with the salt and drainage.

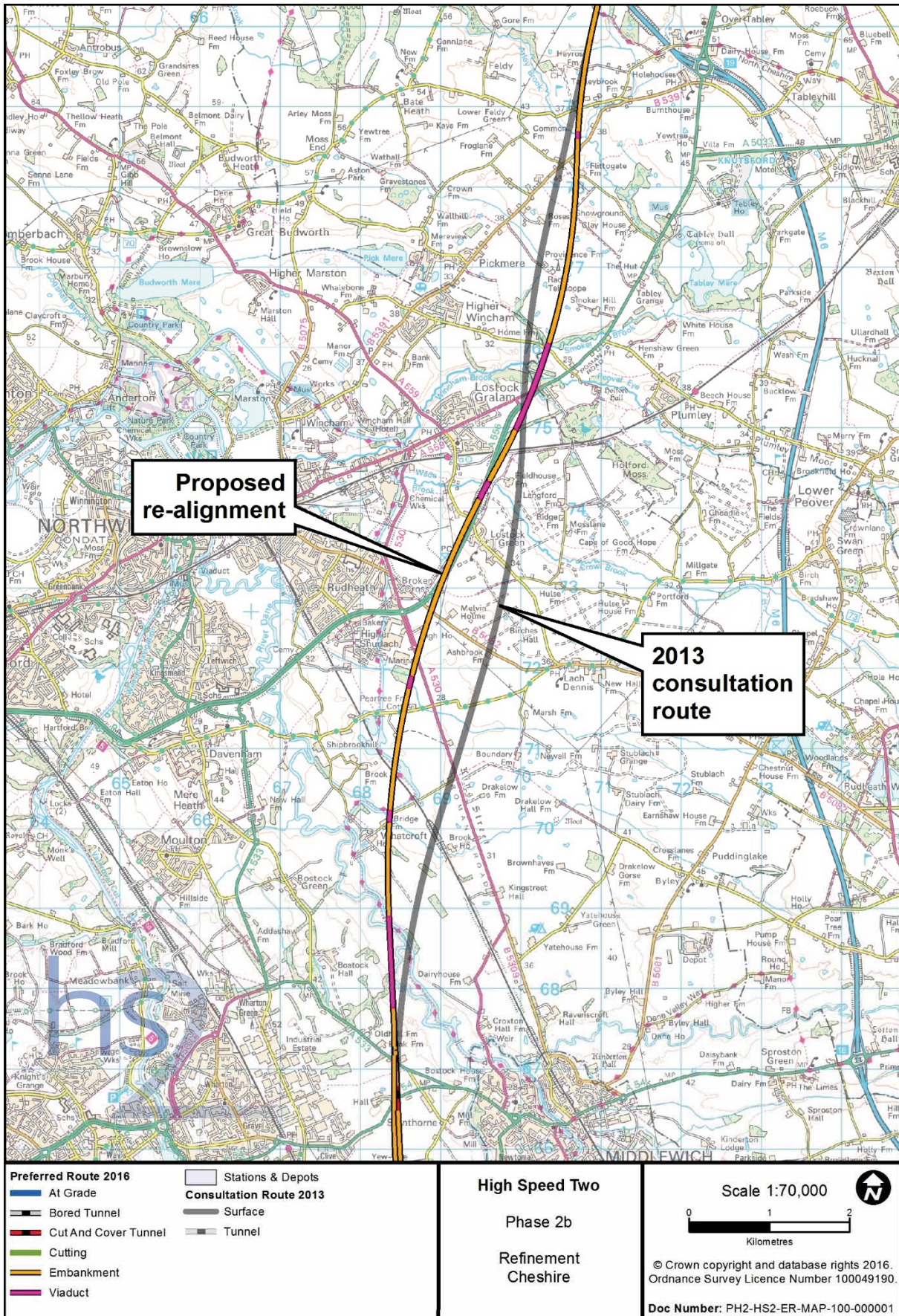
Proposed route refinement and why the Secretary of State is minded to make this change

- 2.2.8 The Secretary of State is minded to amend the route between Middlewich and Pickmere in order to avoid constructing directly over existing cavities used for brining and gas storage.
- 2.2.9 The route has been moved westwards by up to 800m after crossing the River Dane floodplain. As a result, the viaduct over the River Dane has been lengthened by over 400m and the route follows the existing A556 corridor for approximately 1km.
- 2.2.10 As a result of this change, the route to the north of Lostock Gralam has been moved eastwards by up to 400m taking the line further east of Pickmere to avoid the greatest concentrations of existing brining and gas storage infrastructure and reduce risks during construction and operation.
- 2.2.11 In addition to these changes to the alignment, the route has also been raised as it passes through the Cheshire salt plains. For approximately 5km north of Crewe the proposed route has been raised so that it is on embankments up to 8m high. As the route heads north between Winsford and Middlewich the HS2 line has been lifted out of cutting to a maximum height of 8m. In order to avoid the railway running in cutting in this area, the viaduct over the River Dane floodplain and Trent and Mersey Canal has also been raised from a maximum height of 10m to a maximum height of 26m.
- 2.2.12 For approximately 12km from the River Dane Valley to the M6 crossing, the route has been raised onto a series of embankments and viaducts. When on embankment, the route is generally 3-15m high, interspersed with viaducts over floodplains with a maximum height of 23m over the Peover Eye floodplain.

Question 2

- 2.2.13 *Do you support the proposal to change the alignment and raise the route through the Cheshire salt plains? Please indicate whether or not you support the proposal together with your reasons.*

Figure 3: Proposed re-alignment of the route as it passes through Cheshire



2.3 Manchester Piccadilly approach

Proposed change

The Secretary of State is minded to change the alignment on the approach to Manchester Piccadilly station so that it runs to the east of West Gorton, lengthen the tunnel on the approach and relocate the tunnel portal to the Ardwick rail depot.

Summary of the 2013 consultation proposal

- 2.3.1 The route consulted on in 2013 required a tunnel portal in West Gorton. The route then continued in a cutting through the West Gorton Development Site and Ardwick alongside the existing railway line elevating to pass over the Inner Relief Road (Mancunian Way). This approached the new station immediately to the north of the existing Piccadilly Station.

Issues identified with the 2013 consultation proposal

- 2.3.2 Responses to the 2013 consultation raised issues about the direct impact of the proposed tunnel portal on West Gorton, including the need to demolish 22 residential properties and the proximity of the portal to a school. A number of engineering complexities were also identified associated with constructing the tunnel portal in the Corn Brook floodplain and the close proximity of the existing railway viaducts.

Route refinement options

- 2.3.3 In response to the identified engineering complexities with the 2013 proposal and concerns raised during consultation, a number of alternative route alignments have been considered for the approach to Manchester Piccadilly.
- 2.3.4 The alternatives identified would increase the length and alignment of the Manchester tunnel and change the location of the tunnel portal. This would increase costs, but have the advantage of reducing the impact on the community at West Gorton (removing the need for demolition of residential properties in this area), move the tunnel portal out of the floodplain and avoid the need for construction adjacent to the existing West Coast Main Line and associated viaducts.
- 2.3.5 The alternatives also provide a straighter track alignment into Manchester Piccadilly which improves the operational capacity of the railway.

Proposed route refinement and why the Secretary of State is considering this change

- 2.3.6 The Secretary of State is minded to re-align the approach to Manchester Piccadilly station, moving the route eastwards by up to 370m to take the section of the route which runs on the surface further away from West Gorton. This change would lengthen the tunnel leading to the approach to the station by approximately 880m so that the northern tunnel exit would be located in the Ardwick rail depot.
- 2.3.7 This change would reduce the flood risk and engineering complexities by moving the tunnel portal out of the Corn Brook floodplain and away from the existing railway viaducts. It would

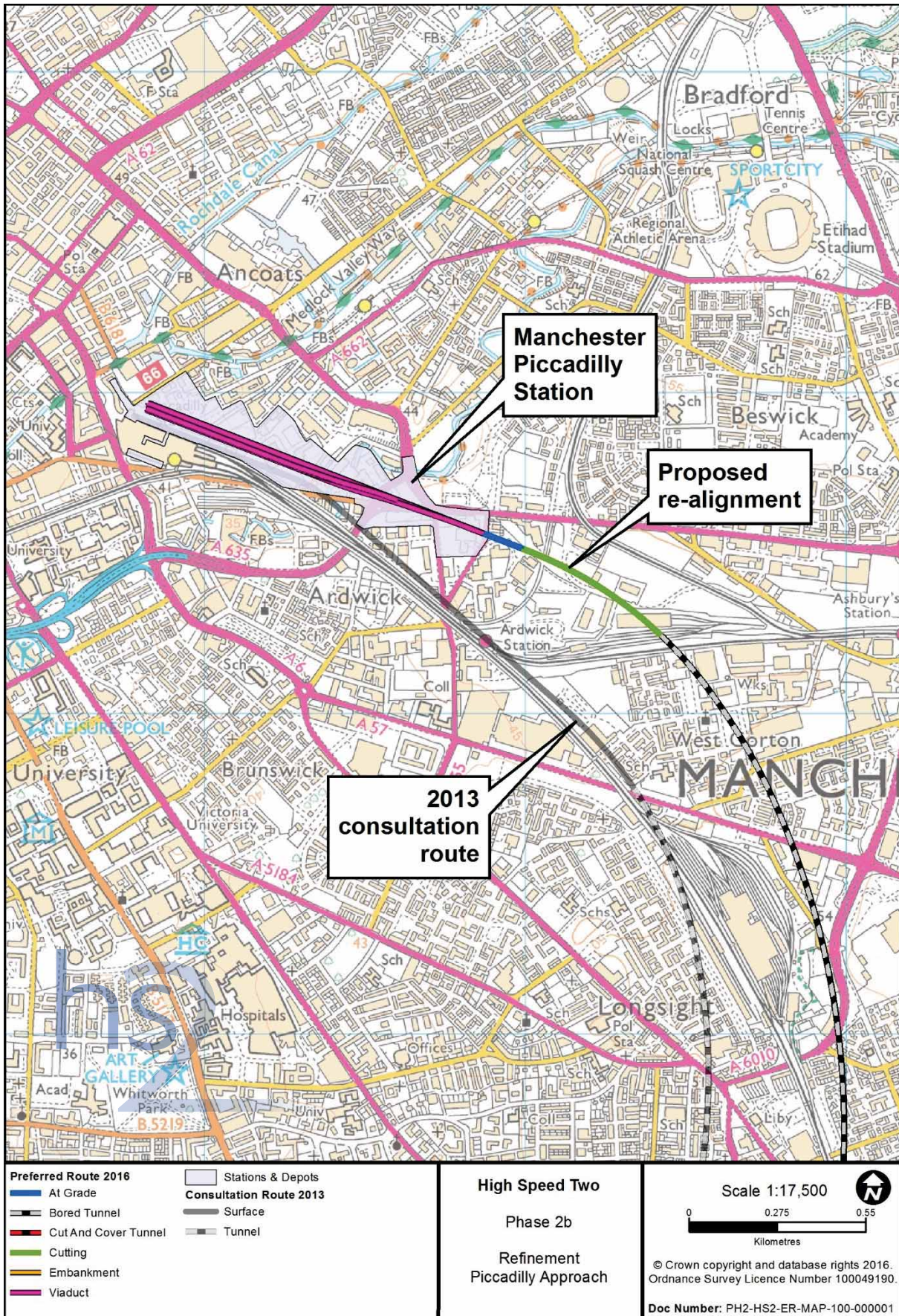
also allow the approach to Manchester Piccadilly Station to be straightened which maximises operational capacity and reduces the impact on the structure of the existing station.

- 2.3.8 While this proposed re-alignment would reduce the impacts on West Gorton and the potential disruption to the existing rail network during construction, it would require a larger area of land on the approach to Manchester Piccadilly station.

Question 3

- 2.3.9 *Do you support the proposal to change the alignment of the approach to Manchester Piccadilly station? Please indicate whether or not you support the proposal together with your reasons.*

Figure 4: Proposed re-alignment of the approach to Manchester Piccadilly station



2.4 Route around Measham, Leicestershire

Proposed change

The Secretary of State is minded to move the route so that it runs to the east of Measham, away from the A42.

Summary of the 2013 consultation proposal

- 2.4.1 The route that was consulted on in July 2013 passed north of Birchmoor and followed the corridor of the M42/A42 on its south-eastern side. The route crossed the River Mease Special Area of Conservation (SAC) and Site of Special Scientific Interest (SSSI) and passed through the north western side of the town of Measham before continuing to follow the A42 towards Tonge.

Issues identified with the 2013 consultation proposal

- 2.4.2 Significant feedback was received during the 2013 consultation about the potential impact of the proposed route on businesses and the Measham Wharf major development site. The visual, landscape and noise impacts of the alignment as it passed Measham and villages in the vicinity were also highlighted as a concern, along with impacts to the Ashby Canal re-instatement project. An additional challenge in this area is the crossing of the River Mease SAC and SSSI.

Route refinement options

- 2.4.3 As a result of the feedback from the 2013 consultation, a number of alternative route options were considered for the Measham area. These options sought to reduce the height of the alignment at Austrey and avoid directly impacting both the local businesses and a major development site in Measham.
- 2.4.4 A series of options which involved tunnelling were not progressed beyond the initial design stage due to the significant cost implications and sustainability impacts associated with vent shafts, provision of emergency access and the generation of excavation materials.
- 2.4.5 A number of options which lowered the alignment so that the line is in a cutting as it passes Austrey progressed to a more detailed level of design development. These options involved a series of different alignments past Measham, which are set out in more detail below.
- 2.4.6 Two options were considered which broadly followed the same corridor along the eastern side of the M42/A42. The first of these still impacted on a number of businesses and Measham Wharf major development site. The second reduced impacts on some of the businesses, maintaining their access, however still impacted on others and would increase the impacts on the Measham Wharf major development site and move the route slightly closer to the communities in Measham.
- 2.4.7 A further option which moves the alignment to the east of Measham away from the M42/A42 corridor was also considered. This option avoids direct impacts on the manufacturing businesses and the major development site. However, the crossing point over the River Mease, an area protected by a number of environmental designations, would need to be moved. The crossing of the River Mease on a viaduct would also pass through a brickworks

quarry and be adjacent to an historic landfill site. This alignment could also increase impacts to Appleby Parva, Appleby Magna and the eastern side of Measham.

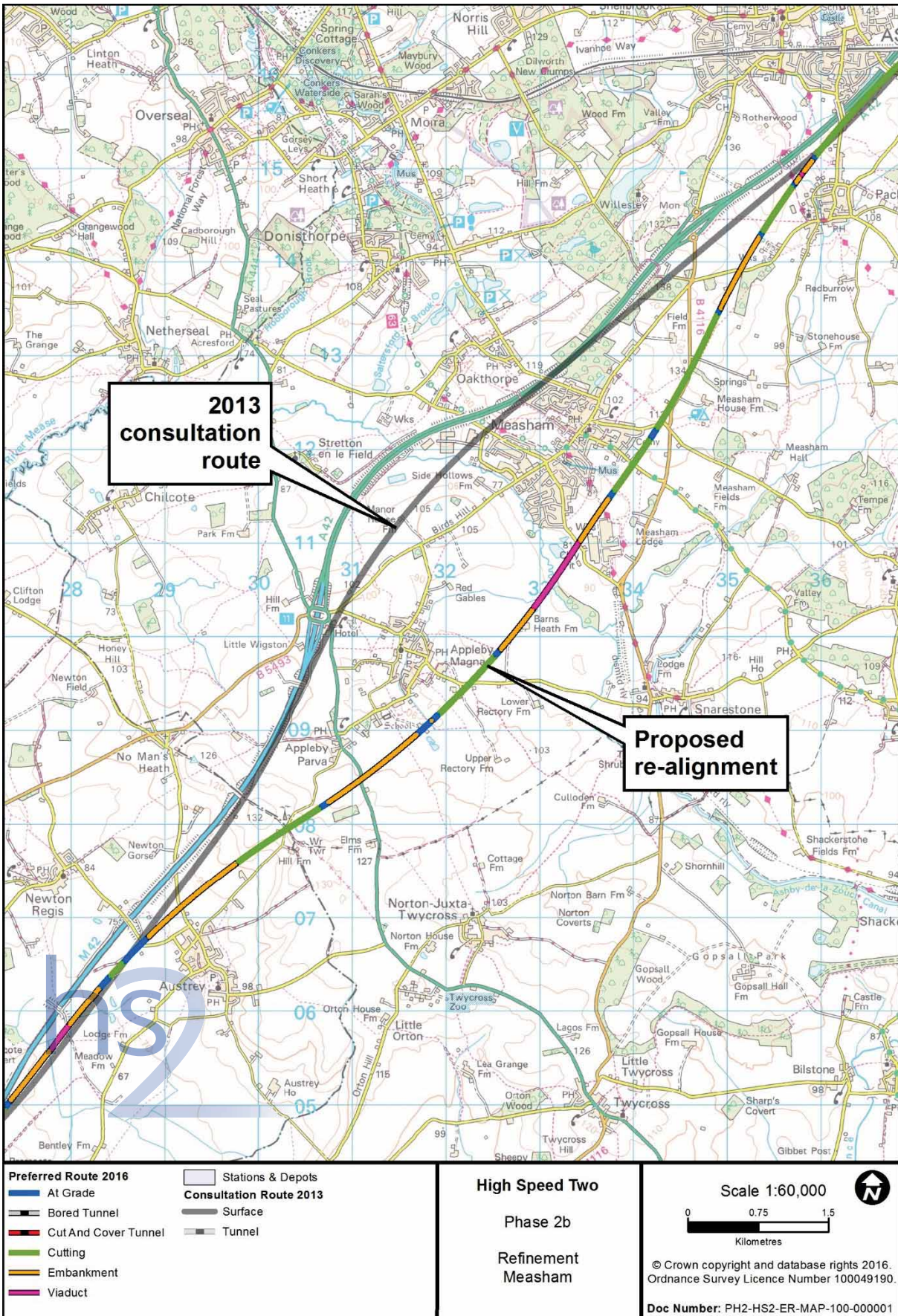
Proposed route refinement and why the Secretary of State is minded to make this change

- 2.4.8 The Secretary of State is minded to amend the alignment of the route in this area so that it runs to the east of Measham away from the M42/A42 corridor; avoiding a direct impact on the manufacturing businesses and the Measham Wharf major development site.
- 2.4.9 The re-aligned route diverges from the M42 to the south of Appleby Parva, passing Appleby Magna in a cutting. The route would then cross the River Mease on a viaduct approximately 880m long and 11m high before rising with the terrain in a shallow cutting until it re-joins the M42/A42 corridor. The line would run to the west of Packington in a deep cutting.
- 2.4.10 This route avoids some of the significant impacts in Measham itself, however, there will be some new impacts in the areas to the south and east of the town, as well as a new crossing of the River Mease which would require further assessment work.

Question 4

- 2.4.11 *Do you support the proposal to re-align the route to the east of Measham? Please indicate whether or not you support the proposal together with your reasons.*

Figure 5: Proposed re-alignment of the route to the east of Measham



2.5 Route along A42 around East Midlands Airport

Proposed change

The Secretary of State is minded to move the route on the approach to East Midlands airport so that it follows the eastern side of the A42 more closely before passing east of the runway and to the east of the M1.

Summary of the 2013 consultation proposal

- 2.5.1 The route that was consulted on in 2013 followed the A42 and crossed under junction 13 near Ashby-de-la-Zouch before passing over the A42 to the east of Tonge and Breedon on the Hill and under the East Midlands Airport and the Strategic Rail Freight Interchange major development site in a tunnel. After exiting the tunnel, the route then passed over the M1, north of junction 24 near Lockington, and crossed the floodplain of the River Soar and the River Trent on 3.4km and 1.7km viaducts respectively.

Issues identified with the 2013 consultation proposal

- 2.5.2 Following the 2013 consultation we reviewed the proposed tunnel under the airport, which would be almost 3km long, to see if an alternative alignment could be identified which would avoid the need for this tunnel.
- 2.5.3 A wide range of feedback was also received about the route in this area, particularly from respondents concerned about the impact of the proposed 16m high viaduct required to cross the A42 on the approach to East Midlands Airport. In addition, local stakeholders at Tonge and Breedon on the Hill raised concerns about the route's proximity to their communities, particularly in relation to potential noise and visual impacts.

Route refinement options

- 2.5.4 As a result of further consideration of the proposed tunnel under East Midlands Airport and in response to the consultation feedback, work focussed on identifying an alternative route to avoid the need for the tunnel under the airport and the A42 crossing and reduce the impacts on the communities of Tonge and Breedon on the Hill and the number of highway crossings.
- 2.5.5 At an initial level of design development a number of options were not progressed as they did not reduce the impacts on the communities of Tonge and Breedon on the Hill, did not significantly reduce the impact on local historic buildings or had a negative impact on the operation of the high speed railway.
- 2.5.6 A series of alternative route alignment options which ran further to the east of the A42 than the route proposed during the 2013, avoiding the need for the crossing and tunnel underneath East Midlands Airport, as well as reducing the impacts on Tonge and Breedon on the Hill were taken forward for detailed design development.

Proposed route refinement and why the Secretary of State is minded to make this change

- 2.5.7 The Secretary of State is minded to amend the route alignment so that it follows the A42 more closely on a mixture of cutting and embankment, remaining to the east of the road. This would avoid the need to tunnel under East Midlands Airport and the Strategic Rail Freight

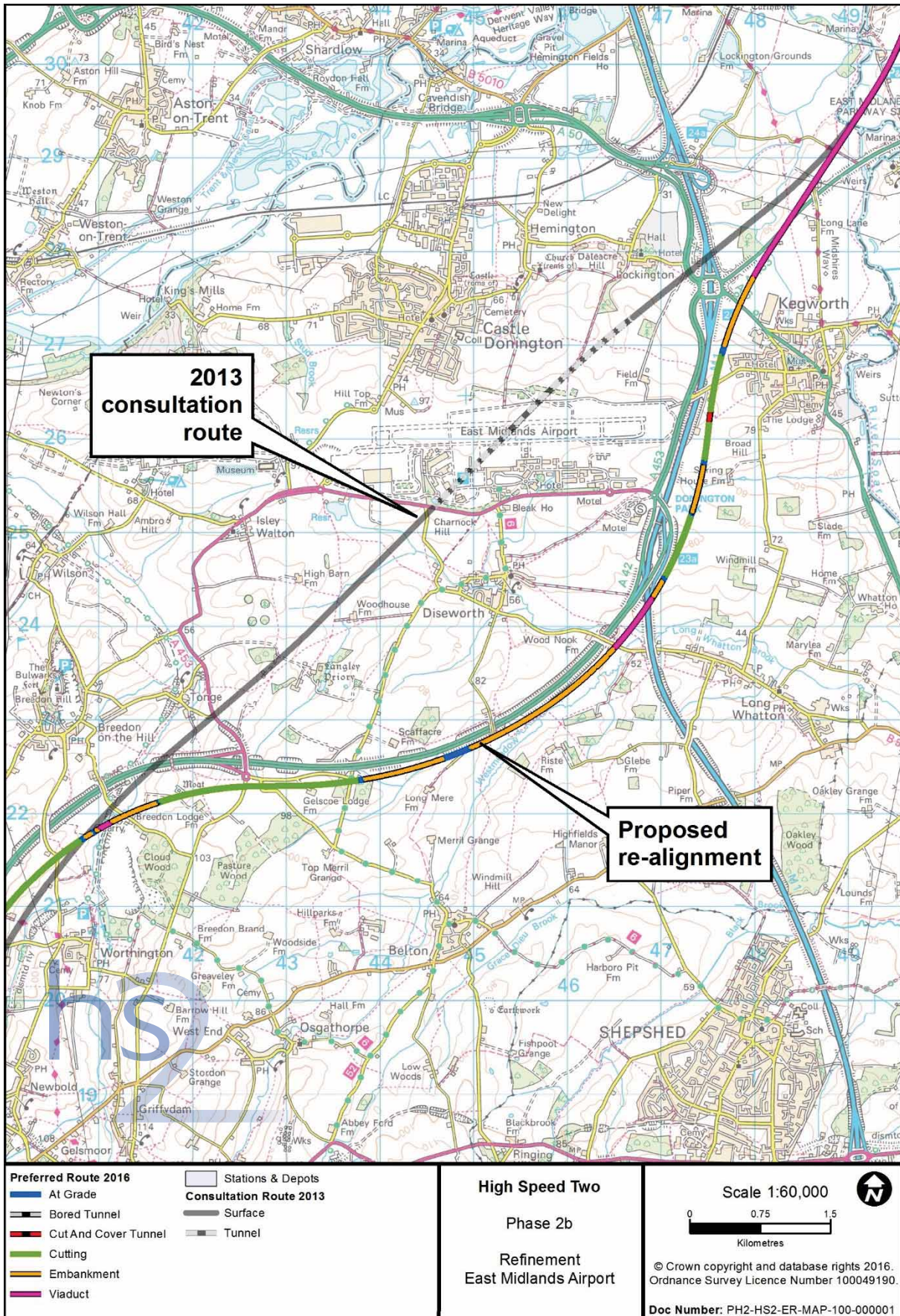
Interchange major development site and reduce the impact on the communities at Tonge and Breedon on the Hill. This route would also remove the need for the 16m high crossing of the A42 proposed in the 2013/14 consultation and enable the route to sit lower in the landscape as it passes through this area.

- 2.5.8 The route then passes west of Kegworth in a cutting, which would be up to 12m deep as it crosses Ashby Road. The route would directly impact the two major residential development sites, 90 Ashby Road and the Curzon Coaker Trust site. It would then rise onto an embankment before crossing the River Soar floodplain on a viaduct, where it would rejoin the alignment presented during the 2013 consultation at Red Hill. As part of the design development for the Phase 2b hybrid Bill, we will continue work to consider options to mitigate the impacts of the route in this area.

Question 5

- 2.5.9 *Do you support the proposal to realign the route in the area around East Midlands Airport? Please indicate whether or not you support the proposal together with your reasons.*

Figure 6: Proposed re-alignment of the route on the approach to East Midlands Airport



2.6 Changes to East Midlands Hub approach through Long Eaton

Proposed change

The Secretary of State is considering two options for the route as it passes through Long Eaton. Both options follow the same route but pass through Long Eaton at different heights. The two options are to:

Either lengthen the viaduct over the River Trent floodplain so that the line passes through Long Eaton at a high level, directly to the east of the existing rail lines.

Or, an alternative option where, after crossing the River Trent floodplain on a shorter viaduct the route passes through Long Eaton on a lower viaduct and embankment again directly to the east of the existing rail lines.

Summary of the consulted 2013 consultation proposal

- 2.6.1 The route that was consulted on in 2013 crossed the River Soar and River Trent on viaducts before running at ground level through Long Eaton along the existing low-level rail corridor on the approach to the East Midlands Hub station at Toton. The route would directly impact Main Street and Station Road, and the existing high level rail line through Long Eaton would need to be widened for use by rail services on the existing network.

Issues identified with the 2013 consultation proposal

- 2.6.2 The 2013 consultation highlighted concerns about the impact of the proposed alignment on local connectivity, particularly that construction and operation of the railway would create a physical barrier through Long Eaton and obstruct existing roads.
- 2.6.3 In addition, further work has been undertaken to better understand the wider rail network through this area. This highlighted that the route consulted on in 2013 would involve work on both of the existing rail routes through Long Eaton, which could involve construction impacts being spread more widely in this area across both the high speed route and the existing high level route.
- 2.6.4 Following further flood modelling work we now also have a better understanding of the flood risks in this area.

Route refinement options

- 2.6.5 Following the 2013 consultation, extensive work was undertaken to consider alternative options for station locations in the East Midlands, which would have required a change to the proposed line of route. As well as considering alternative options for the location of the station, engagement was also undertaken with local stakeholders to understand how well these options fitted with local aspirations. This work confirmed the view that Toton is the best location for an East Midlands Hub Station, and there is broad consensus in the region on this. To reach the proposed station at Toton the line needs to pass through Long Eaton.
- 2.6.6 There are a number of significant constraints and challenges to identifying the most appropriate alignment through the Long Eaton area. These include the proximity of properties along the existing rail corridors, impacts on the existing rail freight yard and

highways including: Station Road, Main Street, the A6005 Nottingham Road, the A52 and Derby Road, the floodplains of the rivers Trent and Erewash, the crossing the River Erewash and the proximity to the Attenborough Gravel Pits Site of Special Scientific Interest (SSSI).

2.6.7 The route needs to reflect these constraints while also seeking to minimise impacts on local communities and avoid creating a physical barrier through Long Eaton and Toton. The design must also reflect the technical requirements for HS2 so that it will be deliverable and operable.

2.6.8 Two alternative route refinement options were identified that focussed construction on a single corridor to the east of the existing low-level rail tracks to reduce impacts on Long Eaton and Toton.

2.6.9 Both options involve a widened low-level rail corridor to enable the high speed line to run to the east of the existing tracks with the first option being elevated 3.5m above ground level at Station Road and the second being elevated 16m above ground level in the same location. Both options would impact on the existing rail network and also require the re-alignment of the A52 and Derby Road.

Proposed options on which the Secretary of State is seeking views

2.6.10 There are clearly significant challenges to identifying the most suitable route alignment in this area, particularly in relation to Long Eaton.

2.6.11 The Secretary of State is therefore considering two options for the route through Long Eaton and is seeking views of the local community and interested parties on both before making a decision on the alignment of this section of the route.

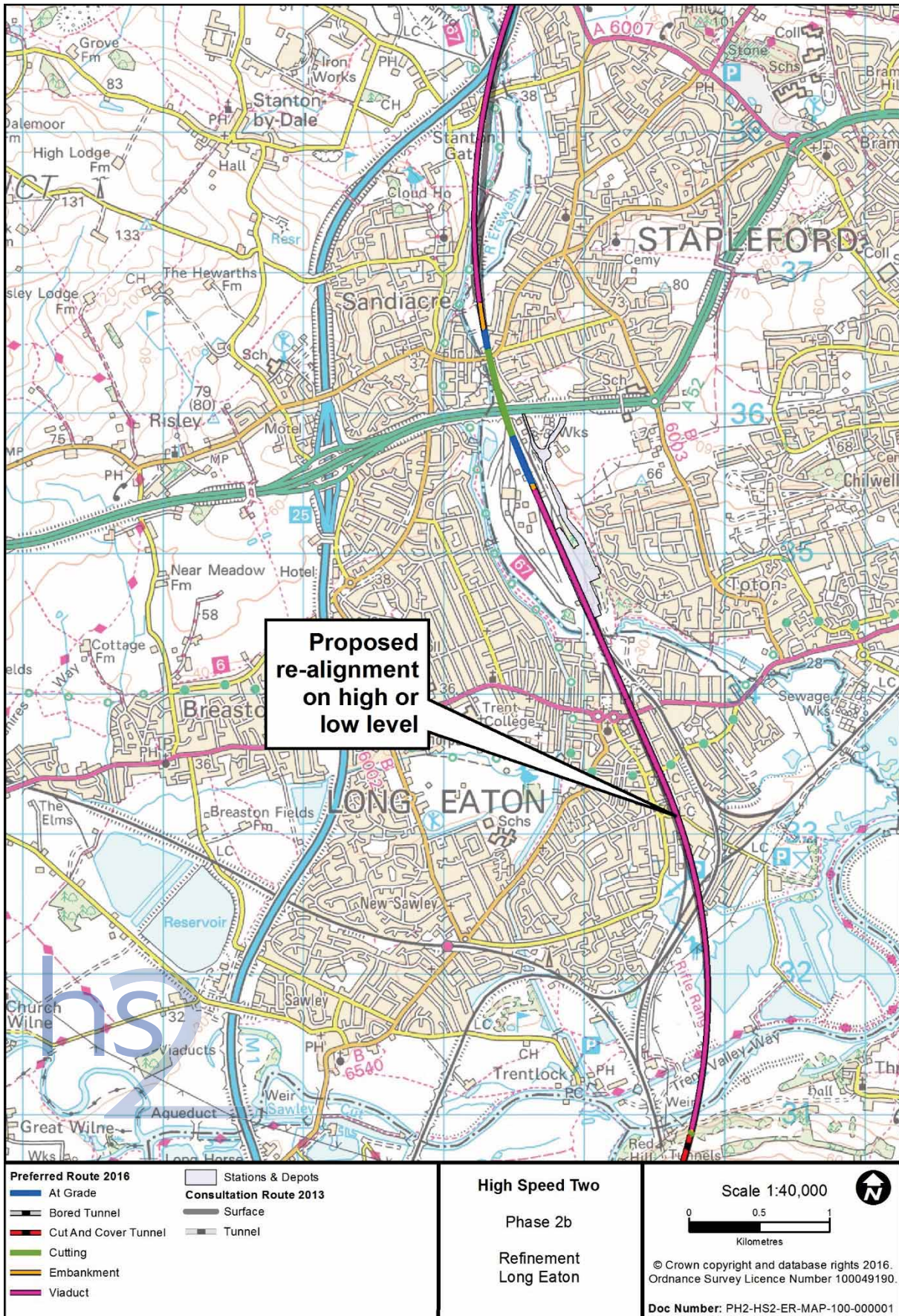
2.6.12 The two route options being considered have the same horizontal alignment but pass through Long Eaton at different heights. The options are:

- To lengthen the viaduct over the River Trent floodplain to approximately 4700m, so that the route now passes through Long Eaton on a viaduct, with HS2 directly to the east of the existing low-level rail lines. The viaduct would cross Station Road at a height of approximately 16m, and the A6005 at approximately 8m. The current level crossings on the existing rail network would continue to operate. This option was developed in response to the local stakeholder preference for a viaduct to reduce impacts on connectivity, the local highways network, and interactions between HS2 and the existing rail network.
- Cross the River Trent flood plain on a viaduct approximately 2470m in length before then passing through Long Eaton at a lower level (around 4m) on the same route as the option set out above to the east of the existing low-level rail lines. This option has the potential to have less overall impacts on the local townscape as it passes through Long Eaton at a lower level but is likely to require greater works to the local highway network which could be disruptive and may lead to new challenges such as increased flood risk.

Question 6

2.6.13 *Do you support one of the two options being considered by the Secretary of State for the alignment through Long Eaton? Please indicate which option together with your reasons.*

Figure 7: Proposed alignment of the route through Long Eaton



2.7 Derbyshire to West Yorkshire (M18 / Eastern route)

Proposed change

The Secretary of State is minded to move the alignment of the route between Derbyshire and West Yorkshire to reflect a change in the proposals for serving Sheffield.

Changing the way Sheffield is served opens up the possibility of running high speed trains from Sheffield to Leeds via a dedicated link. The Secretary of State is also seeking views on the railway junction needed to create this northern 'loop'.

Summary of the 2013 consultation proposal

2.7.1 The route presented during the 2013 consultation travelled to a station at Meadowhall, before heading north into West Yorkshire.

Issues identified with the July 2013 proposal

2.7.2 Since the 2013 consultation, opinion amongst local stakeholders about the best location for an HS2 station in South Yorkshire has remained divided and no consensus has been reached. This has made the decision about how HS2 can best serve the region very challenging.

2.7.3 In addition, there have been a number of new developments since 2013, including Transport for the North's aspiration for fast and frequent services between city centres; increased concerns about congestion on the local road network around Meadowhall, the associated impact on local air quality and the effect of the route proposed in 2013 on property and businesses.

Route refinement options

2.7.4 In light of these developments and the feedback received in response to the 2013 consultation, we have continued to consider a range of options for how HS2 can best serve South Yorkshire, while maintaining the integrity of the HS2 service to the larger markets in Leeds, York and Newcastle. The five key factors that were considered when reviewing possible route options were:

- demand – from South Yorkshire and markets further north;
- the needs of Sheffield and the wider region;
- connectivity with existing rail and the wider transport network;
- topography, urban density, and the environment; and
- cost.

2.7.5 The options for serving South Yorkshire were set out in the Sheffield and South Yorkshire Report produced by Sir David Higgins, published in July 2016. In summary four options were considered:

Meadowhall – main line interchange station

- 2.7.6 This was the option proposed during the 2013 consultation as, at the time, it was considered to be the approach that best satisfied the five key factors identified above (paragraph 2.7.4). An interchange station at Meadowhall balances the need to provide a station in South Yorkshire without compromising the services to Leeds and further north while also providing connectivity to Doncaster, Barnsley and Rotherham.
- 2.7.7 This option involved building a new station on a viaduct at Meadowhall which avoided the dense urban areas of central Sheffield.
- 2.7.8 However, while Meadowhall does provide good connectivity to Sheffield the development of an interchange station in this location does not align with the aspirations of the Northern Powerhouse Rail project to reduce journey times between city centres in the north. Transport for the North's ambition also highlights the fact that while an HS2 station at Meadowhall does meet the demand of the region as a whole, it is less well suited to serve some of the main sources of demand in Sheffield city centre and to the south west including Chesterfield.
- 2.7.9 Finally, while Meadowhall has good connectivity to the local road network, congestion, and the resultant air quality impacts, are already an issue in this area and is only likely to become more so with other planned development projects in the area.

Sheffield Midland – main line interchange station

- 2.7.10 The second option considered was to divert the main HS2 line into the existing Sheffield Midland railway station in Sheffield city centre.
- 2.7.11 This option would reflect the regional demand picture: enables areas where there are higher levels of demand for long distance rail journeys to be better served, namely south west Sheffield and Chesterfield.
- 2.7.12 This would involve the construction of new lines and several long tunnels and would be very challenging given the impacts on the existing road and rail infrastructure.
- 2.7.13 The topography and urban density would make this option difficult, disruptive and more costly to construct. Sheffield Midland station is also located in the floodplain of the River Sheaf and has insufficient space to accommodate the needs of existing local services.

Sheffield Victoria – main line station

- 2.7.14 The third option involved diverting the main HS2 line to the currently disused Victoria station to the north of the city centre. As with the Sheffield Midland option this would better serve the main areas of demand in Sheffield city centre but less so the areas to the south west including Chesterfield. It would however delay services to Leeds, York and Newcastle because the line would be longer.
- 2.7.15 Sheffield Victoria is not currently part of the existing rail network, which presents issues in terms of connectivity to local services. A high speed station at Victoria would also have to be curved due to local constraints which would mean taking a large area of land. The approaches to the south and north would also require significant works which would be disruptive.

M18 / Eastern route

- 2.7.16 A fourth option was also identified which separates the issues of providing an HS2 service to South Yorkshire whilst maintaining the integrity of services to Leeds, York and Newcastle.
- 2.7.17 To achieve this, a southern spur off the main high speed line near Clay Cross would provide a dedicated link to the existing Midland Main Line enabling high speed trains from London to serve Sheffield city centre and Chesterfield. This approach serves the areas of highest demand in South Yorkshire without affecting services further north and enables HS2 services to run into Sheffield Midland station without the environmental implications and engineering challenges of having to construct a dedicated high speed station.
- 2.7.18 Serving South Yorkshire in this way also allows a re-appraisal of the main high speed route. A route to the east, following the M1 and then initially the M18 would avoid a number of the problems associated with the Meadowhall route proposed in 2013 and would be easier to construct, result in less overall noise impact and be less expensive to build. There would however be some significant impacts on this eastern route including a new housing development between Mexborough and Conisbrough, other communities and on the landscape in some locations. Overall, it is assessed there would be fewer properties directly impacted than on the Meadowhall route proposed in 2013.
- 2.7.19 This option also has the potential to meet Transport for the North's aspirations for city centre to city centre connectivity if a link back to the HS2 line north of Sheffield was to be built. Such a link could be provided if a junction was created in the Clayton area.

Proposed route refinement and why the Secretary of State is minded to make this change

- 2.7.20 Sir David Higgins' report on Sheffield and South Yorkshire made a recommendation to pursue the M18/Eastern route option involving the creation of a southern spur off the main high speed into Sheffield Midland and moving the alignment of the main north-south high speed route through South and West Yorkshire to follow a more easterly route.
- 2.7.21 Sir David also identified in his report the potential to create a connection back onto the HS2 mainline north of Sheffield and recommended that a study be undertaken to examine whether there is a case for a parkway station on the newly proposed route.
- 2.7.22 The Secretary of State is minded to accept these recommendations as the Government's preferred option.
- 2.7.23 This refined route has a number of benefits when compared to the route proposed during the 2013 consultation in that it:
- provides direct access into Sheffield city centre: previous work was unable to identify an affordable way in which HS2 services could be built into the city centre. Delivering HS2 services from high speed lines onto the existing railway to Sheffield Midland overcomes these issues;
 - has the ability to serve additional markets: the southern connection provides the opportunity to provide a new HS2 service at Chesterfield;

- reflects the regional demand picture: enables areas where there are higher levels of demand for long-distance rail journeys to be served, namely South West Sheffield and Chesterfield;
- reduces the overall line of route impacts: the mainline would avoid much of the challenging topography, mining risk and densely populated urban areas associated with the Meadowhall route; resulting in fewer direct property demolitions. It also has less interference with watercourses and provides an overall reduction in anticipated noise impacts;
- reduces capital costs: provides a cost saving in the region of £1bn including contingency (whilst providing for a northern junction at Clayton);
- improves journey times to Sheffield city centre: provides a journey time saving to larger markets further north, including Leeds, York and Newcastle. This helps to improve the overall business case for Phase Two;
- has the potential to meet Transport for the North's aspirations for city centre to city centre connectivity if a link onto the HS2 line north of Sheffield were to be built, thereby providing a high speed service to Leeds and destinations to the north.

Detailed description of the proposed refinement

M1/Eastern alignment

- 2.7.24 On this new alignment, the main HS2 route would run to the west of Bolsover on a mixture of viaduct and embankment, passing into longer sections of cutting to the north of the town. We recognise the sensitivity of the landscape through this area with the prevalence of assets of historic importance. We have engaged with the National Trust and Historic England (previously English Heritage) since 2012 on concerns raised in relation to the alignment of the route in this area and will continue to do so as the design develops.
- 2.7.25 The alignment would then head north on a 490m long viaduct, crossing the M1, the B6419 and an existing freight railway at a height of up to 29m. It would then continue to run to the west of the M1, in the existing transport corridor, largely in cutting of up to 15m deep, heading north and to the west of Barlborough.
- 2.7.26 In response to consultation feedback, we reviewed a number of alternative locations for the infrastructure maintenance depot before concluding brownfield land to the north west of Staveley was the most suitable location. The layout of the site has however been refined and the size increased. We continue to develop an understanding of the maintenance strategy and there may be opportunities to refine the design of the depot as the scheme develops.
- 2.7.27 As the route is now further to the east of the infrastructure maintenance depot we have proposed an alternative connection from the mainline to the east of Mastin Moor via a grade separated junction. The connection would follow the line of a currently disused freight railway.
- 2.7.28 The route passes to the east of Killamarsh and Norwood, following the M1 corridor as closely as possible. It passes Wales to the immediate west of the M1 in a cutting up to 10m deep. We would expect to use retaining walls in this area to minimise the footprint of the route.

- 2.7.29 Passing Aston, the route would rise towards the M1 / M18 interchange, crossing the Sheffield to Worksop Railway and the A57 on viaducts. The route would then cross the M1 and M18 slip roads on two further viaducts, separated by embankment. It would run immediately to the west of the M18 past Bramley in cutting up to 11m deep; we would again expect to use retaining walls in this area to minimise the footprint of the route. Past Bramley, the route would curve northwards towards Conisbrough in cutting up to 19m deep through Conisbrough Parks.
- 2.7.30 The route descends into the valley of the River Don, on embankment up to 15m high and a cutting up to 10m deep. The route would pass between Conisbrough and Mexborough, crossing the rivers Dearne and Don.
- 2.7.31 The route then heads north, climbing out of the river valley, and attempts to follow local ground levels, which rise sharply. This results in embankments up to 21m high to the east of Barnburgh, and then cutting up to 25m deep. The route starts to head west past Hickleton, and passes between Thurnscoe and South Kirkby, crossing the existing Sheffield to York railway.
- 2.7.32 HS2 Ltd has carried out extensive stakeholder engagement events since the publication of Sir David Higgins's report on Sheffield and South Yorkshire in July 2016 with its recommendations on the M18 / Eastern route. A number of issues have been raised in relation to community and environmental impacts, for example in Wales, Aston, Bramley, Mexborough, Barnburgh and Crofton. We are conscious of the impacts in these areas. HS2 Ltd will work closely with local communities to understand how such impacts might be reduced or minimised, for example through the design of the route, its vertical profile, noise mitigation, landscaping and visual screening such as earthworks and tree planting.
- 2.7.33 The route proposed during the 2013/14 consultation passed Crofton to the west and also proposed a rolling stock depot at New Crofton. Following changes to the route alignment, the railway now approaches Crofton from the south east, and passes the village of Crofton and New Crofton to the east. It would start to climb to cross the existing Doncaster to Wakefield railway line at a height of 17m.
- 2.7.34 The mainline would then cross the A638, on a 300m viaduct up to 19m high. A new grade-separated connection to the rolling stock depot would also pass underneath the mainline.

New Crofton rolling stock depot

- 2.7.35 During the 2013 consultation we proposed that a rolling stock depot should be sited at New Crofton, as this site was a good fit with the engineering design requirements. This would now be served from the east, rather than the west, but is otherwise in the same general location, with a slight westward shift since the 2013 consultation.
- 2.7.36 In response to concerns raised by the local community during recent engagement activities, we are considering a number of alternative locations for the proposed rolling stock depot. Work to assess these alternative locations is ongoing and we expect to feed back on this review when we respond to the results of this consultation. However, a number of options have been identified and we are confident that some of these may be viable alternatives for the Secretary of State to consider.

Sheffield spur

- 2.7.37 To provide the connection to the existing network so high speed trains can serve Sheffield Midland station, a spur would leave the HS2 network on a grade separated junction between Huthwaite and South Normanton, passing under the A38. The route would then run in cutting, passing under the M1 and between the villages of Newton and Blackwell.
- 2.7.38 The two tracks would cross over the Normanton Brook, before heading westward on embankment and then cutting as it approaches Stonebroom.
- 2.7.39 The route would continue in cuttings up to 7m deep, moving to embankment as the ground level starts to fall. The spur would join the corridor of the existing Erewash Valley Railway immediately to the east of Stonebroom, before joining the existing railway with a flat junction near Clay Cross to enable HS2 trains to serve Chesterfield and run directly into Sheffield Midland station.

Question 7

- 2.7.40 *Do you support the proposal to amend the route to serve South and West Yorkshire? Please indicate whether or not you support the proposal together with your reasons.*

Creating a Northern junction – Sheffield to Leeds services

The use of Sheffield Midland for HS2 services also opens up the possibility to achieve Transport for the North's ambition for frequent 30 minute city centre to city centre journey time between Sheffield and Leeds. This could be achieved via a northern connection to the high speed line which would allow HS2 services to stop at Sheffield Midland and then continue north to Leeds and beyond via a northern junction.

Initial proposals for this northern junction involve high speed services using the existing Sheffield to Leeds line to travel north before connecting back into the high speed network north of Thurnscoe in the vicinity of Clayton via a grade separated junction. In order to deliver this service the existing network between Sheffield and Leeds would require electrification. The Secretary of State is minded to include a northern junction in the ongoing development of the HS2 scheme (with provision made in the Phase 2b hybrid Bill) and is seeking views on this in this consultation.

Questions 8 and 9

Do you support the potential development of a northern junction to enable high speed services stopping at Sheffield to continue further north? Please indicate whether or not you support the proposal and your reasons.

Do you support the proposed location of the northern junction in the vicinity of Clayton? Please indicate whether or not you support the proposal and your reasons.

Figure 8: Overview of the proposed re-alignment of the route through South Yorkshire

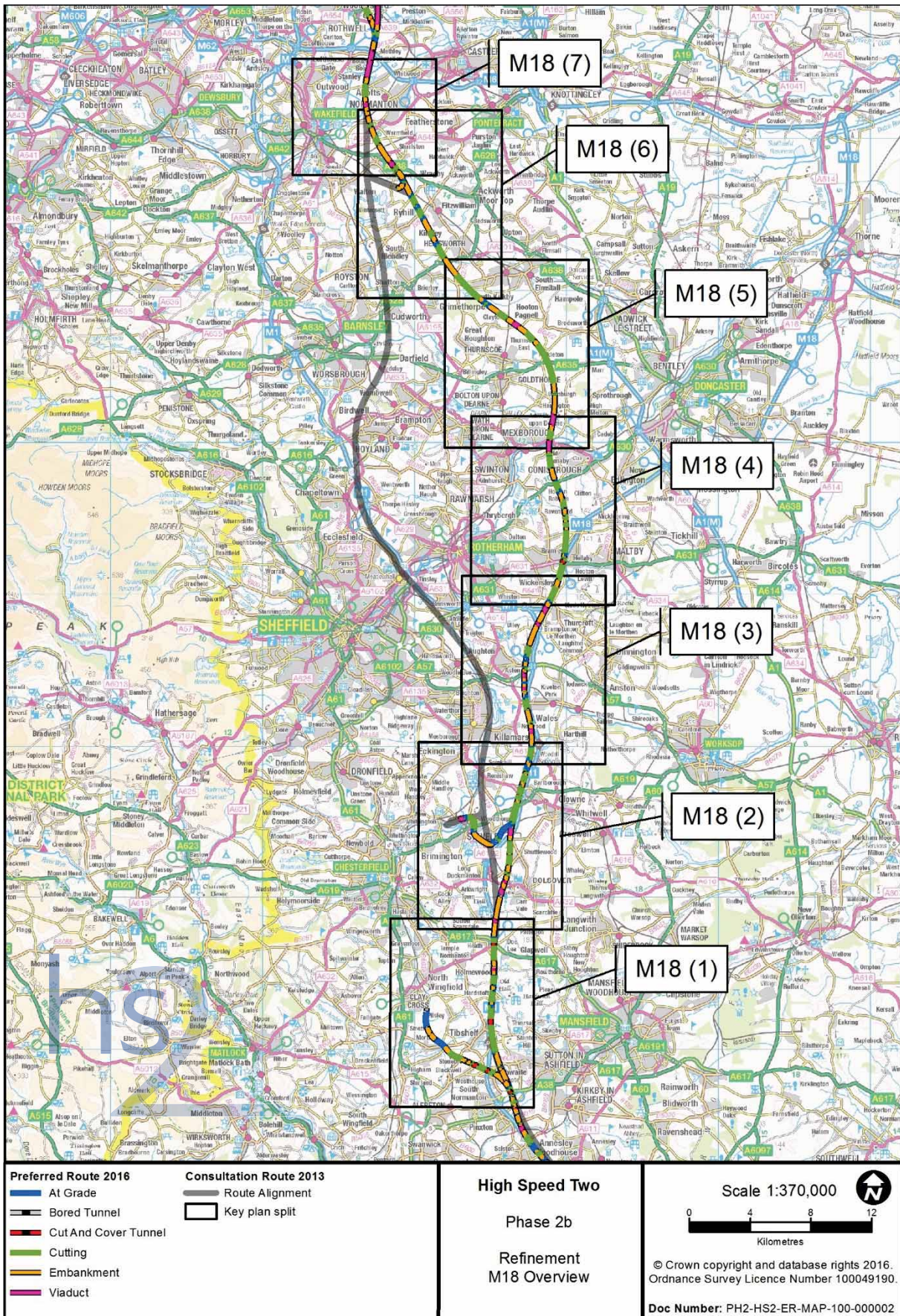
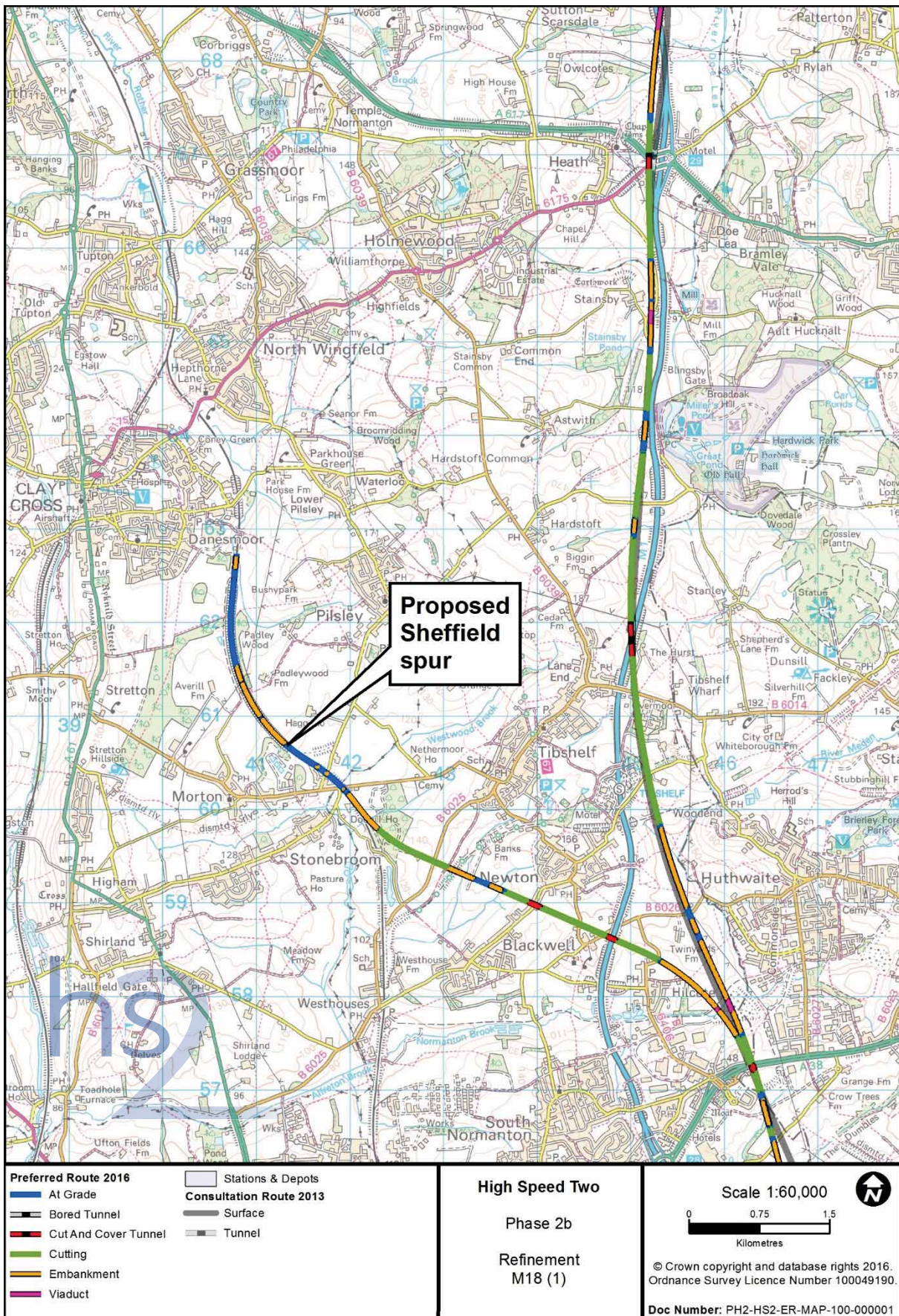
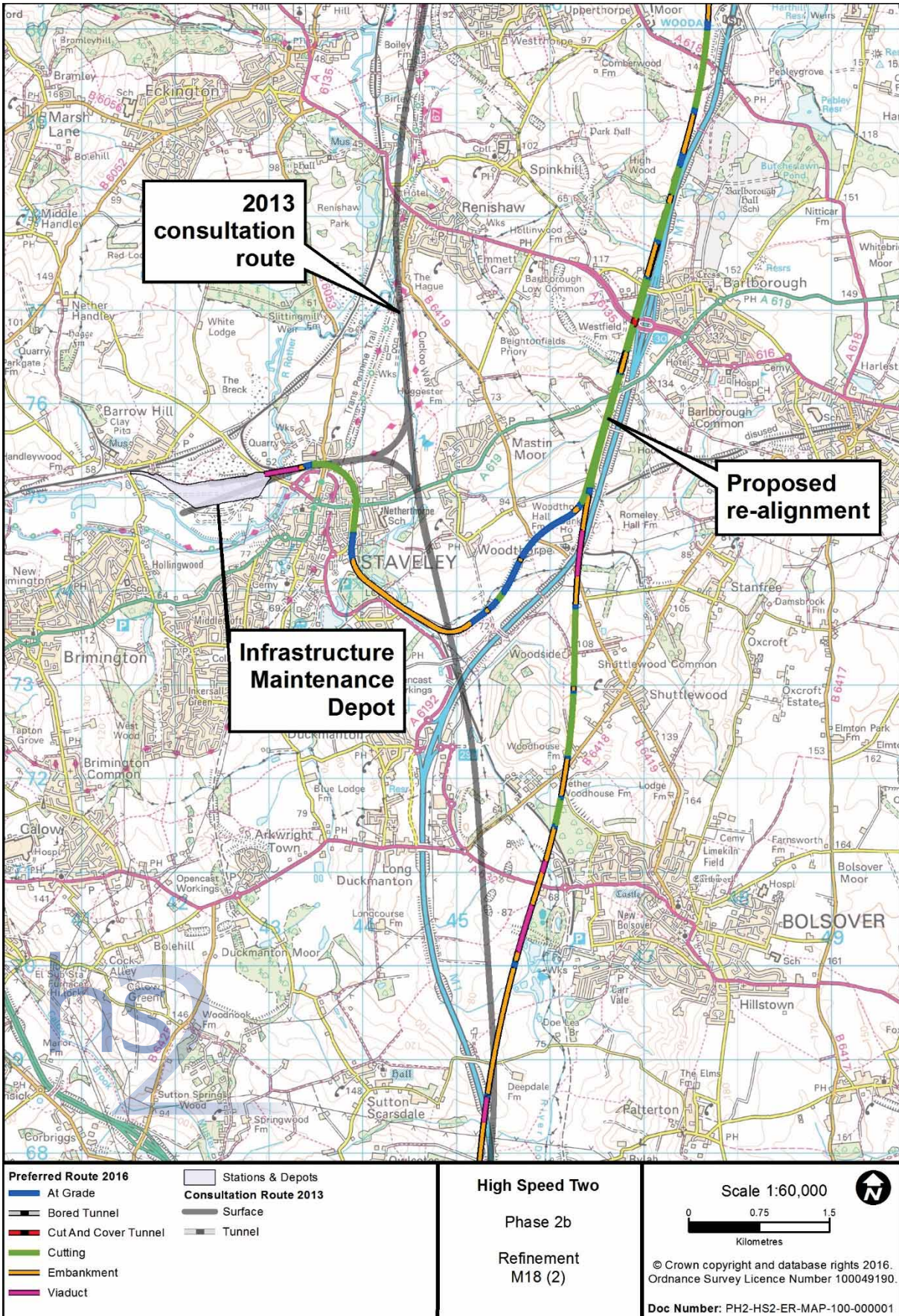
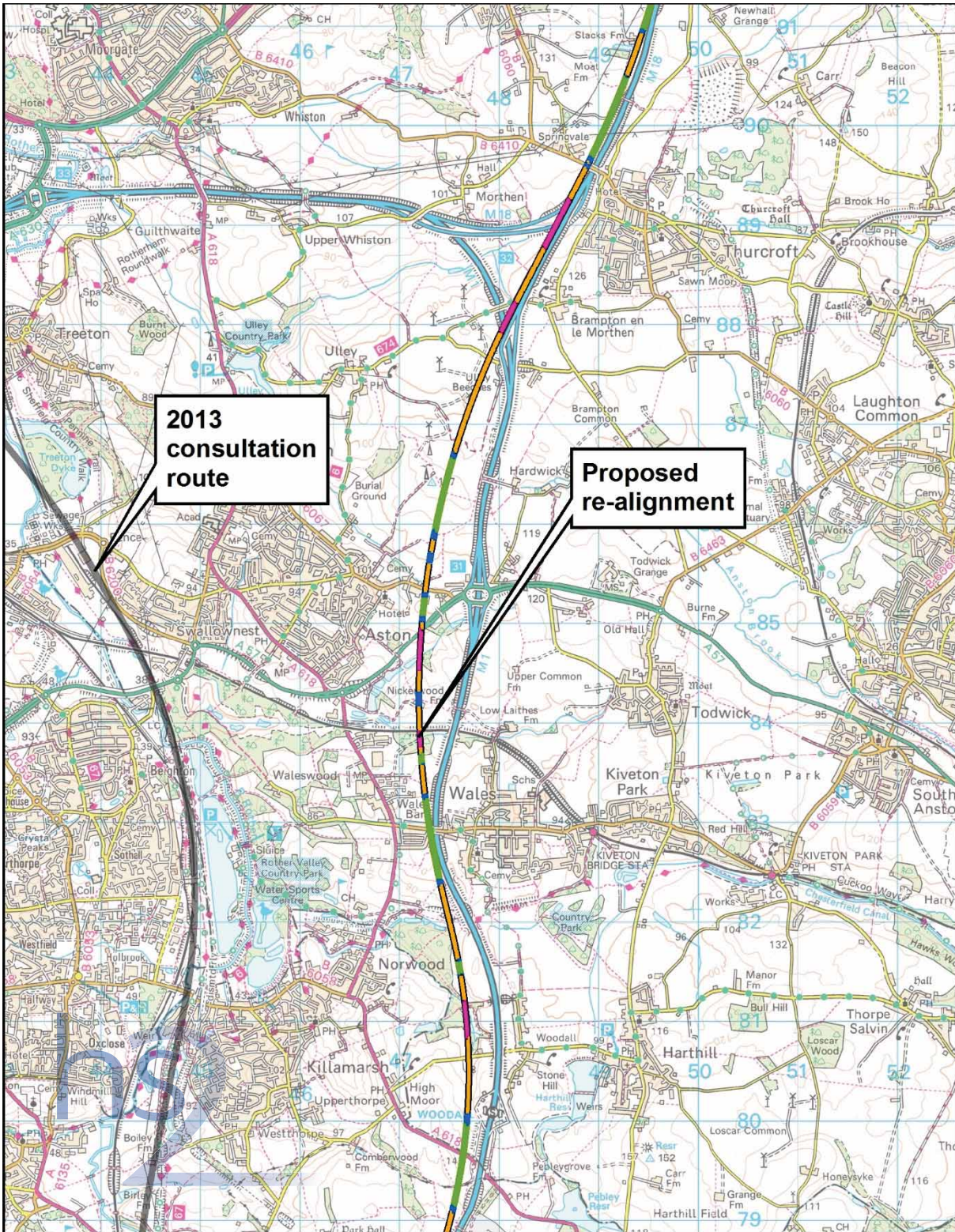


Figure 9: Detail of the proposed re-alignment of the route through South Yorkshire







**2013
consultation
route**

**Proposed
re-alignment**

- Preferred Route 2016**
- At Grade
 - Bored Tunnel
 - Cut And Cover Tunnel
 - Cutting
 - Embankment
 - Viaduct

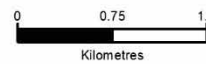
- Stations & Depots**
- Surface
 - Tunnel

High Speed Two

Phase 2b

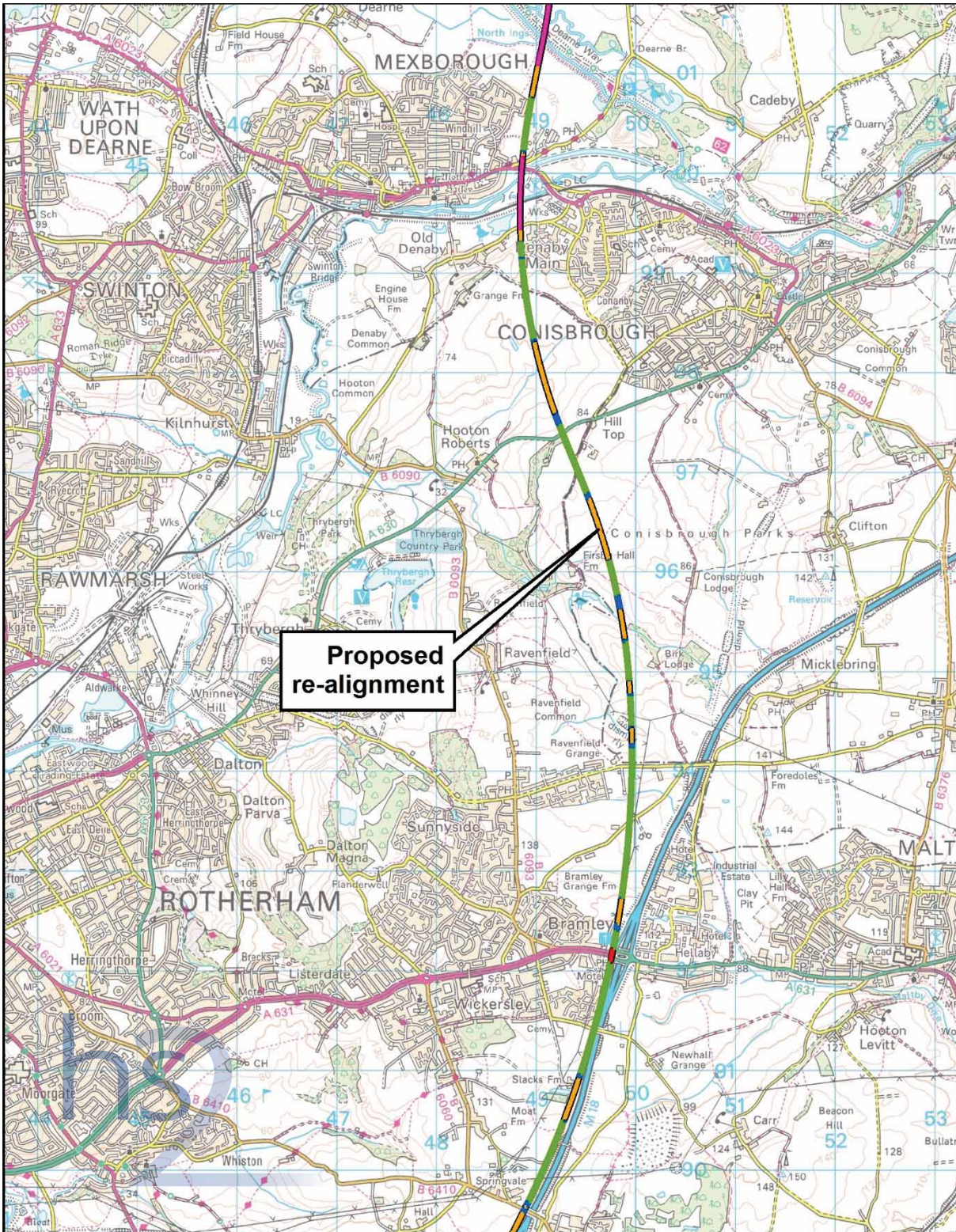
Refinement
M18 (3)

Scale 1:60,000

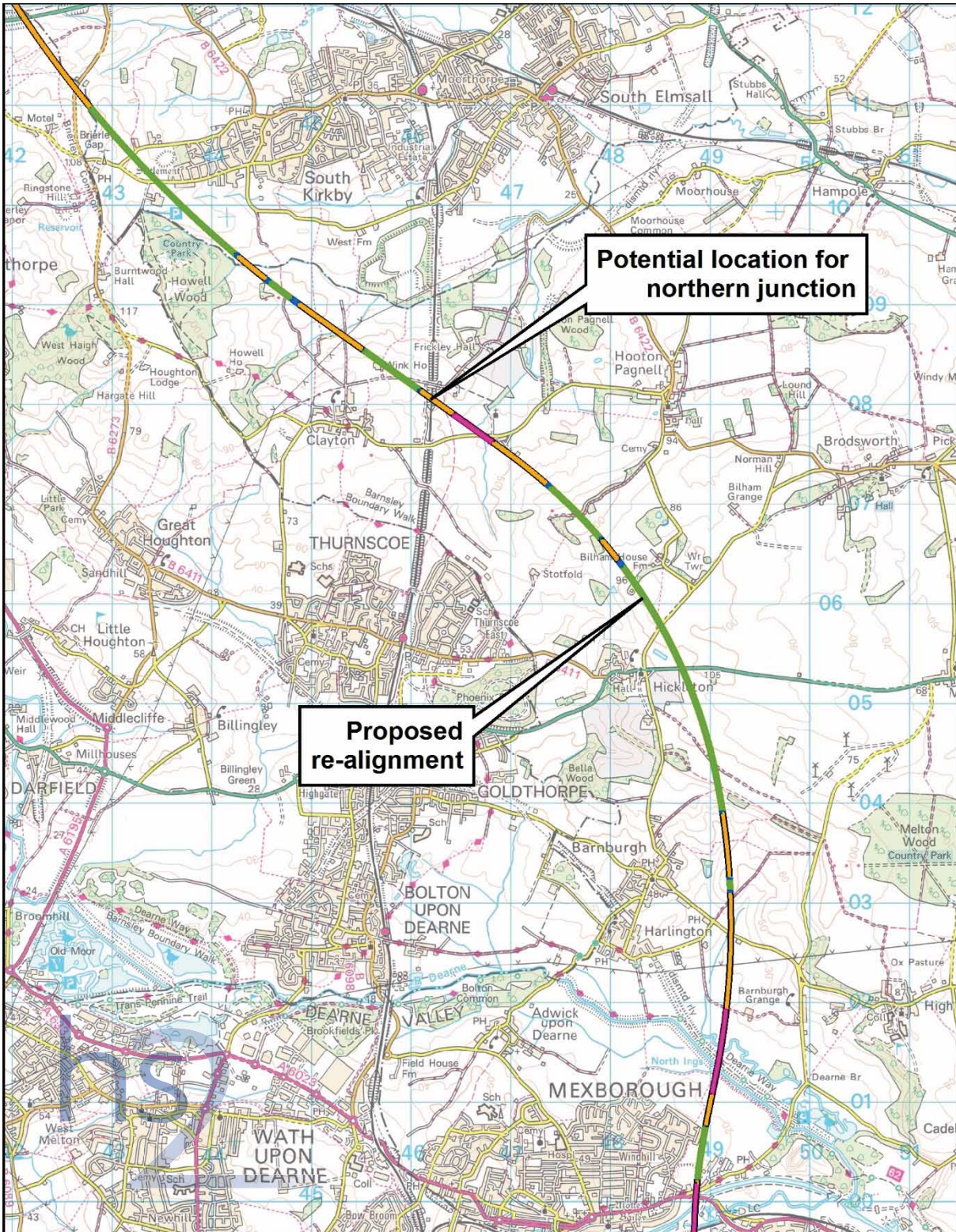


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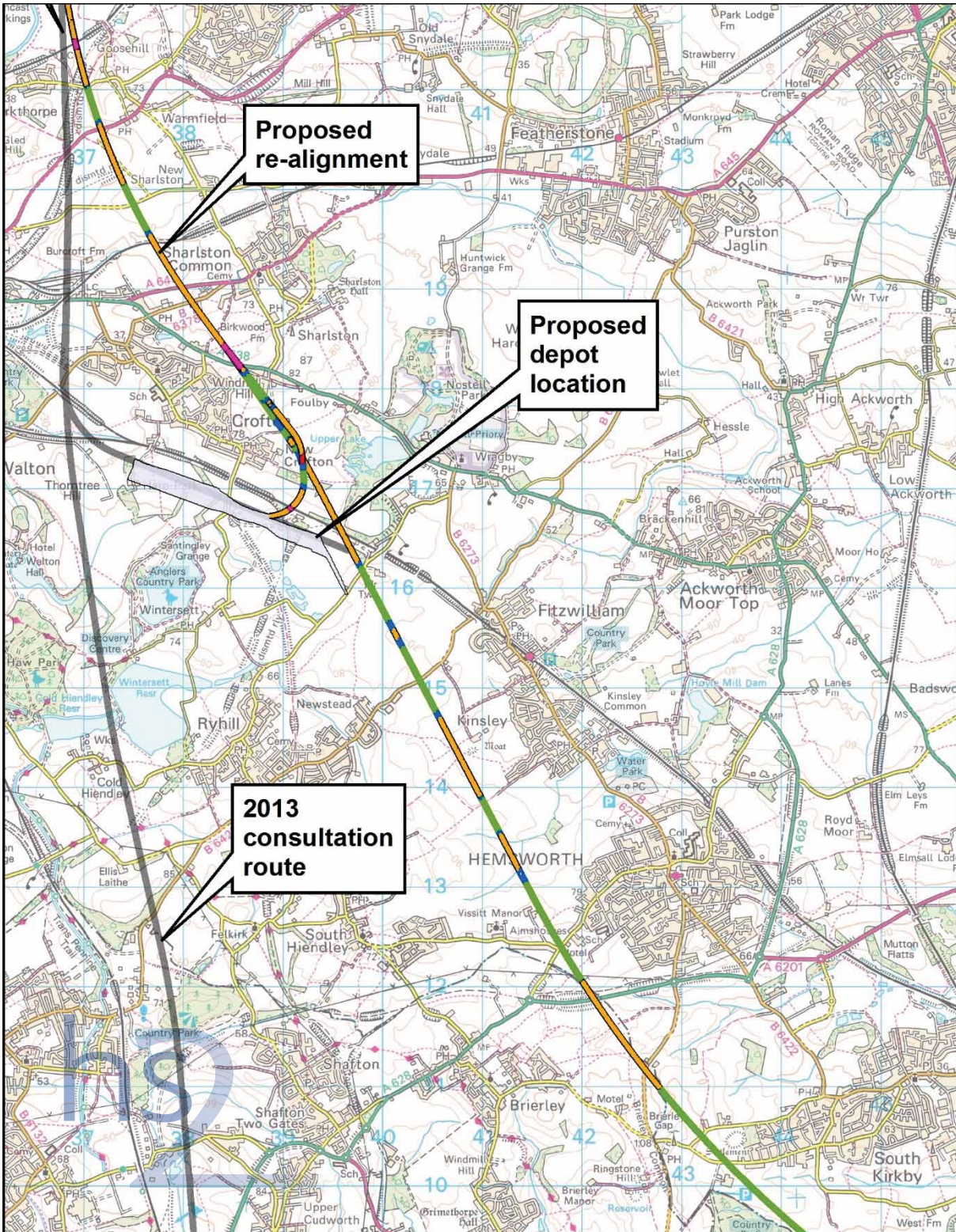
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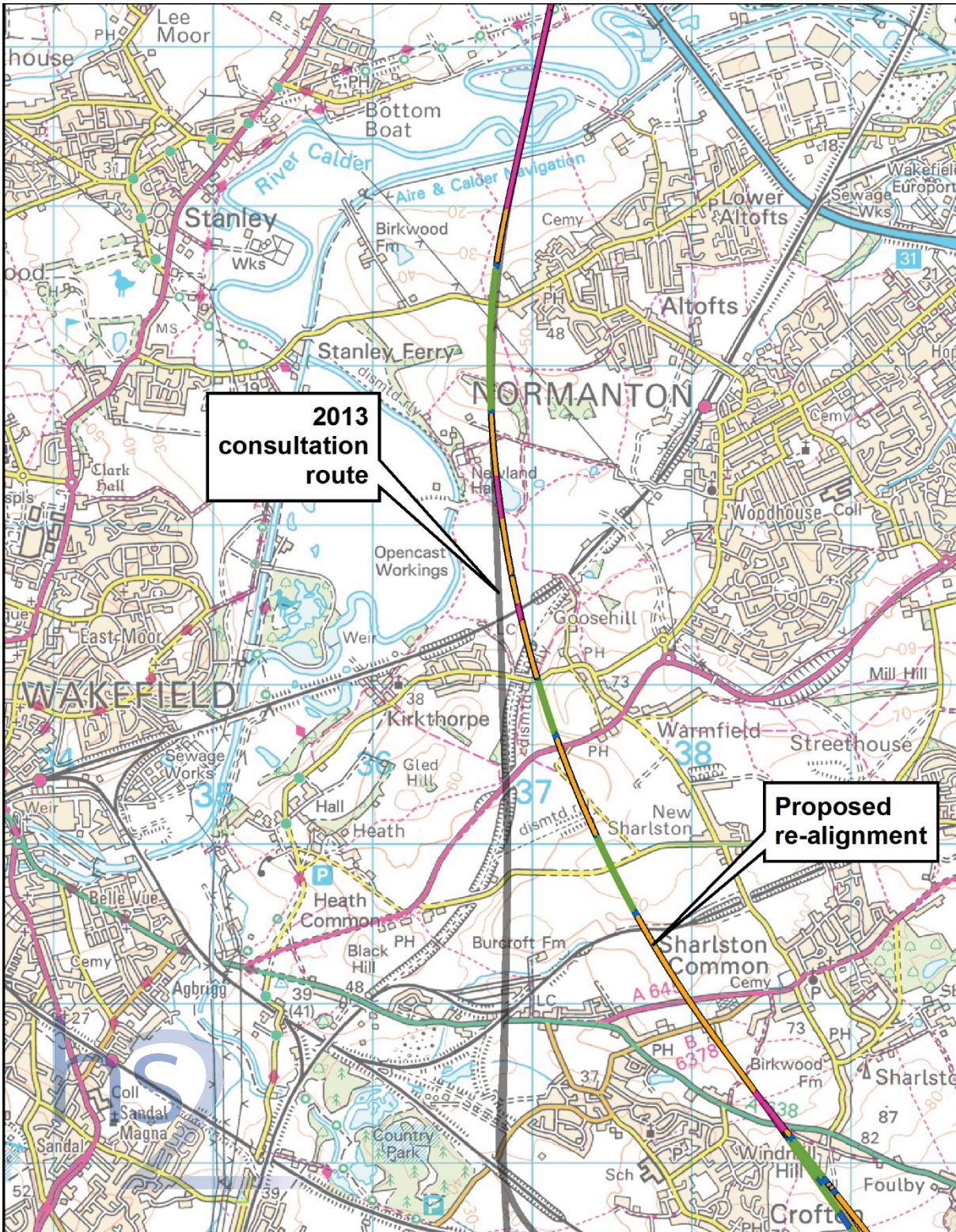
<p>Preferred Route 2016</p> <ul style="list-style-type: none"> — At Grade — Bored Tunnel — Cut And Cover Tunnel — Cutting — Embankment — Viaduct 	<p>Consultation Route 2013</p> <ul style="list-style-type: none"> Stations & Depots Surface Tunnel 	<p>High Speed Two</p> <p>Phase 2b</p> <p>Refinement M18 (4)</p>	<p>Scale 1:60,000</p> <p>© Crown copyright and database rights 2016. Ordnance Survey Licence Number 100049190.</p> <p>Doc Number: PH2-HS2-ER-MAP-100-000001</p>
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<p>Preferred Route 2016</p> <ul style="list-style-type: none"> — At Grade — Bored Tunnel — Cut And Cover Tunnel — Cutting — Embankment — Viaduct 	<p>Consultation Route 2013</p> <ul style="list-style-type: none"> Stations & Depots — Surface — Tunnel 	<p>High Speed Two</p> <p>Phase 2b</p> <p>Refinement M18 (5)</p>	<p>Scale 1:60,000</p> <p>© Crown copyright and database rights 2016. Ordnance Survey Licence Number 100049190.</p> <p>Doc Number: PH2-HS2-ER-MAP-100-000001</p>
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<p>Preferred Route 2016</p> <ul style="list-style-type: none"> — At Grade — Bored Tunnel — Cut And Cover Tunnel — Cutting — Embankment — Viaduct 	<p>Stations & Depots</p> <ul style="list-style-type: none"> Stations & Depots Consultation Route 2013 Surface Tunnel 	<p>High Speed Two</p> <p>Phase 2b</p> <p>Refinement</p> <p>M18 (6)</p>	<p style="text-align: center;">Scale 1:60,000</p> <div style="text-align: center;"> <p>0 0.75 1.5 Kilometres</p> </div> <p style="text-align: center;">© Crown copyright and database rights 2016. Ordnance Survey Licence Number 100049190.</p> <p style="text-align: center;">Doc Number: PH2-HS2-ER-MAP-100-000001</p>
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**2013
consultation
route**

**Proposed
re-alignment**

Preferred Route 2016	Stations & Depots
At Grade	Consultation Route 2013
Bored Tunnel	Surface
Cut And Cover Tunnel	Tunnel
Cutting	
Embankment	
Viaduct	

High Speed Two

Phase 2b

Refinement

M18 (7)

Scale 1:37,500

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3 How to respond to the consultation and next steps

3.1 Closing date

3.1.1 The consultation closes on 9 March 2017. Please ensure that you send your response before that date to ensure that it is included in our analysis and consideration.

3.2 Who can respond to this consultation

3.2.1 As with all HS2 consultations, this is a national consultation so we welcome comments from all interested individuals or organisations.

3.2.2 If you would like further copies of this consultation document, it can be found at <https://www.gov.uk/government/collections/hs2-phase-two-from-the-west-midlands-to-leeds-and-manchester> or you can contact 020 7944 4908 if you would like alternative formats (Braille, audio CD, etc).

3.3 How to respond

3.3.1 You can respond to this consultation in the following ways:

- online: you can provide your response online via the HS2 consultation website at <https://route2b.dialoguebydesign.net>
- response form: for copies of the response form, go to www.gov.uk/hs2 or call 020 7944 4908;
- email: you can email your completed response form to route2b@dialoguebydesign.co.uk
- post: you can post your completed response form to the following address:
FREEPOST HS2 PHASE 2B ROUTE REFINEMENT CONSULTATION

3.3.2 HS2 Limited and the Department for Transport (DfT) cannot accept responsibility for ensuring responses sent to addresses other than those described above are included in the consultation process.

3.3.3 All responses must include your name and organisation (if applicable). When responding, please state whether you are responding as an individual or representing the views of an organisation. If responding on behalf of a larger organisation, please make it clear who the organisation represents and, where applicable, how the views of members were assembled.

3.3.4 If you have any queries you can contact us by email at: HS2Enquiries@hs2.org.uk or by telephone on 0207 944 4908.

3.4 Information events

3.4.1 As part of this consultation we will be running a series of information events in January and February 2017. These events will provide members of the public and other interested parties with the opportunity to talk in person to members of the HS2 and DfT project teams. Events

will be supported by a specialist team of engineering and environmental professionals, who will help the public understand the proposed route refinements and answer specific queries. Maps showing the proposed route refinements and a series of project summary documents will be made available to the public at these events.

- 3.4.2 Further information is available on the HS2 consultation website at <https://route2b.dialoguebydesign.net> or by contacting 0207 944 4908.

3.5 Confidentiality and data protection

- 3.5.1 If you do not want any of your response to be published, you should clearly mark it as 'Confidential'. However, information provided in response to this consultation, including personal information, may be subject to publication or disclosure in accordance with the access to information regimes. These are, primarily, the Freedom of Information Act 2000 (FOIA), the Data Protection Act 1998 and the Environmental Information Regulations 2004.

3.6 What happens next?

- 3.6.1 The consultation closes on 9 March 2017. We will then review and take into consideration all responses before making a recommendation to the Secretary of State. It is anticipated that the Secretary of State will confirm the full Phase 2b route in 2017.

3.7 Freedom of Information

- 3.7.1 Information provided in response to this consultation, including personal information, may be subject to publication or disclosure in accordance with the Freedom of Information Act 2000 (FOIA) or the Environmental Information Regulations 2004.
- 3.7.2 If you want information that you provide to be treated as confidential, please be aware that, under the FOIA, there is a statutory Code of Practice which guides public authorities and which deals amongst other things, with obligations of confidence.
- 3.7.3 In view of this it would be helpful if you could explain to us why you regard the information you have provided as confidential. If we receive a request for disclosure of the information, we will take full account of your explanation, but we cannot give an assurance that confidentiality can be maintained in all circumstances. An automatic confidentiality disclaimer generated by your IT system will not, of itself, be regarded as binding on the DfT and HS2 Limited.
- 3.7.4 The DfT and HS2 Limited will process your personal data in accordance with the Data Protection Act (DPA) and in the majority of circumstances this will mean that your personal data will not be disclosed to third parties.

Annex A: Summary of refinements not subject to consultation

The table on the next page sets out other changes to the route on which we are not consulting. It does not include minor changes driven by design requirements where there is no appreciable change in impact.

For more information about the changes that we have proposed to the route consulted on in 2013, please consult the draft Summary of Route Refinements.

Leeds leg	Manchester leg
<p>Kingsbury / Whateley – The route in this area has been lowered by around 4m and moved approximately 35m closer to the M42. This was driven by lessons learned from Phase One and reflects concerns raised during the 2013 consultation over the height of the route in this area. As a result the route is lower in the landscape and closer to the existing transport corridor. The route is now also on a single continuous viaduct as opposed to sections of viaduct and embankment. It therefore requires fewer watercourse diversions and has a lesser impact at Kingsbury Water Park.</p>	<p>Crewe Tunnel - The northern portal of the tunnel at Crewe has moved around 270m south to reflect the reduction in the tunnel diameter introduced as a value engineering measure. As it leaves the tunnel, the route continues to follow the existing West Coast Main Line corridor. Some increases in noise impacts are expected as a result of the shorter tunnel, and opportunities for noise mitigation will be considered as part of the development of the hybrid Bill scheme.</p>
<p>East Midlands Hub Station – East Midlands Hub Station has moved about 150m south to enable the route to fit through the gap between Stapleford and Sandiacre whilst incorporating lessons learned from Phase One. The station remains in the same general area and the configuration of the station has not changed. Heading north from East Midlands Hub Station, the route travels in the same corridor and has moved c. 50m to the west and reduced in height by around 1.5m over the Erewash Canal and existing rail line.</p>	<p>Delta Junction – As a result of the proposed removal of the northern chord of this junction (facilitated by moving the Western leg Rolling Stock Depot), there are reduced landscape and visual impacts. This has also allowed refinements to the vertical alignment of the Manchester Spur, delivering improved watercourse crossings, and has removed the need for a grade separated junction across the Bridgwater Canal.</p>
<p>Strelley - The route has moved east by approximately 15m at the southern portal of the tunnel under Strelley, and 10m east at Bulwell Wood Site of Special Scientific Interest (SSSI). Beyond Strelley, the route is up to 3m higher over a long section of route, to improve clearances over watercourses and roads, reflecting lessons learned from the Phase One design, with higher embankments at Bulwell Wood SSSI and Nuthall, and a reduction in the depth of the cutting through Park Forest. The route follows the same corridor, although there would be some increase in impacts on the setting of the conservation area and local listed buildings, although the route under Strelley itself would continue to be in a cut and cover tunnel.</p>	<p>Manchester Ship Canal –The 2013 consultation proposed that the route should cross the Manchester Ship Canal on a viaduct. We continue to recommend a viaduct in this area. The height of the viaduct is determined by the need for clearances on the ship canal. In response to design lessons learned from Phase One, the design speed has been reduced allowing for the profile of the viaduct to be smoothed, with longer approaches but without increasing the maximum height. This slower speed delivers a small reduction in noise impacts.</p>
<p>Bogs Farm – In response to feedback from the 2013 consultation and intelligence about design risk, the route has moved to the west by approximately 80m so that it runs more closely alongside the M1, largely avoiding Bogs Farm SSSI and entirely avoiding Bentinck Colliery Tip. The route has also been moved approximately 250m further away from Langton Hall, largely avoiding the demolitions that were associated with the previous design. This move also means that the route sits deeper into the hillside and crosses the River Erewash approximately 11m lower.</p>	<p>Manchester Airport Station: The general location of Manchester Airport Station has not changed since consultation. The proposed design of Manchester Airport Station has been amended in response to consultation, so that car parking is now provided in the space between the HS2 main line and the M56. The design of the station will be subject to further development in liaison with stakeholders during the hybrid Bill design process and beyond.</p>
<p>M1 corridor North of Tibshelf – The route crosses under the M1 at Tibshelf and proceeds to the west of the M1, in the M1 corridor, passing a number of heritage assets including Hardwick Hall and Sutton Scarsdale. The height of the route has increased by around 5m as it crosses the Doe Lea Floodplain to improve the clearance over the floodplain, reflecting lessons learned from Phase One. However, the route continues in the same general corridor.</p>	<p>Culcheth – In response to consultation the route alignment has been moved approximately 300m further from the town of Culcheth, within the same general corridor but further from the town itself. This avoids impacts on the Culcheth Linear Park, an important local amenity, and the Taylor Business Park, an important site for local employment, which were previously in the line of the route. These changes, which have included slowing the alignment speed have reduced some of the noise impacts at Culcheth, although there are expected to be some additional noise and visual impacts at Wigshaw, as well as affecting a fish farm which was previously to the south of the route.</p>

<p>Woodlesford - As a result of feedback from the 2013 consultation, the route alignment for the Leeds spur now passes beneath Woodlesford in a 1.6km tunnel, joining the existing rail corridor and consultation alignment north of Rothwell Country Park. This replaces the previous route alignment where the Leeds Spur ran to the north of Woodlesford on viaducts along the line of the River Aire. This refinement was made in response to strong feedback from consultation and would result in overall reduction in noise at Woodlesford, as well as avoiding significant landscape and visual impacts to the north of Woodlesford, and impacts on the River Aire and Aire and Calder Navigation. Although there would be some new views of the tunnel portal to the east of Woodlesford, this is expected to have little visual impact.</p>	<p>Golborne Alignment – The proposed removal of the Rolling Stock Depot in this location has allowed HS2 Limited to re-align the route in this area, moving it further away from Pennington Flash and Abram Flash and resulting in a significant reduction in land take in this area. Although the route moves closer to Golborne, moving the depot has resulted in reduced landscape and visual impacts in this area, including reduced fragmentation and isolation of the countryside. The north facing grade separated connection to the West Coast Main Line remains; however the south facing grade separated junction and the grade separated junction to connect to the Rolling Stock Depot have been removed. Impacts to the setting of the GII* Lightshaw Hall and GII Byrom Hall are also avoided.</p>
<p>Leeds Station – The Government is confirming that Leeds will be served with the station configuration as proposed by Sir David Higgins in <i>The Yorkshire Hub</i> with a shared concourse connecting the existing station with the HS2 station. This change was made following extensive engagement with stakeholders, and better reflects regional aspirations for connectivity as well as local regeneration and development plans, offering improved opportunities for housing and commercial development. The route in this area now crosses the River Aire and as a result has new impacts on this watercourse and floodplain. There would be greater impacts on the townscape in central Leeds as a result of this move. It is expected that there will be a reduction in the impacts on Leeds Canal Wharf conservation area, although the route and station will continue to be close by.</p> <p>The proposed location for the HS2 station is referenced in the current consultation on Leeds City Council's master planning process and we will consider any further outcomes from these discussions as the design develops further.</p>	



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