Appendix A

CHAPTER 2 SOCIO-ECONOMIC CONTEXT

LIST OF TABLES

APPENDIX A-1

REVIEWED NATIONAL POLICY DOCUMENTS

NATIONAL TRANSPORT POLICY

1.1.1 National policy identifies the potential for enhancing transport infrastructure as an opportunity to make a positive contribution to supporting economic growth and environmental improvements. National policies are the basis for policies that go on to be developed at regional and local levels. At the national level there are several key policy documents which have driven forward the focus on transport schemes that enhance connectivity and contribute to economic growth within the North of England.

DFT LOCAL TRANSPORT WHITE PAPER: CREATING GROWTH, CUTTING CARBON: MAKING SUSTAINABLE LOCAL TRANSPORT HAPPEN (DFT, 2011)

1.1.2 The White Paper's vision is "…for a transport system that is an engine for economic growth, but one that is also greener and safer and improves quality of life in our communities".

1.1.3 The key objectives identified by the White Paper are to encourage economic growth, reduce carbon emissions and encourage the wider objectives of transport (such as more physical activity, improved road safety and air quality).

NATIONAL PLANNING POLICY FRAMEWORK (NPPF) (DEPARTMENT FOR COMMUNITIES AND LOCAL GOVERNMENT, 2012)

1.1.4 The NPPF states that "significant weight should be placed on the need to support economic growth through the planning system" and "to help achieve economic growth, local planning authorities should plan proactively to meet the development needs of business and support an economy fit for the 21st century."

ROAD INVESTMENT STRATEGY DFT (HIGHWAYS ENGLAND, 2014)

1.1.5 The Roads Reform Agenda which includes the Road Investment Strategy (RIS), and transformation of Highways England, was established to:

- Provide certainty in long term funding to deliver and drive efficiencies;
- Transform connectivity, upgrading key roads;
- Increase capacity and deliver over 1,300 additional lane miles;
- Improve network condition including 80% resurfacing of the SRN; and
- Enable construction with £5bn available for 50 schemes to connect developments.

1.1.6 The RIS looks to ensure that the SRN functions optimally in order to:

- Provide capacity and connectivity, supporting the economy;
- Improve safety for road users with the target of 40% less deaths and serious injuries by 2020 and enhancing crossings for active modes and vulnerable users; and
- Improve environmental outcomes specifically in terms of noise exposure and loss of biodiversity.

NATIONAL INFRASTRUCTURE PLAN (HM TREASURY, 2014)

1.1.7 Infrastructure is integral to the economic function of the UK. The National Infrastructure Plan 2014 (NIP 14) established a vision including new infrastructure and quality improvements to support the government's Long Term Economic Plan.

1.1.8 Over £460bn of planned public and private investment was allocated to the NIP 14 for the period to 2020 and beyond, including £15bn to the RIS, £38bn to Network Rail's delivery programme, £2.3bn to flood investment, support for digital and scientific infrastructure and funding for energy, waste and water infrastructure. It was estimated that for every £1 investment in infrastructure construction, there would be an overall increase of £2.84 in economic activity.

ROAD INVESTMENT STRATEGY 2015-2020 (HIGHWAYS ENGLAND, 2014)

1.1.9 In the 2013 Spending Round, the Government committed to a £15bn Road Investment Strategy (RIS1), with an outlook for long term improvement of England's motorways and major roads, to deliver smart and sustainable roads.

1.1.10 RIS1 identified over 100 major schemes and included a feasibility study into a Trans-Pennine Tunnel to fill the gap in the Strategic Road Network (SRN) between Sheffield and Manchester.

FIXING THE FOUNDATIONS: CREATING A MORE PROSPEROUS NATION (HM TREASURY, JULY 2015)

1.1.11 This report identifies that UK productivity lags behind other leading, advanced economies and that having higher productivity would improve public finances, by reducing national debt, and would contribute to a stronger trade position in the global marketplace.

1.1.12 Two pillars for improving productivity were identified:

- Encouraging long-term investment in economic capital, including infrastructure, skills and knowledge; and
- Promoting a dynamic economy that encourages innovation and helps resources flow to their most productive use.

1.1.13 Decisive action has already been taken to channel funds into improved connectivity by road in the UK including the establishment of a Road Fund from Vehicle Excise Duty and the development of a second Road Investment Strategy for the period 2020-25.

- Modernising the network through smart motorways, upgrading non-motorway routes to the new Expressway standard, ensuring that the network has a positive impact on the environment and communities and improving facilities for active mode users;
- Maintaining the network by upgrading the busiest junctions and alleviating bottlenecks, resurfacing and minimising disruption to users; and
- Operating the network to keep traffic moving through better information and response to incidents.

HIGHWAYS ENGLAND: DELIVERY PLAN 2015-2020 (HIGHWAYS ENGLAND, 2015)

1.1.14 The Highways England Delivery Plan works in parallel to the Strategic Business Plan, providing the detail for the delivery of strategic outcomes and identifying how success will be measured.

1.1.15 There are five strategic outcomes set out in the Delivery Plan:

- Supporting economic growth
- A safe and serviceable network
- A more free-flowing network
- Improved environment
- An accessible and integrated network

1.1.16 In order to deliver the strategic outcomes there are 4 enablers:

- → Collaborative relationships
- → Delivering performance and efficiency
- → People and company
- → Managing risk and uncertainty

NATIONAL INFRASTRUCTURE DELIVERY PLAN 2016 TO 2021 (INFRASTRUCTURE AND PROJECTS AUTHORITY, 2016)

1.1.17 The National Infrastructure Delivery Plan outlines the delivery of economic infrastructure to support growth and create jobs, raise the productive capacity of the economy, improve efficiency and boost international competitiveness over the short term (to 2020/21) and longer term (to 2050). It provides a more detailed outlook of the £460bn fund highlighted in NIP 14.

1.1.18 In terms of transport, £15bn is in place to support Highways England with over 100 schemes completed or constructed by 2020/21 on the SRN including the A14, A1, A303 and further plans for smart motorways.

1.1.19 The Government is also supporting rail through a rail modernisation programme, which includes HS2, Crossrail 2 and high speed rail in the North of England between Leeds and Manchester, in addition to investment in rolling stock and £38bn for Network Rail's delivery programme.

1.1.20 The Plan goes on to identify how the Government will deliver road and rail to support private sector investment in airport and port capacity.

HIGH SPEED NORTH (NATIONAL INFRASTRUCTURE COMMISSION, MARCH 2016)

1.1.21 The National Infrastructure Commission (NIC) is a newly-established body set up to complement the Infrastructure and Projects Authority to delivering infrastructure to support economic growth over the period to 2050. The NIC has overseen three studies to date including High Speed North, Smart Power and Transport for a World City. It will become a permanent Executive Agency in January 2017.

1.1.22 The High Speed North study identifies that a total of 74% of journeys to work in the North of England are made by road. This puts a burden on existing road links, particularly East-West routes including the M62 which links the City Regions of Hull, Leeds, Manchester and Liverpool.

1.1.23 Three strategic studies have been commissioned to consider longer term options for Trans-Pennine connectivity, including the TPT study – these are considered later in this section.

APPENDIX A-2

REVIEW OF SUB NATIONAL TRANSPORT POLICY

SUB NATIONAL TRANSPORT POLICY

1.1.24 Sub-national transport policies across the North recognise the importance of enhancing transport connectivity to support and facilitate economic growth. Improved connectivity at this scale means reduced journey times, increased network capacity and/or capability and improved journey time reliability and punctuality.

1.1.25 Generally, sub-national policies apply three scales of geography when considering connectivity enhancements to meet their social, environmental and economic objectives:

- **National** - including maximising opportunities from High Speed 2 (HS2) and Northern Powerhouse Rail (NPR) and more generally, improving transport connectivity to contribute to economic growth;
- **Regional/Pan-Regional/LEP** – concerned with making interurban and city to city connectivity by road and rail better to benefit the economy in terms of moving freight, ensuring that there is a skills match and unlocking strategic development sites. Enhancing connectivity to ports and airports is identified as important to improve access to international markets and to support their growth; and
- **Local** – targeted transport enhancements to address social, health and environmental issues, as well as to benefit the economy by enhancing access to jobs, training and services. In many cases, there is a focus on improving integration between land-use planning and transport to support more sustainable patterns of travel and reinforce the case for targeted enhancements to the transport network.

ONE NORTH: A PROPOSITION FOR AN INTERCONNECTED NORTH (MANCHESTER CITY COUNCIL, 2014)

1.1.26 This was the first report to consider the major City Regions, within the North of England, collectively in order to maximise economic growth as part of a 'Northern Powerhouse'.

1.1.27 The vision for economic growth in the North of England is based around better transport connectivity to improve journey time reliability, journey quality and deliver shorter journeys. Together, these elements contribute to strengthened labour markets and improved business efficiency and therefore, higher productivity in the North of England.

1.1.28 The report recognises the dominance of the highway network for the movement of people and goods, and the need to improve the reliability and resilience of the network to facilitate this. The report specifically identified the gaps in the strategic network, including the requirement for an enhanced Sheffield to Manchester Corridor.

THE NORTHERN POWERHOUSE: ONE AGENDA, ONE ECONOMY, ONE NORTH (TRANSPORT FOR THE NORTH, 2015)

1.1.29 Following on from the One North Proposition in 2014, this report provides a more focussed view of the options which would support the Northern Powerhouse concept.

1.1.30 East-West road connections are recognised as a constraint to the pan-Northern economy. The M62 is the only motorway which connects East to West and is under pressure to deliver reliable travel times whilst carrying high volumes of traffic. Poor weather conditions across the Pennines reduce the resilience of the M62 even further.

1.1.31 The report suggests that an alternative to the M62 would be an improvement to the link between Manchester and Sheffield which is noted as being 'a small single carriageway'. Improved East-West connectivity would ensure more reliable journey times between major Northern cities, grounding their operation as a single economic area.

THE NORTHERN TRANSPORT STRATEGY: SPRING 2016 REPORT (TRANSPORT FOR THE NORTH, MARCH 2016)

1.1.32 The ambition for the Northern Powerhouse is to increase productivity and job opportunities to support the re-balancing of the national economy and grow the UK economy. Transport provision is crucial to delivering the ambitions of the Northern Powerhouse through a faster and less-congested road and rail network.

1.1.33 East-West road connections are the focus of the Northern Transport Strategy, particularly the connectivity between Greater Manchester and the Sheffield City Region through the Peak District National Park which is subject to bad weather resulting in long delays or closures. A trans-Pennine tunnel was poised as a high performance link between these areas which would provide an all-weather link, remove significant traffic from the Park District National Park and provide improved resilience and journey time savings for road traffic.

APPENDIX A-3

REVIEWED LOCAL POLICY

LOCAL TRANSPORT POLICY

SHEFFIELD CITY REGION TRANSPORT STRATEGY, 2011-2026 (APRIL 2011)

1.1.34 The Sheffield City Region (SCR) Transport Strategy presents the vision for transport change over the period 2011-26. The Transport Strategy was developed with the Sheffield City Region partners and is shared by all districts within the SCR. The Transport Strategy pre-dates the SCR SEP.

1.1.35 SCR consider transport to have four goals in the City Region:

- To support economic growth of the SCR – improving national and local connectivity to allow SCR to become a magnet for investment and business location;
- To enhance social inclusion and health – ensuring access for people in all parts of the SCR;
- To reduce emissions from vehicles - supporting sustainable choices and an integrated approach to transport and land use planning; and
- To make transport increasingly safe and secure – improve traveller confidence in safety for all modes.

1.1.36 The proposed high-level actions to support the goals above include:

- Improve interurban connectivity through improved rail links to London, Manchester, Leeds and Nottingham;
- Create new links to major regeneration areas including the Dearne Valley, East Doncaster, Rossington, Waverley, Lower Don Valley, Markham Vale and Junctions 36-37 of M1;
- Deliver active traffic management and intelligent traffic control systems to make road and rail more reliable, reduce congestion and delivery capacity benefits;
- Particularly for short distance trips, provide a choice between car and alternative modes;
- Provide more travel options through public transport enhancements;
- Create pedestrian and cycle friendly facilities;
- Influence land use planning to reduce the need to travel long distances; and
- Consider applying measures to reduce congestion on the highway whilst acknowledging the importance of parking provision.

1.1.37 The SCR Transport Strategy pre-dates the proposal for a new trans-Pennine link in 'The Northern Powerhouse: One Agenda, One Economy, One North (Transport for the North, March 2015)'. An updated Transport Strategy is currently being prepared and it would be expected to include the Trans-Pennine tunnel.

GREATER MANCHESTER TRANSPORT STRATEGY 2040: OUR VISION, TRANSPORT FOR GREATER MANCHESTER (2015)

1.1.38 The Greater Manchester Transport Strategy outlines a vision for transport as part of the wider economic, social and environmental ambitions of the Greater Manchester area, particularly as a European City Region which will grow as a centre of high skills, advanced manufacturing and service delivery in the period to 2040.

1.1.39 Greater Manchester is at the heart of the Northern Powerhouse economy and therefore city to city connectivity and internal city region connectivity will be essential in supporting business to business markets and access to wider labour catchments in the future.

1.1.40 The strategy outlines several key challenges which must be overcome, such as:

- Growth leading to thousands more trips on transport networks which, without sufficient investment in transport, may result in “choking off investment and damaging prosperity”
- Access to skills and markets needs to be improved to allow people to take up new jobs, allow employers to recruit the best talent and also allow businesses to deliver goods efficiently
- There is a need to ensure that networks are well maintained and function properly; there are increasing challenges in this area stemming from adverse weather conditions, ageing infrastructure and more intensive operation
- Perceptions of Manchester as a good place to live, invest and visit is vital to the economy and there is a need to deliver efficient, seamless, intelligent and easy to use public transport systems which are comparable to those enjoyed by leading world cities. There is also a required to provide urban areas that offer a safe, attractive and clean environment for walking and cycling.

1.1.41 The four key elements of the vision are: sustainable growth; quality of life; environment; and, developing an innovative city region encompassing the overarching vision of ‘World Class connections that support long-term, sustainable economic growth and access to opportunity for all’. These are all linked through a requirement for improved connectivity across the five spatial themes of:

- Connected neighbourhoods
- Travel across the wider city region
- City to city links
- Getting into and around the regional centre
- A globally connected city

1.1.42 The strategy is focussed on improving existing transport networks using technology and alternatives to private vehicles as a way to better utilise existing capacity. There is also a drive for a more “consistent, resilient, better integrated public transport system” to better enable multi-modal journeys through the most sustainable travel choices.

1.1.43 The strategy recognises the importance of links between Manchester and Sheffield as part of the Northern Powerhouse and the issues of congestion and safety on the links between these city regions. The strategy notes a focus on the Greater Manchester Strategic Road Network through RIS1 and the delivery of the Mottram Moor Link Road and possibly the adjacent Hollingworth and Tintwistle bypass as part of improved connectivity measures to Sheffield.

1.1.44 The strategy sets out a number of key policy themes which form the basis of transport interventions within the area. These policy themes consist of integrated, inclusive, healthy, environmental, reliable and resilient, safe and secure, highways, walking and cycling, public transport and goods and services.

1.1.45 Overall, the strategy sets out how investment in areas such as new transport infrastructure, delivery of services and maintenance of existing assets will be focussed around supporting growth and recognising that improving access to employment and training, as well as enhancing the health of the population, are important aspects of improving productivity levels, whilst improving the quality of urban areas will also be required for attracting investment.

1.1.46 The strategy has a focus on the requirements of different types of journey and the investment required in order to improve connectivity to global markets, transform journey times to other major cities, capitalise on the potential of a growing Regional Centre, create better links between jobs and homes across the wider city-region and provide 'first and last mile' connections within neighbourhoods to ensure that sustainable travel becomes a more attractive option.

LIVERPOOL CITY REGION COMBINED AUTHORITY: A TRANSPORT PLAN FOR GROWTH (MARCH 2015)

1.1.47 The Transport Plan for Growth document is a single strategic framework to deliver Transport in the Liverpool City Region. Transport is central to delivering objectives for economic growth in the Liverpool City Region, providing the conditions for inward investment and, through better connectivity to local and national levels, business location and re-location, improved access for visitors and improved access to employment.

1.1.48 Transport is recognised as an enabling factor for growth because of its relationship to economic productivity. Transport is therefore an important consideration within the planning of land use, housing, health, education and economic development.

1.1.49 The transport priorities within the Plan focus on low carbon (clean, low emission and sustainable transport network) and access to opportunity (providing support for access to training, education, further learning and employment opportunities.

1.1.50 Liverpool is particularly important within the North of England because of its port and specifically, the recent investment in the Liverpool 2 SUPER PORT which has an aspiration to increase container freight by over 200% by 2030. Improvements to connectivity and freight by road and rail to the port and the rest of the UK are seen as a fundamental part of supporting the economic prosperity of the City Region.

1.1.51 Beyond connectivity for freight, the Plan also recognises the importance of transport connectivity at both local and wider scales for:

- → Maximising development opportunities to deliver an economically prosperous and sustainable City Region;
- → Increasing access to markets and labour to establish a better local and globally connected City Region;
- → Enhancing connectivity to support the creation of jobs and access to jobs, different skilled labour markets and training opportunities;
- → Improving access to health services and enhancing the active modes offer to support sustainable travel which has positive health benefits;
- → Supporting sustainable modes which contribute a low emission transport network;
- → Developing improved social cohesion between residents of the City Region; and
- → Securing a high quality visitor experience which further encourages public and private investment into the area.

1.1.52 Within each of these areas, there is an ambition to deliver schemes which address problems and needs within the City Region as well as looking beyond the boundaries of the LEP to a wider geographical area.

1.1.53 The City Region transport priorities are targeted at connectivity improvements to promote access for all transport users, address unemployment, address car parking and Park and Ride and to promote sustainable and active travel.

WEST YORKSHIRE TRANSPORT STRATEGY 2016-2036, SUMMARY CONSULTATION DRAFT (2016)

1.1.54 The West Yorkshire City Region transport priorities are targeted at connectivity improvements to promote access for all transport users, address unemployment, address car parking and Park and Ride and to promote sustainable and active travel. The major issues for transport in West Yorkshire which are relevant to the current study are:

- Significant investment required in North to South and East to West connections
- Congestion improvements on motorways and corridors into main urban centres
- Enhance road safety with a focus on active modes and motorcyclists
- Improvements to access key development and gateways supporting job creating and housing development
- Reduce emissions and improve air quality through reducing the impact of transport in these areas

1.1.55 In terms of roads, the emphasis is on better performance and capacity to support economic growth. Smart Motorways and the Road Investment Strategy which cover improvements on the main motorways (M1, M62 and M621) are pivotal to delivering improvements.

APPENDIX A-4

REVIEWED PREVIOUS STUDY WORK

PREVIOUS STUDY WORK

1.1.56 This section of the report provides an overview of previous key study work which is of relevance to the study.

TRANS-PENNINE TUNNEL STUDY (DFT, TFN, HIGHWAYS ENGLAND, ON-GOING)

1.1.57 In July 2015 the DfT and TfN jointly appointed Highways England to oversee the feasibility assessment into improving highway connections between Manchester and Sheffield, across the Pennines, as a supporting scheme to improve the economic prosperity of the cities within the Northern Powerhouse. This work was supplementary to the Interim Report which initially looked at the scheme.

1.1.58 The feasibility study identified the following:

- There is a clear case for the scheme, as it would contribute to additional capacity and connect major cities to maximise the economic benefits as part of the wider Northern Powerhouse;
- The link would have the greatest impact on Greater Manchester and South Yorkshire but also potential significant improvement for wider areas including Merseyside and the East Midlands;
- The transformative nature of the scheme could result in significant transport user benefits and wider user benefits, although further modelling to support this is required; and
- Route corridors in the North of the study area, closest to the existing Trans-Pennine trunk road, perform best.

1.1.59 The latest report for the study, the Stage 3 Report, was published on 28 November 2016.

1.1.60 The Stage 3 report concludes that there is a case for change based on the interrelated transportation and economic needs of the North, and that a new strategic route between Manchester and Sheffield has the potential to deliver the following:

- Improve the ability for people to travel between these two city regions
- Promote growth; improving jobs, skills and employment opportunities
- Improve capacity of the transport network
- Improve safety for all road users
- Offer greater resilience in terms of issues such as adverse weather
- Reduce the impact of traffic on the environment of the Peak District National Park

1.1.61 In addition, the report notes that initial analysis is indicative of large economic benefits associated with delivering a new strategic link between Manchester and Sheffield. However, current limitations are noted, which are primarily associated with the availability of suitable traffic models and the emerging nature of the wider economic impact appraisal methodology. These limitations mean that many of the benefits that are likely to result from the implementation of such a transformational scheme have not been fully accounted for at this early stage; it Is likely that the significant benefits which have been identified at this stage will increase further.

INTEGRATED ROADS REPORT (TFN, ON-GOING)

1.1.62 The TfN Integrated Roads Report will set out a comprehensive decision-making framework, and a consistent and coordinated regime for the strategic planning of the North of England's 'major' roads. A major road route network of important national, regional and local strategic roads will be defined and interventions identified.

1.1.63 The Integrated Roads Report takes into account outputs from TfN work on freight, strategic local connectivity, international connectivity and smart and integrated mobility. It will build upon work on the three East-West Strategic Road Studies commissioned by DfT and Highways England.

1.1.64 It is further expected to influence and build upon evidence from Highway England's Route Strategies process, to provide an evidence base to inform and influence the Governments Road Investment Strategy (RIS2), by identifying gaps and opportunities for the network not already addressed in these programmes, and to identify new potential studies.

1.1.65 The Integrated Roads Report will demonstrate where road investment will maximise opportunities for economic growth. It is being developed within the context of evidence on growth-led priorities identified in the NPIER, the High Speed North report and inputs from key partners. A set of Conditional Outputs for the major road route network will be defined to support improved connectivity and economic growth.

1.1.66 The study will take account of evidence on current network performance and future travel demand including outputs from the Economic Growth & Transport Demand Scenarios analysis (described later) to identify options for future highway improvements and present a sequenced 25-year investment programme, divided into short term (up to 2025), medium term (2025-2030) and long term (2030 – 2040 and beyond).

1.1.67 It is expected that the Integrated Roads Report will be finalised in February 2017.

INTEGRATED RAIL REPORT (TFN, ON-GOING)

1.1.68 The Integrated Rail Report will provide an integrated picture for rail investment in the North of England, identifying gaps and setting out short-term 5 and 10 year plans and longer term emerging priorities and horizon scanning for a 25-year plan. The study will identify baseline information on the current operation and performance of the rail network in the North of England, encompassing principal demands for cross-boundary movement to adjacent economic centres and transport hubs. Longer term connectivity priorities will emerge from evidence in the NPIER, TfN work streams (including Freight and Strategic Local Connectivity), Northern Powerhouse Rail, and Rail North as expressed within the Long Term Rail Strategy.

1.1.69 The study will provide recommendations for the development of a set of Conditional Outputs, outside of Northern Powerhouse Rail and the development of a long list of options for developing a 25-year investment plan, including a sequenced long term programme - identifying where further analysis is required. This review will include optional scenarios to be used to support future prioritisation. A matrix will be developed to enable the high level prioritisation of options, taking into account work already undertaken in the development of Northern Powerhouse Rail, and schemes / proposals provided to Rail North by the various Combined Authorities and LEPs.

1.1.70 It is expected that the Integrated Rail Report will be finalised in February 2017.

NORTHERN POWERHOUSE INDEPENDENT ECONOMIC REVIEW NPIER (TFN, 2016)

1.1.71 The NPIER identified a persistent performance gap between the North and the rest of the country with the North's output per capita consistently 10-15% below the rest of England (excluding London), and larger still when London is included in the comparison. While the performance gap narrowed over the decade from 1999-2009, there are emerging signs that the gap is beginning to widen again. When London is included within the comparison, the performance gap is more persistent, and indicative of London's economic resilience following the 2008 financial crisis and subsequent Great Recession.

1.1.72 The NPIER attributed this performance gap to two features of the Northern economy:

- The relatively low proportion of working-age residents in work (economic activity rate); and
- The relatively low productivity of those employees.

1.1.73 To close this gap, the NPIER pointed towards two actions. Firstly, the workforce in the North must become more productive and secondly, there needs to be a greater participation rate in the economy, and a greater proportion of the working age population must be in productive work.

1.1.74 While there is a range of factors that lead to lower productivity and economic activity rates in the North, many of these can be affected either directly or indirectly by transport connectivity. For example, people of working-age may not be in employment since they cannot find work that matches their skills and pay expectations within their search horizon. Improving transport connectivity will reduce barriers to searching for employment over a larger geographical area and, once active in the labour market, will allow individuals to make longer-distance commuting trips.

1.1.75 Connectivity improvements can also lead to improvements in productivity through:

- Better-matching people and their skills/experience to jobs;
- Attracting highly-skilled workers who value the ability to access a range of work and leisure opportunities across the North;
- Facilitating opportunities for collaboration on research and development projects;
- Attracting footloose Foreign Direct Investment (FDI) capital; and
- Knowledge spill-over effects as a consequence of proximity to competitors and collaborators.

1.1.76 The NPIER goes on to state that greater productivity in the North will be led by businesses in four world-class prime capabilities (advanced manufacturing, health innovation, energy, and digital), supported by three enabling capabilities (financial and professional services, logistics, and education). While the NPIER identifies these seven capabilities as having the strongest potential to grow, together the prime and enabling capabilities account for around only a third of the North's economy overall. For the productivity gap to be closed, other sectors and industries must also grow and the conditions need to be created that will support and facilitate this growth.

1.1.77 The NPIER sets out a number of barriers to growth that need to be overcome to create the conditions for accelerated growth, both in the prime and enabling capabilities and in the wider economy. These are:

- The North's transport connectivity, which falls short of what the North's economy needs:
- The North's skill base, with the North having a higher share of people with lower skills, and a lower share of people with higher skills; and

- The approach to innovation and to inward investment;

1.1.78 The Northern Powerhouse Independent Economic Review was published in June 2016.

ECONOMIC GROWTH & TRANSPORT DEMAND SCENARIOS (TFN, ON-GOING)

1.1.79 The Economic Growth and Transport Demand Scenarios study has been commissioned by TfN to develop the future travel demand patterns that will result from the transformational growth scenarios set out in the NPIER, and develop a coherent evidence-based narrative to show the contribution of transport investment to economic growth. The main deliverable from the commission will be a range of multi-modal travel demand scenarios to inform TfN's developing evidence base, strategy and scheme development processes. These scenarios will consider and co-exist with existing travel demand analyses that have been developed by TfN's partners over recent years and which are used to inform their respective strategic planning processes. The TfN multi-modal travel demand scenarios will feed into the revised TfN Integrated Transport Strategy that is due to be published in spring 2017.

1.1.80 The study will develop the evidence base, future economic scenarios and associated patterns of multi-modal travel demand between economic areas, using the NPIER as the starting point for more a more in-depth assessment of how transport investment can unlock the potential growth through transformed connectivity and access to labour and product markets. These scenarios will inform the travel demand assumptions of the transport industry planning processes, including Network Rail and Highways England.

1.1.81 The basis of the study is a geographical analysis of travel patterns between the Northern economic areas, to demonstrate which socio-economic groups, businesses and freight are travelling between economic centres, by which mode, and why (e.g. commuting, business to business, leisure). The relationship between transformed connectivity across the North and the long term economic potential of the Northern Powerhouse identified in the NPIER will be developed, taking into account the dynamic effects of transport investment in terms of attracting more investment and business to the North, further stimulating travel demand. The output of the commission will be a set of travel demand scenarios to inform TfN strategy development and input into the prioritisation of investment programmes.

1.1.82 The Economic Growth and Transport Demand Scenarios will be finalised in February 2017.

STRATEGIC LOCAL CONNECTIVITY (TFN, 2016)

1.1.83 With the ultimate goal of accelerating the North's economic growth and realising the vision of a Northern Powerhouse, TfN commissioned the Strategic Local Connectivity (SLC) work stream which was tasked with achieving the following goals:

- To establish the types and scale of interventions that should be considered as being within the ambition of TfN's SLC work stream;
- To develop and then apply an objective method to assess proposed connectivity enhancements;
- To identify any 'gaps' between what is being put forward and what it is considered as necessary to deliver the overall Northern Powerhouse goal; and
- To set out the next steps for the SLC work stream over the short and medium terms.

1.1.84 With regard to the types and scale of interventions that should be considered as being within the remit of the SLC work stream, a principal output from the work was the definition of categories of intervention:

- **TfN Sponsored Intervention** Interventions in this category would be pro-actively taken forward by TfN, for example through chairing the Project Board and/or providing the Senior Responsible Owner (SRO);
- **TfN Supported Intervention** TfN would take an active role in their development, for example through membership of the Project Board, but the sponsor would be a Local Transport Authority, either directly or via Highways England or Network Rail;
- **TfN Endorsed Intervention** Such interventions would primarily have a local impact, but are seen as supporting the attainment of the overall TfN vision

1.1.85 The Assessment Framework developed for this work was applied to 110 interventions. These were submitted for consideration by the 11 LEP areas that make up the North. The interventions related to road, rail (network and stations), rapid transit and airport and port access. A number were made up of packages of interventions.

1.1.86 A number of 'gaps' with regard to SLC in particular and the Northern Transport Strategy in general, were identified. These fell into two groups: 'Connectivity Gaps', where there is an apparent shortfall between the extent and scale of interventions being put forward and what is needed to form part of a Northern Transport Strategy, and 'Implementation Gaps', that if not addressed, could cause delay in taking forward interventions or potentially mean that they do not progress at all.

1.1.87 The SLC final report was submitted to TfN in May 2016.

NORTHERN FREIGHT AND LOGISTICS REPORT (TFN, 2016)

1.1.88 The Northern Freight and Logistics report was commissioned with the key aim of maximising the efficiency of the movement of goods to, from and within the North of England in order to contribute to the transformation of the economy and the Northern Powerhouse.

1.1.89 The freight and logistics sector, as well as supporting industries, has a key role to play in contributing to the Northern Powerhouse. The North of England is home to several major port, distribution and haulage companies, and is referred to as a 'super region' in terms of freight as it handles around a third of road, rail, distribution centre and port but has against a population that represents only 24% of the UK total.

1.1.90 The report presents a series of recommendations, as shown in Table 2.2, which are demonstrative of how public sector investment in a range of rail, road, waterborne freight and land use proposals, coupled with private sector investment in new infrastructure and services, can achieve substantial benefits:

- £34.7 billion of User and Non-User Benefits to UK economy
- £13-20 billion of Wider Economic Benefits (Gross Value Added benefits)

1.1.91 Despite the key role of the North within the freight industry, the Report notes that Northern transport networks in their current state pose capacity problems as well as gaps in connectivity, for which there is an urgent need for investment. The report highlights three key issues for freight movements:

- **80% of road freight tonnage in the North is domestic traffic:** Most of this is relatively short haul and, as such, is difficult for rail to compete for which places a heavy burden on the SRN
- **Longer distance freight flows are dominated by North-South movements:** Most of these are by road, including to remote ports, and may not reflect optimal locational, modal and mileage outcomes

- **Heavy concentration of freight activity on a relatively small proportion of the North's road and rail network:** A network which is shared with high volumes of car and passenger train demand. Levels of utilisation and associated congestion that emerge present significant barriers to the capacity and efficiency of freight movement

1.1.92 Overall, the report suggests that the current transport network has major constraints and is not sufficient to exploit opportunities in freight. Current programmed road and rail network upgrades in the region will, when considering the best case scenario, only keep pace with demand. Additionally, road congestion is forecast to potentially cost the freight and logistics sector around £500m per year by 2043, as a result of delays on the network and other issues.

1.1.93 The Report makes a series of recommendations centred on rail/port-centric multimodal distribution that will reduce barriers to investment, growth and development in the Northern Economy. The recommendations are summarised in Table A1.

Table A1 – Focus Areas of Recommendations

Focus Areas of Recommendations	
Rail	Additional capacity on East-West and North-South axes Chained multi-modal distribution parks
Waterborne Freight	Enhanced port hinterland connections New infrastructure at ports
Road	Capacity and connectivity improvements Supporting infrastructure e.g. HGV parking Improved signage
Policy/Planning	Delivery of multimodal distribution parks Harmonised regulations for HGV access to urban areas

1.1.94 The Report's recommendations are premised on an anticipated response from the private sector following public sector investment. It assumes that there will be private sector action in three key areas:

- Development of Multi-modal Distribution Parks (MDPs) that offer multi-modal connectivity;
- Changes to short sea and deep sea shipping industry services that increase traffic through Northern ports; and
- Greater investment in equipment e.g. locomotives and wagons.

1.1.95 In terms of implementation the Report identifies a range of recommended public sector measures to be achieved over a short term (2016-21), medium term (2022-27) and long term (2028-33). TfN, and other public sector organisations, will explore all the interventions in order to create an environment that will encourage substantial private sector investment in the North of England.

1.1.96 It is critical that the TPT WTCA takes into consideration the freight and logistics aspirations for the North, as set out in this Report, in order to ensure that benefits are fully realised and that measures to ensure connectivity consider the needs of the freight and logistics sector.

NORTHERN TRANS-PENNINE ROUTES STRATEGIC STUDY (DFT, TFN AND HIGHWAYS ENGLAND, 2016)

1.1.97 The Northern Trans-Pennine Routes (NTPR) Strategic Study, one of the six national level studies, was sponsored by the DfT and TfN, and commissioned by Highways England on their behalf. WSP | PB, CH2M | TRL and SDG were commissioned to undertake the package of work with a vision that the recommendations of the report would positively contribute towards the development of the Northern Powerhouse.

1.1.98 The central aim of the study was to identify options for a new strategic corridor involving an upgrade to either or both the A66 (between A1 at Scotch Corner and the M6 at Penrith) and A69 (between A1 at Newcastle and the M6 at Carlisle) routes, with the potential to make alternative improvements along their length. In addition, the study aimed to contribute to the improvement of East-West connectivity within the North of England, build network resilience and promote economic growth.

1.1.99 The report notes that the Northern Powerhouse: One Agenda, One Economy, One North report identifies that the number, capacity and reliability of East-West road connections is seen as a constraint of the Northern economy. The highways vision plan includes a range of aims and aspirations that are of direct relevance to the Trans-Pennine Routes Study:

- → Improving East-West major road links to ensure better and more reliable journey times between major cities;
- → Ensuring effective road connections to the major ports in Northern England; and
- → Future roads investment in enhancements, maintenance and renewals.

1.1.100 As a result, the importance of both routes, particularly the A66, is noted, ensuring that the links do not constrain future economic growth associated with the Northern Powerhouse Agenda is of significant importance.

1.1.101 In terms of socio-economic considerations, the report highlights the Local Enterprise Partnership (LEP) Growth Deals and Local Plans produced by local authorities which estimates in excess of 112,000 new homes and 54,000 additional jobs will be required by 2030 to cater for regional demand. Despite the fact that very little of this growth will be within the Local Economic Impact Area (LEIA) the report notes that additional employment opportunities either end of the A66/A685 and A69 and are therefore likely to result in increased traffic flows within the study area.

M60 NORTH WEST QUADRANT STUDY (DFT, TFN, HIGHWAYS ENGLAND, 2016)

1.1.102 The M60 North West Quadrant study is another of six strategic studies announced by the DfT as part of its Road Investment Strategy: Investment Plan (2014). The study focuses on exploring options for transport improvements around the North West Quadrant of Manchester's orbital (M60) motorway between junctions 8 and 18.

1.1.103 The aim of the study is to identify and provide an initial appraisal of the improvements to the transport network, across all modes, which will contribute to wider aspirations for transforming and rebalancing the national economy and establishing the Northern Powerhouse.

1.1.104 The report outlines the strategic and economic case for this, and for other significant transport investment projects in the North, and highlighting that the North of England has a number of medium sized cities that perform well individually, but do not have the transport connectivity required to drive improved economic output and employment, which is a core objective of the Northern Powerhouse initiative.

1.1.105 The M60 provides Manchester and the surrounding area with an orbital strategic route, and is part of the M62 Trans-Pennine route linking Northern city regions. The multiple functions of the M60 results in it having some of the highest daily flows outside of the M25 and M1.

- In terms of the strategic economic and planning context of the North West Quadrant Study the report highlights the following key points:
- The Strategic Road Network (SRN) within the study area has a range of functions and provides international, national, regional and local connectivity.
- As outlined within the Northern Transport Strategy, a strengthening of the transport connections within and between key Northern cities and the resultant combined 'economic pass' has the potential to rival that of London and the South East.
- Greater Manchester is expected to be a major driver of economic activity in terms of achieving the vision of the Northern Powerhouse, however it is noted that future performance may be constrained by its transport network.
- The Greater Manchester Spatial Framework (GMSF) is currently considering three options with the aim of determining how Manchester will deliver growth during the period 2014-35, and it is noted that the developments associated with the GMSF will impact the study area.
- The economic consequences of failing to address connectivity problems across the North, particularly within the Manchester area, may mean that transport constraints will likely have significant implications for the Northern Powerhouse agenda.

1.1.106 The current transport problems associated with the M60 North West Quadrant have been summarised below:

1.1.107 The strategic road network within the area experiences severe congestion with the majority of road links falling within the worst 10% nationally in terms of journey time reliability and speed.

1.1.108 Analysis suggests that, since 2005, peak periods are extending into the inter-peak.

1.1.109 The topography and road layout of the SRN within the study area contribute to issues such as congestion and poor journey times largely as a result of the following issues:

- Volume of traffic using the main carriageways within the study area
- Significant merging and diverging flows
- Short distances between junctions, narrow lanes and steep gradients
- There are limited opportunities for crossing the Manchester Ship Canal, resulting in local traffic being forced onto the SRN within the study area.
- There are few opportunities for public transport to contribute to the reduction of commuter traffic using the SRN, primarily due to disparate origins and destinations of commuters.
- Freight on the SRN comprises pan Northern, regional and local movements. The freight volume, as well as the road layout and topography, results in slow moving freight which impacts on overall network performance.
- In terms of road safety, during the period of 2009 to 2011, the vast majority of the motorways within the study area fell within the top 20% worst performing sections of the SRN in terms of total casualties.

1.1.110 Despite a number of planned road and public transport improvements it is clear that operating conditions will continue to deteriorate on the majority of the SRN despite these improvements.

1.1.111 There is a need to investigate a number of major transport interventions if the economic aspirations of the Northern Powerhouse are to be achieved

1.1.112 Some of the key findings regarding the current environmental challenges associated with the study area have been summarised below:

- The environmental considerations of air quality and noise are significant, and have historically presented a barrier to road improvements within the study area. Air quality within close proximity to the M60 North West Quadrant is poor, with measure concentration well above EU limit values.
- There are two ecological European sites of significance located within the study area, as well as a number of heritage assets. As such, any interventions would have to be mindful of the location of these.

1.1.113 The overall key findings of the study have been summarised in the points below:

- In the context of the vision for the Northern Powerhouse, Manchester is of significant importance and will be a major driver of economic activity.
- A number of major transport interventions are required within the study area if the economic aspirations of the Northern Powerhouse are to be achieved, particularly in terms of the SRN.
- The SRN within the study area has multiple functions and provides connectivity on a local, regional, national and international basis
- The network has issues with severe congestion and there are significant environmental issues which must be considered when proposing any interventions, particularly around air quality and noise
- Major challenges must be overcome if public transport is to make any significant contribution to reducing the level of commuter traffic on the SRN within the study area

TRANSPORT AND ECONOMIC PRIORITIES OF CITY REGIONS

1.1.114 Each of the eleven Northern Local Enterprise Partnerships (LEPs) has produced a Strategic Economic Plan (SEP) based on an understanding of the past and current performance of the LEP area's economy and an assessment of its strengths and weaknesses. The purpose of a SEP is to set out a course of action that will support and facilitate future economic growth, and explain how these actions will be delivered by public authorities across the LEP area, working in conjunction with businesses.

1.1.115 Typical measures included in the eleven Northern SEPs are:

- Supporting local labour markets through improving qualifications and skills;
- Delivering enterprise areas or opportunities;
- Boosting housing quality and quantum; and
- Enhancements to transport connectivity

1.1.116 Enhancements to transport connectivity are seen as necessary but often not sufficient to secure LEPs economic goals in their own right.

1.1.117 The specific economic growth and transport infrastructure priorities of the City Regions of Manchester, Sheffield, Liverpool and Leeds and Humber LEP have been extracted below.

GREATER MANCHESTER SPACIAL FRAMEWORK (GMSF)

1.1.118 The Greater Manchester Combined Authority (GMCA) is working together to produce a joint plan to manage the supply of land for jobs and new homes across the Greater Manchester area. The Greater Manchester Spatial Framework (GMSF) has the central objective of ensuring that the right land is available in the right places to deliver the homes and jobs needed up to 2035, along with identifying the new infrastructure) such as roads, rail, Metrolink and utility network) required to achieve this.

1.1.119 It will be the overarching development plan within which Greater Manchester's ten local planning authorities can identify more detailed sites for jobs and homes. As such, the GMSF will not cover everything that a local plan would cover and individual districts will continue to produce their own local plans.

1.1.120 Importantly, the GMSF will address the environmental capacity of Greater Manchester, setting out how we enhance and protect the quality of the natural environment, conserve wildlife and tackle low carbon and flood risk issues, so that we can accommodate growth sustainably. Alongside the GMSF, we are also developing an integrated appraisal framework (including a strategic environmental assessment, sustainability appraisal, health impact assessment and equality impact assessment) to ensure we understand the impacts of decisions and agree the best policies for Greater Manchester.

1.1.121 The announcement in November 2014 of the Greater Manchester Agreement, and the move to a directly elected mayor for Greater Manchester, has implications for both the preparation and content of the GMSF. The agreement will give the directly elected mayor powers over strategic planning, including the power to create a statutory spatial framework (with a unanimous vote of the Mayor's cabinet). Legislation is required to enable these changes and it is anticipated that the first elections will take place in early 2017.

1.1.122 It will require a seamless transition from the preparation of a joint development plan to the GMSF produced by GM Mayor/GMCA and the later stages of the GMSF will be reviewed once precise details of the mayoral powers are determined.

1.1.123 Submission, examination and adoption of the framework is expected in 2018.

STRONGER TOGETHER – THE GREATER MANCHESTER STRATEGY

1.1.124 In 2013 the Local Enterprise Partnership (LEP) and the GMCA published the jointly-owned Stronger Together: Greater Manchester Strategy around the twin themes of Growth and Reform.

1.1.125 The strategy sets out a range of priorities that will drive sustainable economic growth and reform the way that public services are delivered. These priorities include the following:

- → Delivering targeted investment based on the needs of the market
- → Revitalising town centres within Greater Manchester
- → Improving both integration of infrastructure planning and connectivity
- → Placing Greater Manchester at the leading edge of science and technology
- → Supporting business growth and improving international competitiveness
- → Reforming public service delivery in order to build independence and raise productivity of residents

STRATEGIC ECONOMIC PLAN: A FOCUSED 10 YEAR PLAN FOR PRIVATE SECTOR GROWTH 2015-2025, SHEFFIELD CITY REGION, MARCH 2014

1.1.126 The economy of the Sheffield City Region (SCR) is recovering from historical trends in industrial job losses. Although economic growth was observed between the mid-1990s and 2008, this was in the public sector, rather than the private sector. The SEP sets targets of 70,000 new jobs, an increase in Gross Value Added (GVA) of 10% and 6,000 additional businesses in the SCR over the period 2015-2025. This will be brought forward through higher productivity, innovation and exports in key sectors.

1.1.127 The plan to deliver economic growth in SCR includes transport infrastructure, including improvements to public transport connectivity to join up key urban centres and encourage them to maximise the opportunities from HS2l. Delivering the prioritised City Region schemes in the Sheffield City Region Infrastructure Fund (SCRIF) is also a key focus of the plan.

1.1.128 The SEP states that aggregated, sustainable transport at the local level can make a significant impact in supporting access to jobs and training.

1.1.129 The ambition for transport infrastructure in SCR is as follows:

- To improve SCR's external connectivity, nationally and internationally, by air, road and rail, including maximising the benefits of HS2;
- To unlock key employment sites across the SCR, improving the commercial property offer and creating a high quality business environment that encourages further investment in the City Region;
- To ensure that infrastructure supports the efficient movement of goods, people and ideas across the SCR, enabling residents, businesses, employees and visitors to access the range of opportunities available; and
- To deliver a residential offer that meets the needs of economic growth.

A PLAN FOR GROWTH AND REFORM IN GREATER MANCHESTER, MARCH 2014

1.1.130 The Growth and Reform Plan details a wide number of Greater Manchester (GM) transport challenges including:

- Reducing traffic congestion;
- Increasing employment catchments around town centres;
- Reducing the cost of travel; and
- Enhancing the image of GM for both investors and visitors.

1.1.131 Three goals for GM in terms of connectivity and economic growth have therefore been established:

- Facilitate and support regeneration and economic growth / Improve access to opportunities
- Improve the quality of life, health and make travel safer and more secure across GM
- Reduce transport emissions and make transport more resilient

1.1.132 GM places connectivity and transport at the centre of their economic strategy. This is demonstrated by the GM Transport Fund (2009) which has delivered significant multi-modal interventions within GM.

LIVERPOOL CITY REGION GROWTH PROSPECTUS, 2012

1.1.133 The LEP Business Plan published in 2012 outlined the following high-level objectives:

- Growth – both in terms of absolute output (GVA) but also in jobs;
- Increased productivity - by being more innovative and effective in how they do business, increasing their competitiveness on the national and international stage;
- A rebalanced economy – with a reduced emphasis on public sector employment through a renewed focus on creating private sector jobs; and
- The Growth Prospectus which builds upon these ambitions, looking to maximise economic growth further.

1.1.134 Over the next 20 years, the LEP seeks to increase the business base of the City Region by 20,000 businesses. In order to achieve this they are looking to a number of areas including ensuring that there are good transport links to efficiently move both people and goods across the area to maximise the impact on the local economy, to reduce traffic congestion, attract new businesses and allow businesses to operate effectively.

1.1.135 In order to deliver a globally connected City Region, there is a need to prioritise transport to move people and goods but also support tourist-related connectivity, particularly with respect to Manchester Airport.

LEEDS CITY REGION STRATEGIC ECONOMIC PLAN 2016-2036

1.1.136 The transformative vision of the Leeds City Region is to be “a globally recognised economy where good growth delivers high levels of prosperity, jobs and quality of life for everyone”. The SEP has been developed to connect with the outlook of neighbouring LEPs and their economic plans, heavily guided by the concept of the Northern Powerhouse.

1.1.137 By 2036, the Leeds City Region looks to create 35,700 additional net jobs and £3.7bn in additional economic output. The concept of ‘Good Growth’ is built upon around high productivity, innovation and output grounded by quality places, environment and connections and good jobs, incomes and less inequality.

1.1.138 There are four priorities to deliver ‘Good Growth’. Priority 4 is the need for infrastructure for growth. The LEP looks to:

- Deliver 30+ West Yorkshire Plus Transport Fund schemes and make progress towards a single ‘metrostyle’ public transport network, connected to major national/Northern schemes such as HS2 and Northern Powerhouse Rail;
- Develop and regenerate integrated spatial priority areas, supporting employment, quality environments and the building of 10,000-13,000 new homes per year; and
- Develop an integrated flood risk reduction programme, incorporating flood defences, green infrastructure and resilient development.

1.1.139 The location of the Leeds City Region, at the heart of the North of England, means that it already has an extensive road and rail network which makes it attractive for businesses to access markets and labour competitively. However, the SEP further considers the need for better connectivity to enhance local level access through the West Yorkshire Transport Fund and to also provide the opportunities to integrate with the long term opportunities presented by HS2 and NPR which present opportunities to extend access to markets and labour. In terms of connectivity, it is noted that Kirklees has strong connections to Sheffield and Manchester and therefore transport connections and access to the Pennines and the Peak District area are important.

1.1.140 The outlook for 'Good Growth' is not only dependent on the physical changes in infrastructure but the overall improvements in connectivity which the infrastructure affords. Connectivity is therefore an important facet to growth in the LCR.

STRATEGIC ECONOMIC PLAN 2014-2020, HUMBER LOCAL ENTERPRISE PARTNERSHIP

1.1.141 The vision for 2020 is threefold:

- A thriving renewables sector which has a growing reputation for excellence and supports jobs creation;
- A skills system aligned to deliver economic growth; and
- A stronger visitor economy supported by a better infrastructure and housing offer.

1.1.142 Areas outside the port lack the agglomeration of transport capacity because of concentrated local labour markets. Strategic investment in transport infrastructure is therefore required to improve connectivity to principal employment sites along East-West corridors on the North and South banks and to the rest of the UK by road and rail, specifically by reducing bottlenecks on the networks.

1.1.143 It is noted is that the Port of Goole is an important distribution centre for Leeds, Sheffield and Manchester and, as such, strong connectivity is required to support its operation and growth.

1.1.144 The Humber LEP vision is supported by 'Strategic Enablers' including infrastructure to support economic growth. These include:

- Access to strategic sites and along key corridors within the LEP area including upgrades to the freight and passenger rail network to support anticipated investment in the Energy Estuary; and
- Improved access between businesses and employees to allow businesses to succeed and to improve unemployment and support economic growth.

Appendix B

CHAPTER 4 TRANSPORT CONTEXT

LIST OF TABLES

LIST OF FIGURES

APPENDIX B-1

TRAFFIC FLOWS IN EXCESS OF 60,000 AADT

Table B1 – Ten Busiest Route Sections 1 April 2012 to 31 March 2013 (South Pennines Route Strategy Evidence Report, Highways England (2014))

Rank	Strategic Road Network Section	Annual Average Daily Flow (AADF)[1]	National Rank
1	M60 between M60 J12 and M60 J13 (clockwise)	93,600	9
2	M60 between M60 J13 and M60 J12 (anticlockwise)	89,500	12
3	M60 between M60 J16 and M60 J17 (clockwise)	82,600	16
4	M60 between M60 J17 and M60 J16 (anticlockwise)	80,800	18
5	M60 between M60 J17 and M60 J18 (clockwise)	79,500	23
6	M60 between M60 J13 and M60 J14 (clockwise)	78,800	27
7	M60 between M60 J18 and M60 J17 (anticlockwise)	78,600	28
8	M60 between M60 J15 and M60 J16 (clockwise)	75,600	38
9	M60 between M60 J14 and M60 J13 (anticlockwise)	74,300	42
10	M56 between M56 J3 and M56 J4 (westbound)	73,100	49

Note on Freight (South Pennines Route Strategy Evidence Report (2014))

On the South Pennines route, the level of freight traffic is greatest on the M56 between junctions 6 and 5, with 51% of all traffic volume being classified as freight. This is the 5th highest proportion of freight traffic on any section nationally. In addition, the M56 from junctions 7 to 6 and junctions 2 to 1 has 47% and 46% (respectively) of all traffic being classified as freight. These are the 10th and 13th highest nationally. The M56 freight traffic is likely to be a combination of traffic heading for Manchester Airport, the M6, Cheshire or Wales.

[1] Note that these figures have been rounded for clarity.

APPENDIX B-2

CONGESTION REFERENCE FLOWS BY SECTION

Figure B1 - Route Sections Analysed (Trans-Pennine Routes Feasibility Study (TPRFS), Highways England, 2015)

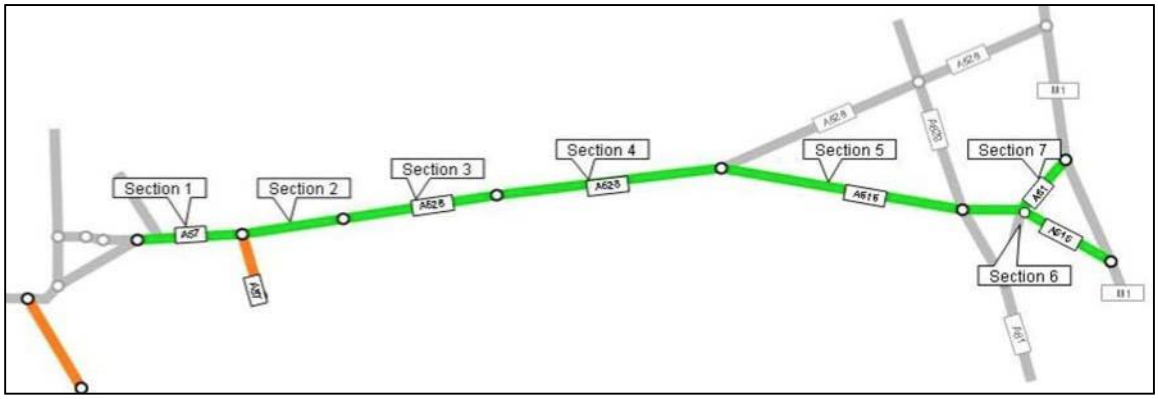


Table B2 – Existing Congestion Reference Flows by Section (Trans-Pennine Routes Feasibility Study (TPRFS), Highways England, 2015)

SECTION	EXISTING TRAFFIC FLOWS
1) **A57** between M67 J4/A57/A560 roundabout and A57/A628 junction in Hollingworth	71.46%
2) **A628** between A57/A628 junction in Hollingworth and end of Tintwistle 30mph section	61.18%
3) **A628** between end of Tintwistle 30mph section and A628/A6024 junction	39.41%
4) **A628** between A628/A6024 junction and A628/A616 junction	40.36%
5) **A616** between A628/A616 junction and A616/A629 junction	46.93%
6) **A616** between A616/A629 junction and A616/M1 J35A	55.8%
7) **A61** between A61/A616 junction and A61/M1 J36	74.76%

Figure B2 - Congestion Reference Flows – Existing Traffic Flows (TPRFS, Highways England, 2015)

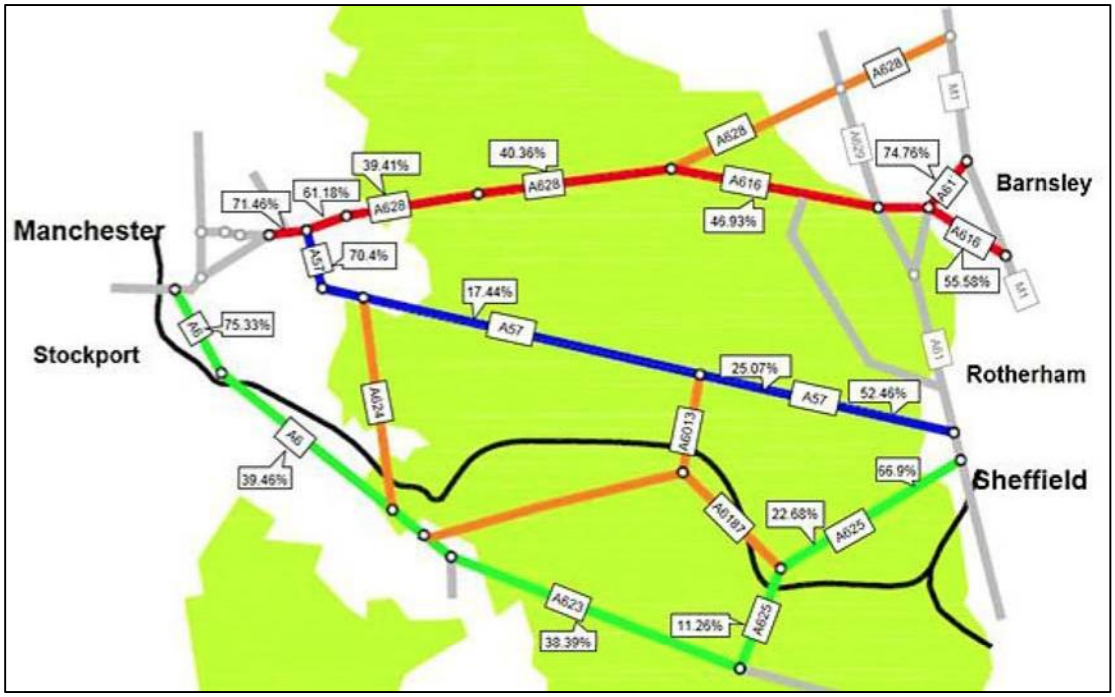


Table B3 – Congestion Reference Flows on Local Authority Roads (TPRFS, Highways England, 2015)

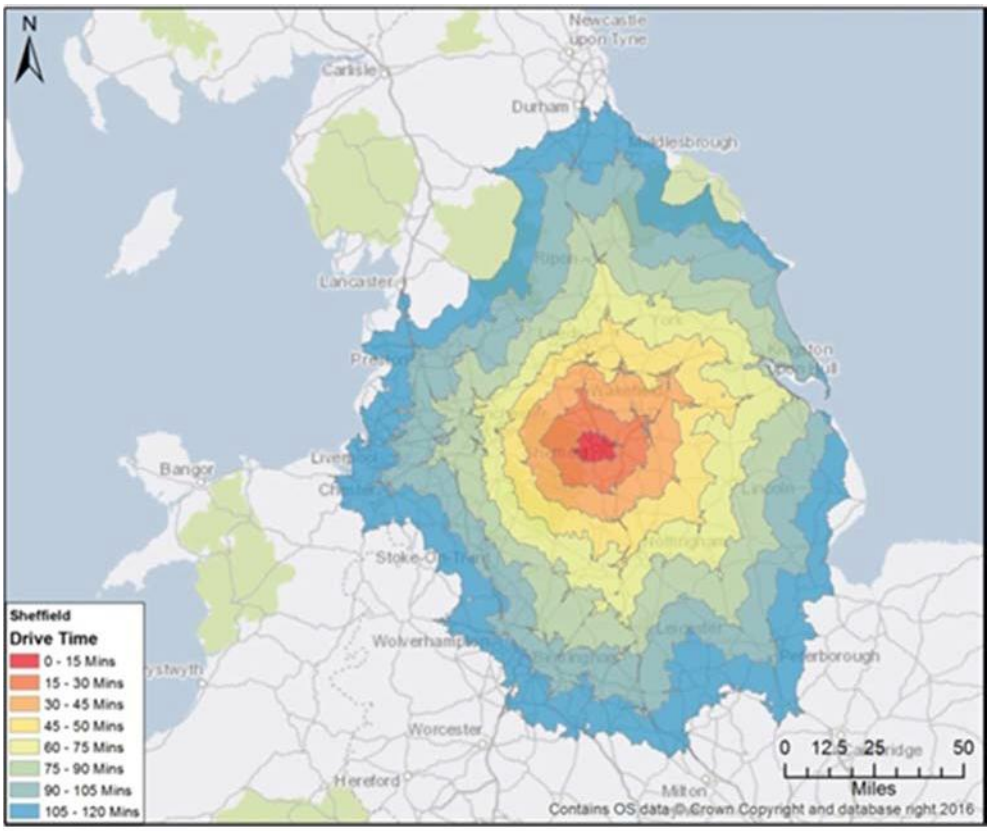
SECTION	EXISTING TRAFFIC FLOWS
A57 between the A628 and Glossop	70.40%
A57 between Glossop and A6013	17.44%
A57 between A6013 and A6101	25.07%
A57 between A6101 and Sheffield	52.46%
A6 between Stockport and A523	75.53%
A6 between Chapel-en-le-firth and A623	39.56%
A623 between the A6 and A625	38.39%

Section	Existing Traffic Flows
A625 between the A623 and A6187	11.26%
A625 between the A6187 and Dore	22.68%
A625 between Dore and Sheffield	66.90%

APPENDIX B-3

DRIVE TIME ISOCHRONES MAPS

Figure B3 - Drive Time Isochrones for Sheffield and Manchester (Streetmap Premium Dataset, 2016)



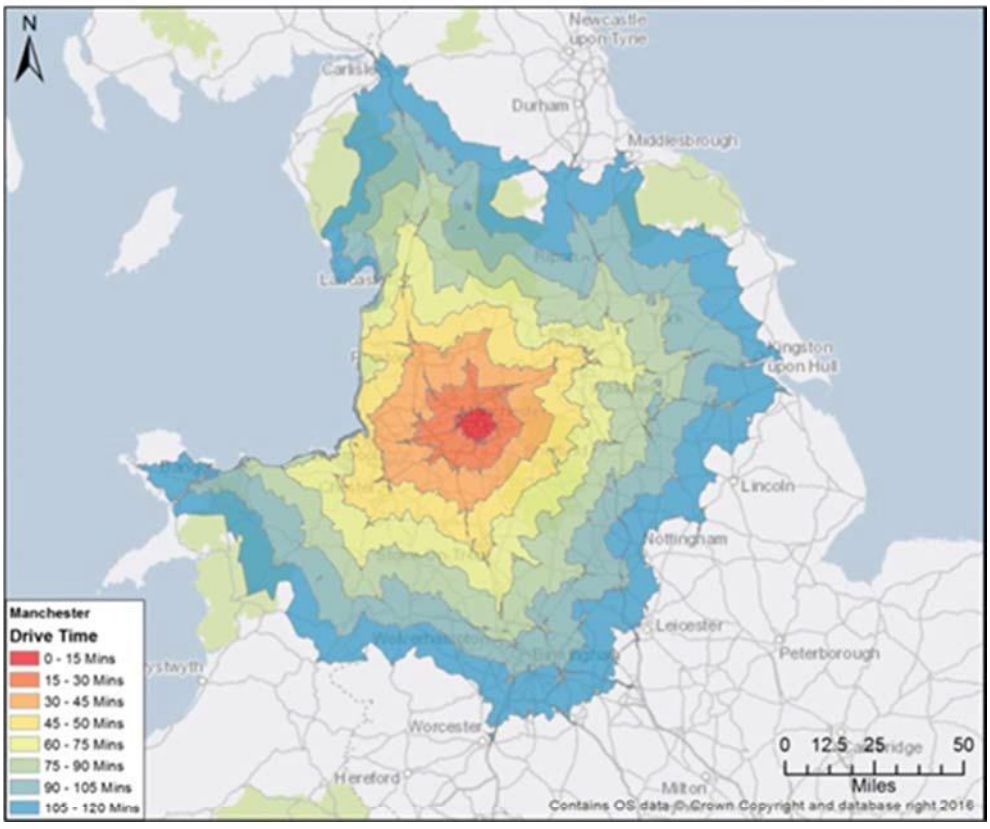
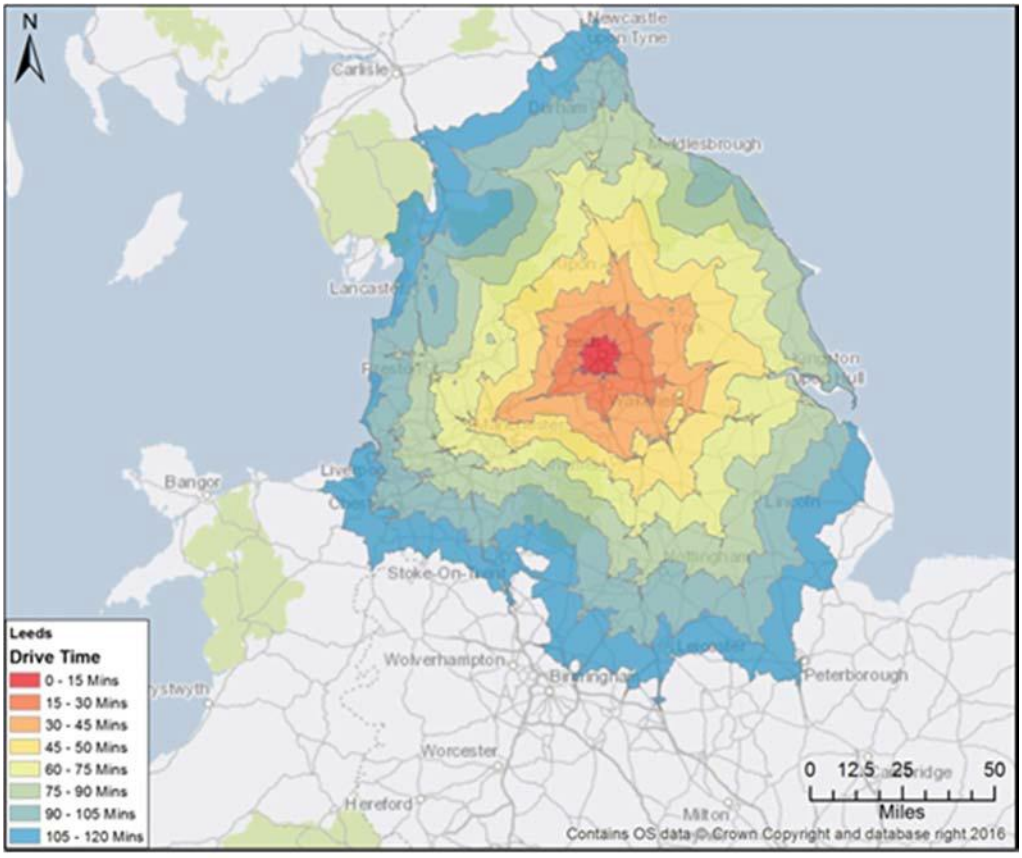
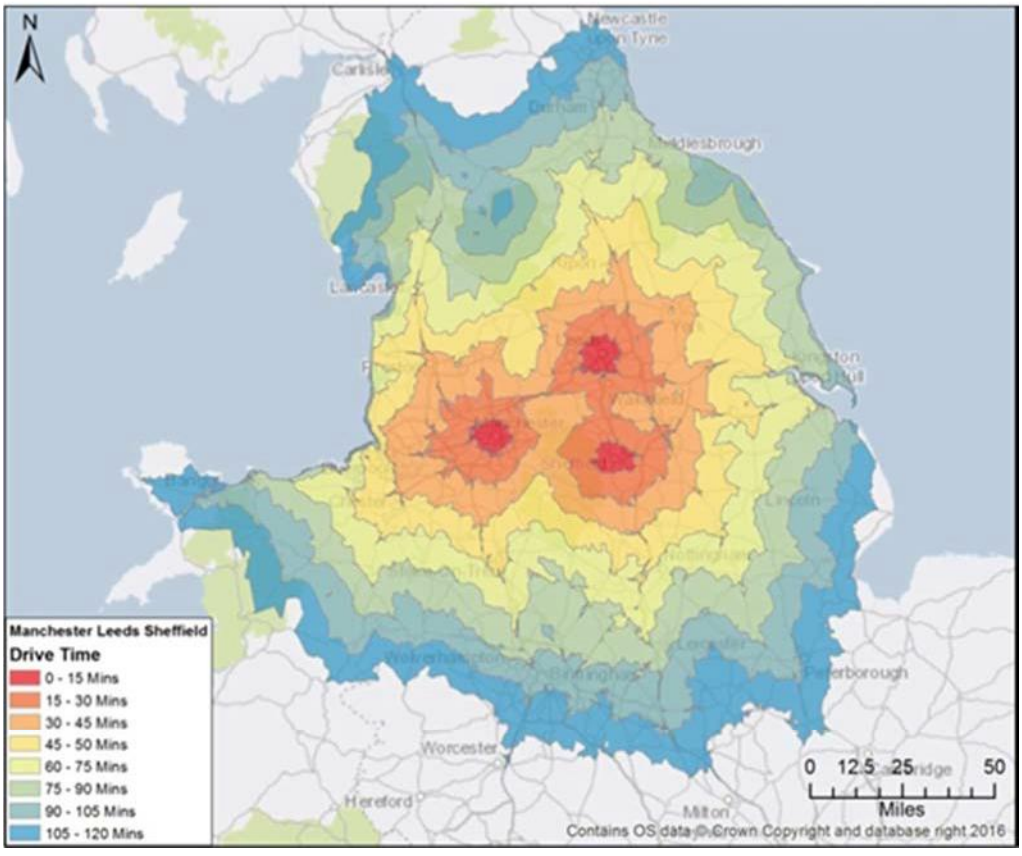


Figure B4 – Drive Time Isochrones for Leeds and Combined (Streetmap Premium Dataset, 2016)

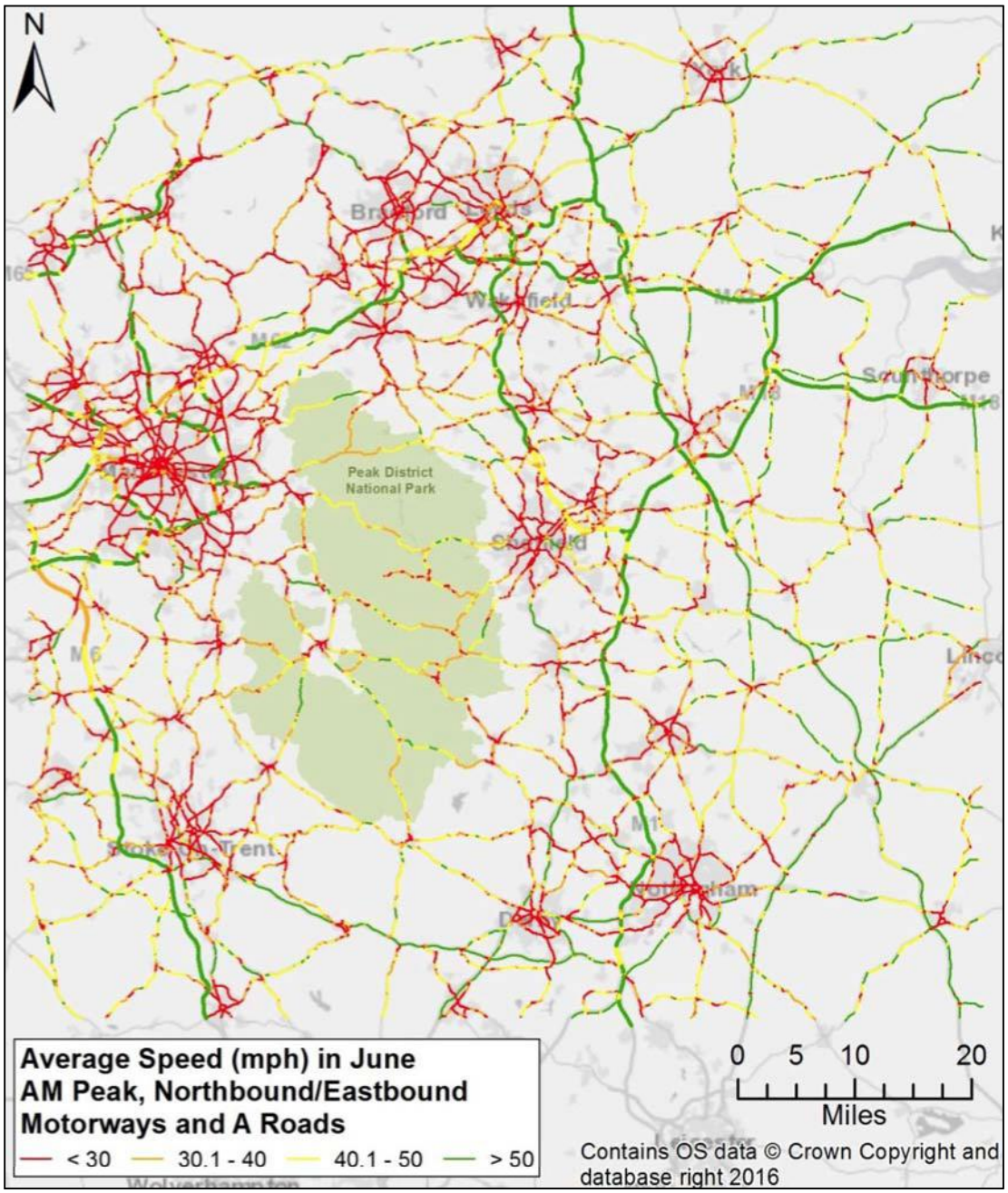




APPENDIX B-4

MAP SHOWING AVERAGE SPEEDS WITHIN WIDER AREA OF IMPACT

Figure B5 – Average Speeds in Area of impact



APPENDIX B-5

SRN AVERAGE SPEEDS – FURTHER ANALYSIS

1.1.1 Analysis of the Traffic Master speed data has been undertaken within the area of influence of the TPT. The key below (Table B4) which shows the colour coding used and the average speeds associated with each location. This colour coding has been used to identify the performance of the network and is graded in some instances, for example orange to red, to indicate variation in speed between junctions. The following time periods have been reviewed

- → AM – 08:00 – 09:00 (October 2015)
- → PM – 17:00 – 18:00 (October 2015)

Table B4 - Key showing Average Speeds

Key	Average Speed (mph)
	>50
	40.1 - 50
	30.1 - 40
	<30
Varying Speed Example	
	<30 - 40
Direction	
NB/EB SB/WB	Northbound/Eastbound Southbound/Westbound

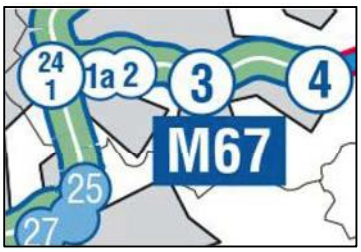
M67

1.1.2 The M67 is a key route within the study area as it is the western the connecting point for two of the potential TPT corridor options. Table B5 demonstrates that this section of the SRN experiences low speeds when nearing the M60, approaching Manchester, this is indicative of congestion on this area of the network.

1.1.3 The data shows that this section of the SRN consistently operates at low speeds across most time periods which are, at least partially, influenced by the road's proximity to Manchester.

Table B5 - Summary of Average Speeds between junctions on the M67 (2016 data)

Road Section		Oct-15			
		EB		WB	
		AM	PM	AM	PM
M67	0-1				
	1-2				
	2-3				
	3-4				



M1

1.1.4 The M1 is a key link on the SRN as two of the potential entry/exit points for the proposed TPT are located within this section of the network.

1.1.5 Table B6 shows how the average speeds change across the length of the M1 within the study area. Analysis shows that, on this section of the SRN, the worst performing stretches are those located nearest to junctions for Leeds and Sheffield where traffic often operates at less than 40mph in the peak hours.

Table B6 - Summary of Average Speeds between junctions on the M1 (2016 data)

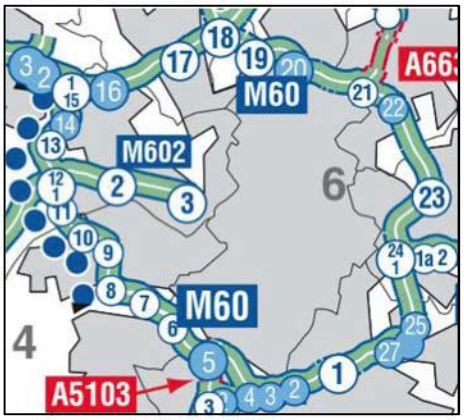
Road Section		Oct-15 NB/EB AM	Oct-15 NB/EB PM	Oct-15 SB/WB AM	Oct-15 SB/WB PM	Connection Points
M1	32-33					
	33-34					
	34-35					C
	35-36					C
	36-37					B
	37-38					A
	38-39					
	39-40					
	40-41					
	41-42					

M60

1.1.6 The M60 is one of the most congested sections of the SRN within the study area. As shown in Table B7, the northern section of the road (between Junctions 10 and 18) experiences average speeds of less than 40mph in the peak hours. This is indicative of significant congestion.

Table B7 – Summary of Average Speeds between junctions on the M60 (2016 data)

Road Section		Oct-15 Clockwise AM	Oct-15 Clockwise PM	Oct-15 Anti-Clockwise AM	Oct-15 Anti-Clockwise PM	Connection Points
M60	1-2					
	2-3					
	3-5					
	5-6					
	6-7					
	7-8					
	8-9					
	9-10					
	10-11					
	11-12					
	12-13					
	13-14					
	14-15					
	15-16					
	16-17					
	17-18					
	18-19					
	19-20					
	20-21					
	21-22					A
	22-23					B, C
	23-24					
	24-25					
	25-27					



M62

1.1.7 The M62 is a key west-east Trans-Pennine motorway, which connects Liverpool and Hull via Manchester and Leeds, with seven miles of the route common with the M60 orbital motorway around Manchester. Table B8 indicates that, although much of the M62 delivers average speeds of above 50mph, between Junctions 18 and 20 there are significantly lower speeds when joining the M60 towards Manchester from the east. This is particularly problematic in a West bound direction during both the AM and PM peaks.

1.1.8 It is considered that the proposed TPT would reduce the number of vehicles using the M62 for travel between Leeds and Manchester, resulting in an increase in average speeds between Junctions 18 and 20.

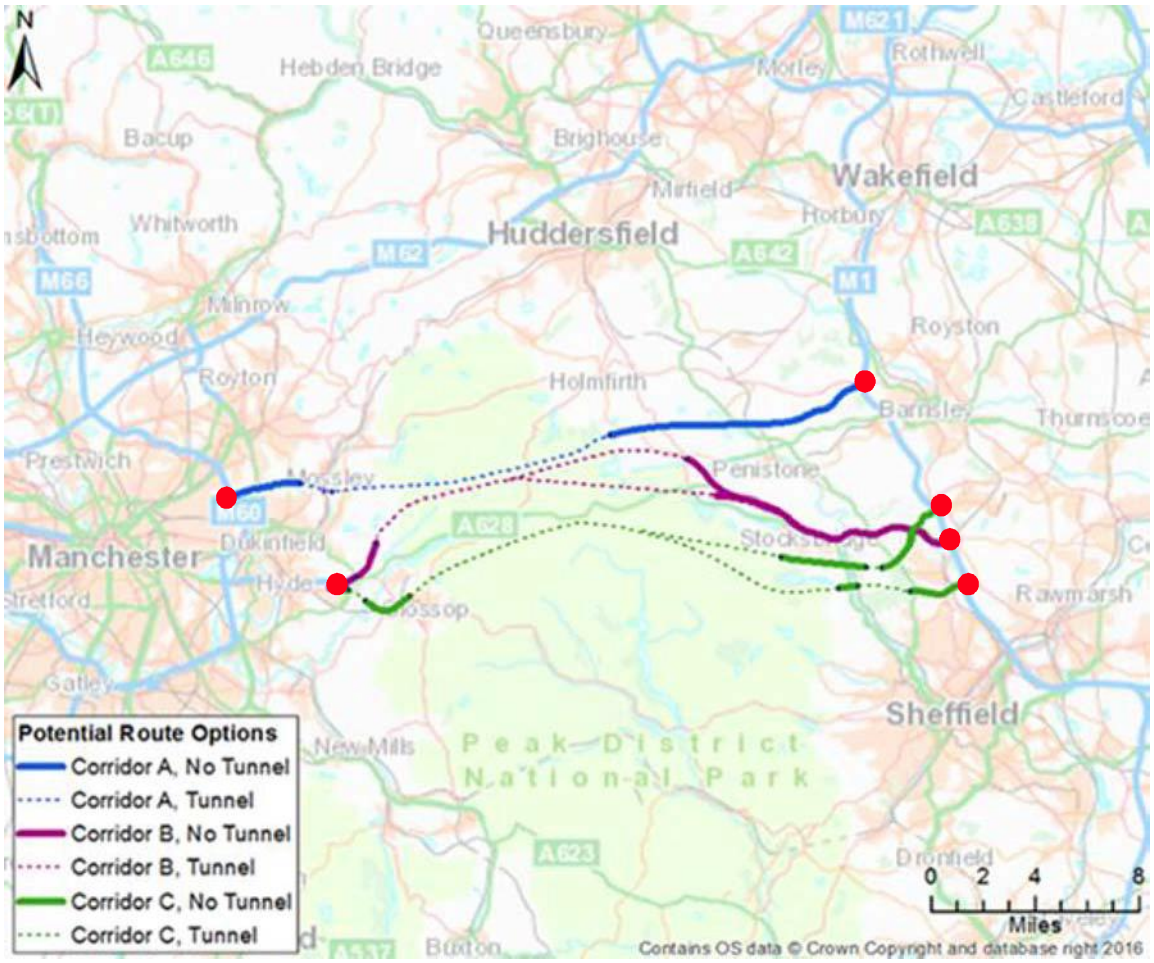
Table B8 – Summary of Average Speeds between junctions on the M62 (2016 data)

Road Section		Oct-15			
		EB		WB	
		AM	PM	AM	PM
M62	18-19				
	19-20				
	20-21				
	21-22				
	22-23				
	23-24				
	24-25				
	25-26				
	26-27				
	27-28				
	28-29				

TUNNEL CORRIDOR CONNECTIONS TO THE EXISTING ROAD NETWORK

1.1.9 A map showing the shortlisted route options under analysis has been included for reference – see Figure B6, the points at which the TPT will connect with the wider road network have been highlighted in red. The map shows the routes for Corridors A, B and C marked in blue, purple and green respectively, and the points at which these connect to the existing road network to the East and West of the Peak District National Park.

Figure B6 – Map showing Potential TPT Route Options (A, B, C)



CORRIDOR A

Table B9 – Corridor A Connection Point – Summary of Average Speeds (2016 data)

East		Oct-15			
		NB/EB		SB/WB	
		AM	PM	AM	PM
Corridor A	M1 (37-38)				
West		NB/EB		SB/WB	
		AM	PM	AM	PM
Corridor A	M60 (22-23)				

1.1.10 As shown in Table B9, average speeds on the M1 (37-38) and the M60 (22-23) are generally good with the exception of NB/EB PM on the M1, and NB/EB AM on the M60. This suggests that traffic flows on these sections of the road network are generally good with no significant constraints.

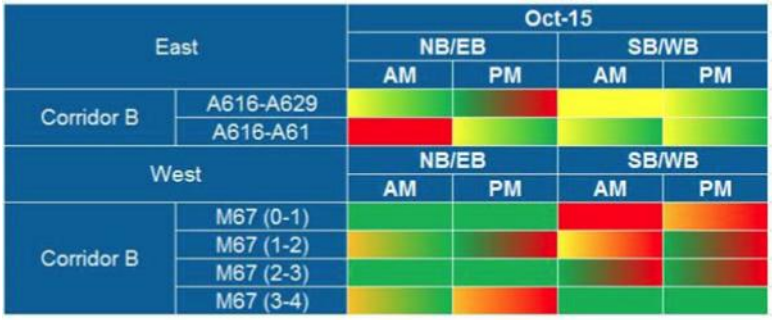
CORRIDOR B

1.1.11 Table B10 shows the key routes which connect Corridor B to the wider road network experience variable average speeds, dependent on the specific route under analysis.

1.1.12 To the east, the A616-A629 generally has higher average traffic speeds during the AM, with lower speeds during the PM in an NB/EB direction. The A616-A61, on the other hand, has consistently low average speeds (under 30MPH) during the AM in an NB/EB direction, with good average speeds elsewhere.

1.1.13 To the west, the M67 (0-4) is used by Corridor B. Generally, average speeds are good in a NB/EB direction. However, average speeds are significantly slower in a SB/WB direction on the M67, with the exception of 3-4, which suggests congestion on these sections of the road network.

Table B10 – Corridor B Connection Points – Summary of Average Speed (2016 data)



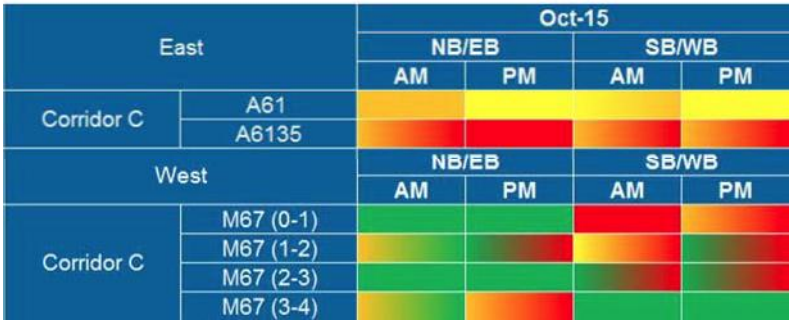
CORRIDOR C

1.1.14 Table B11 shows key routes which connect Corridor C have variable average speeds, with the A6135 having the lowest average speeds.

1.1.15 To the east, the A61 has average speeds predominantly within the 30-40 mph range, the A6135 has significantly lower average speeds with significant proportions averaging less than 30 mph which indicates congestion concentrated on these areas of the road network.

1.1.16 To the West, the M67 (0-4) is used by both Corridor B and C, as noted in the previous sub-section, and average speeds are generally good in a NB/EB direction, with lower average speeds in a SB/WB direction, indicating levels of congestion, particularly during the AM period.

Table B11 – Corridor C Connection Points – Summary of Average Speed (2016 data)



APPENDIX B-6

SUMMARY OF LEAST RELIABLE JOURNEY TIME LOCATIONS (TRANS-PENNINE ROUTES FEASIBILITY STUDY)

1.1.17 Table B12 shows that the majority of the top ten least reliable journey time locations within the area of influence of the TPT occur on the trunk road sections of the route. Each of the sections listed are within (or on) the approach to an urban area. Nine of the ten locations are ranked within the fifty least reliable journey time locations nationally. It should be noted that it is the variability of the journey time that is presented below and this does not necessarily relate directly to low speeds or congestion.

Table B12 – Ten least reliable journey time locations on the route 1 April 2012 to 31 March 2013 (South Pennines Route Strategy Evidence Report, Highways England (2014))

Rank	Location	On-time Reliability Measure	National Rank
1	A63 between A1165 (Great Union St) and A2079 (Ferensway)	48.6%	8
2	A5036 between A5027 and A59 (Netherton, North of Liverpool)	49.5%	10
3	M60 between M60 J4 and M60 J3	53.4%	18
4	M606 between A6177 and M606 J2	55.8%	34
5	A663 between A627(M) and A669 (Oldham)	56.6%	37
6	M606 between M606 J2 and A6177	58.0%	47
7	M58 between M58 J5 and M58 J6	58.0%	48
8	A61 between A616 and M1 J36	58.1%	49
9	A663 between A669 and A627(M) (Oldham)	58.1%	50
10	A63 between A1166 (Brighton St) and A1079 (Ferensway)	58.2%	51

APPENDIX B-7

ROAD CLOSURE SUMMARY TABLES

Table B13 – Road Closures by Year (Aone+)

Number of Road Closures by Year				
2010	2011	2012	2013	Total
32	49	25	23	129

Table B14 – Road Closures by Type (Aone+)

Year	Number of Road Closures by Type						
	Collision	Weather	Broken Down Vehicle	Closure Request	Fire	Other	Total
2010	14	7	4	2	1	4	32
2011	26	12	6	3	2	0	49
2012	11	13	0	1	0	0	25
2013	7	10	0	1	1	4	23
Total	58	42	10	7	4	8	129
%	45%	32%	8%	5%	3%	10%	100%

Table B15 – Road Closures by Road (Aone+)

Year	Road Closure by Road				
	A57	A628	A616	A61	Total
2010	3	16	11	2	32
2011	2	30	12	5	49
2012	0	19	4	2	25
2013	0	19	0	4	23
Total	5	84	27	13	129
%	4%	65%	21%	10%	100%
Closures per mile	3.7	6.1	2.5	12.4	4.81

APPENDIX B-8

SOUTH PENNINES ROUTE STRATEGY – OPPORTUNITIES AND CHALLENGES

Figure B7 - Figure X South Pennines Route Strategy – Opportunities and Challenges (Map 2)

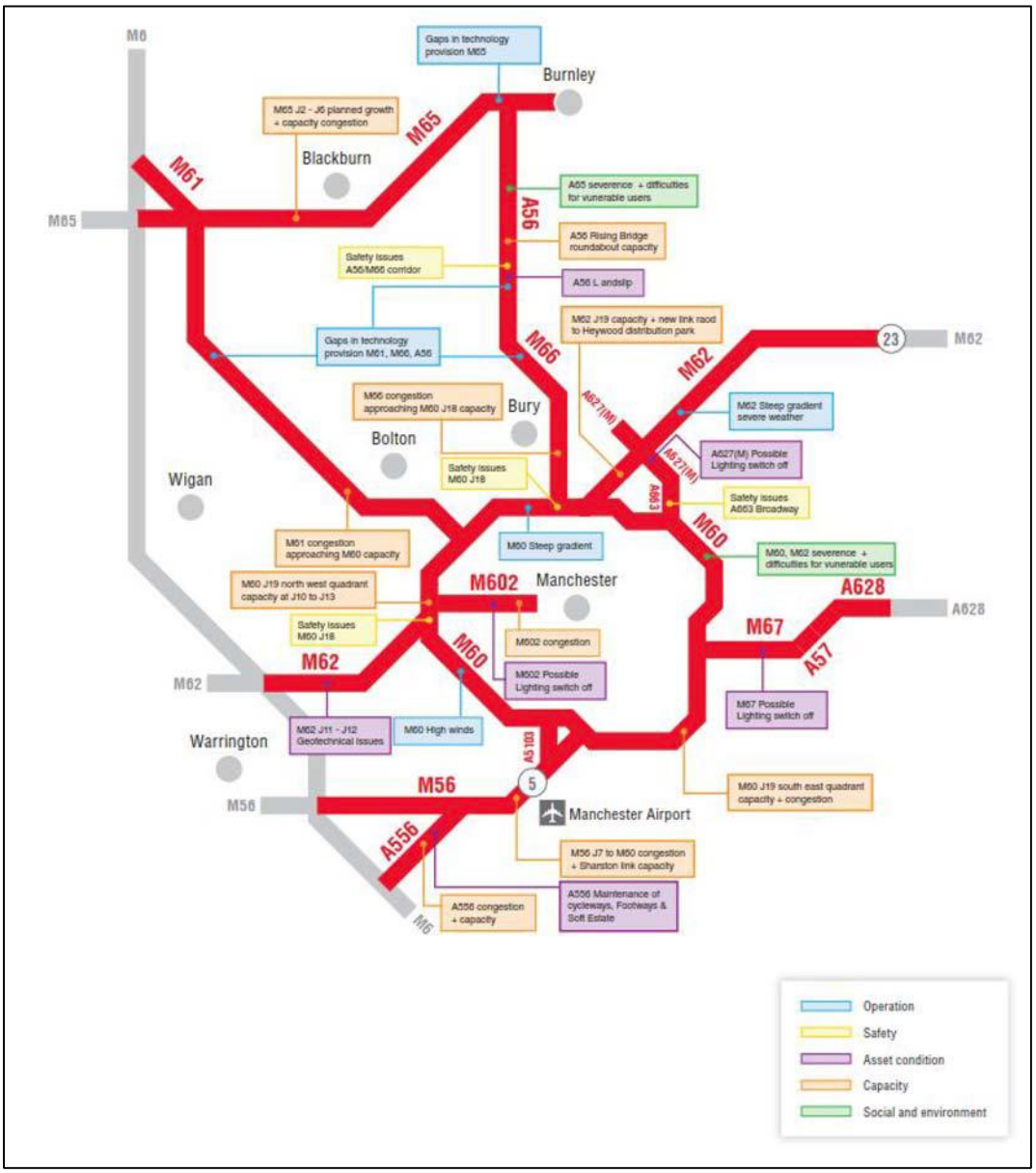
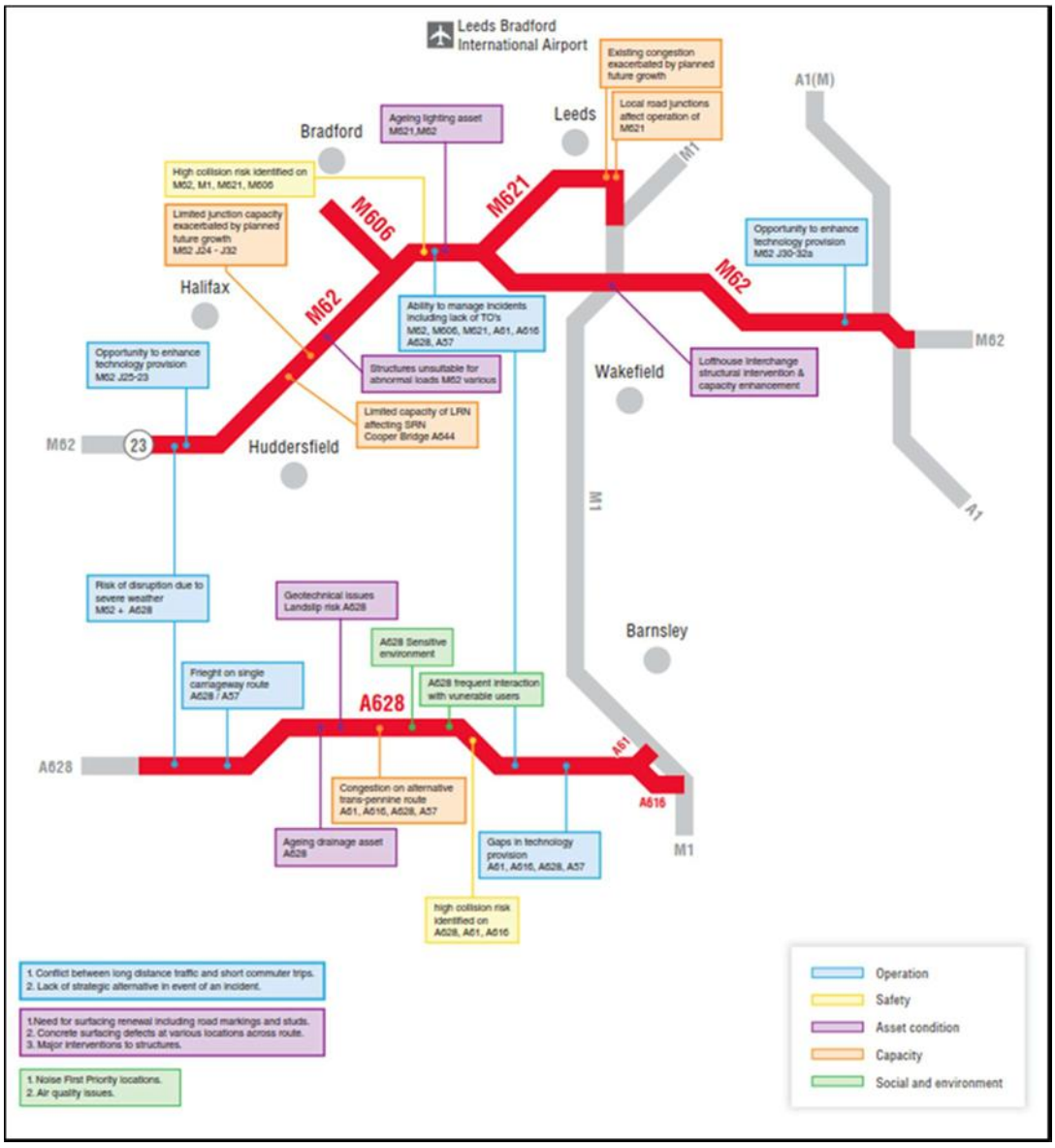


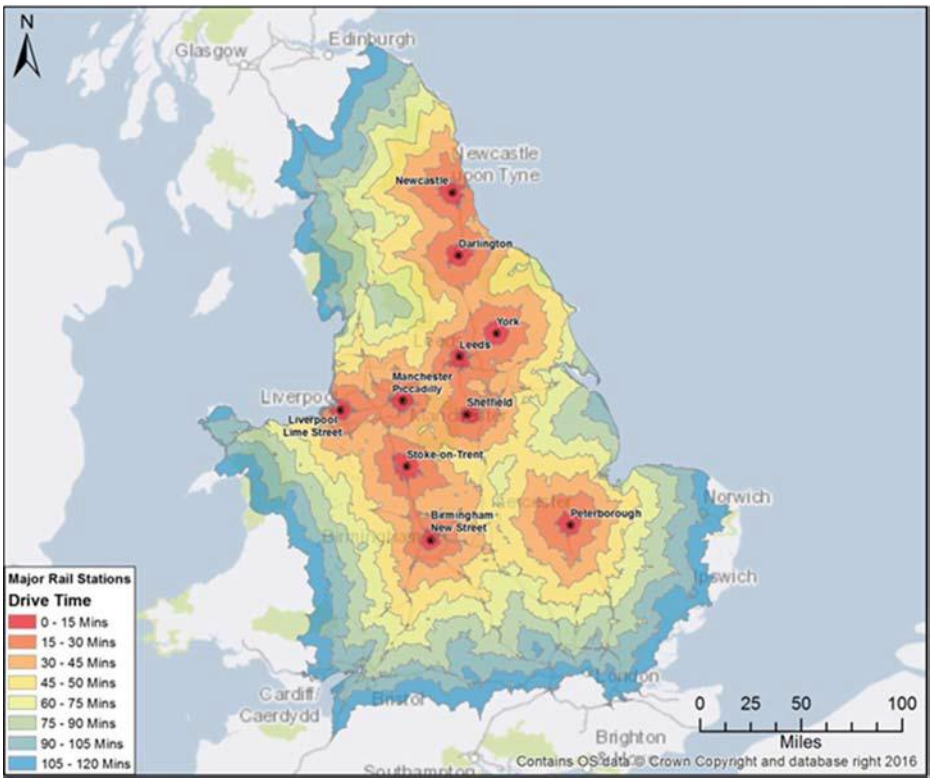
Figure B8 - South Pennines Route Strategy – Opportunities and Challenges (Map 3)



APPENDIX B-9

KEY RAIL STATIONS DRIVE TIME ISOCHRONES

Figure B9 - Map showing Drive Time Isochrones for Key Rail Stations



APPENDIX B-10

SUMMARY OF PASSENGER JOURNEYS ON HOPE VALLEY RAIL LINE

Table B16 - Summary of Passenger Journeys on Hope Valley Line [2]

Railway Station	Total Journeys into Manchester	Total Journeys into Sheffield	Total Journeys to and from Station[3]	Daily Journeys into Manchester*	Daily Journeys into Sheffield
Manchester	-	574,000	39,900,000	-	1,840
Stockport	Unknown	103,000	3,313,000	-	330
Hazel Grove	Unknown	1,000	610,000	-	3
Chinley	57,000	13,000	103,000	183	42
Edale	16,000	20,000	73,000	51	64
Hope	13,000	15,000	52,000	42	48
Bamford	6,000	10,000	25,000	19	32
Hathersage	9,000	24,000	56,000	29	77
Grindleford	13,000	24,000	55,000	42	77
Dore	32,000	36,000	106,000	103	115
Sheffield	583,000	-	8,424,000	1,869	-
Total	729,000	820,000		2,337	2,628
*Based on 6 days per week					

[2] Adapted from the Long Term Planning Process: Regional Urban Market Study (Network Rail, 2013)
[3] ORR Station Usage 2011/12

APPENDIX B-11

RAIL IMPROVEMENTS MAP

Figure B10 – Key Rail Improvements for Trans-Pennine Routes (Network Rail, 2016)

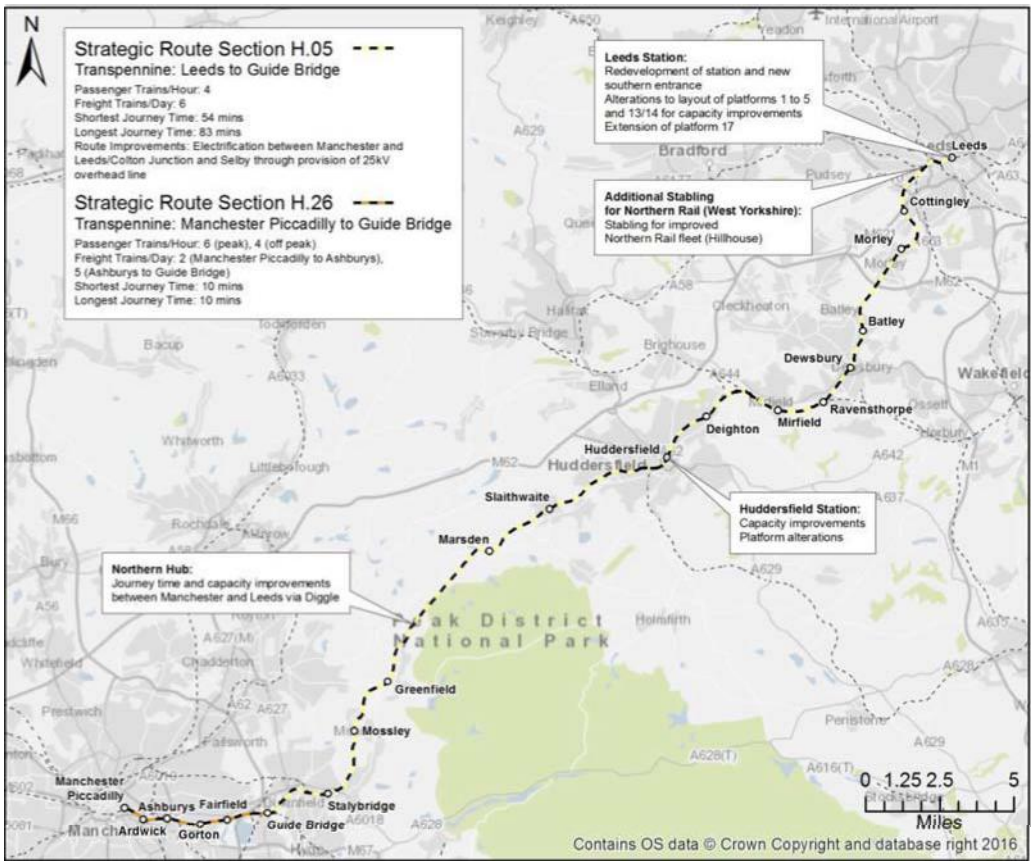
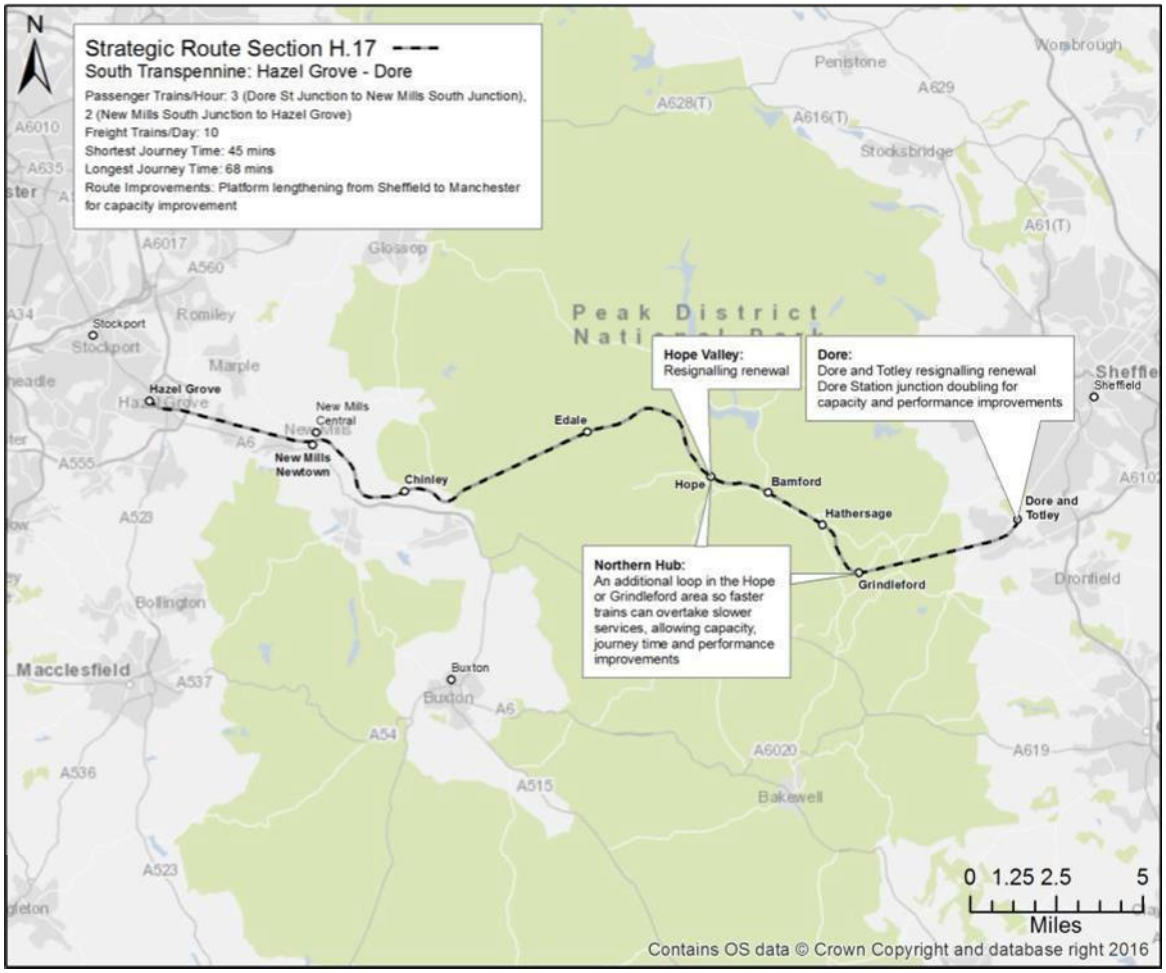


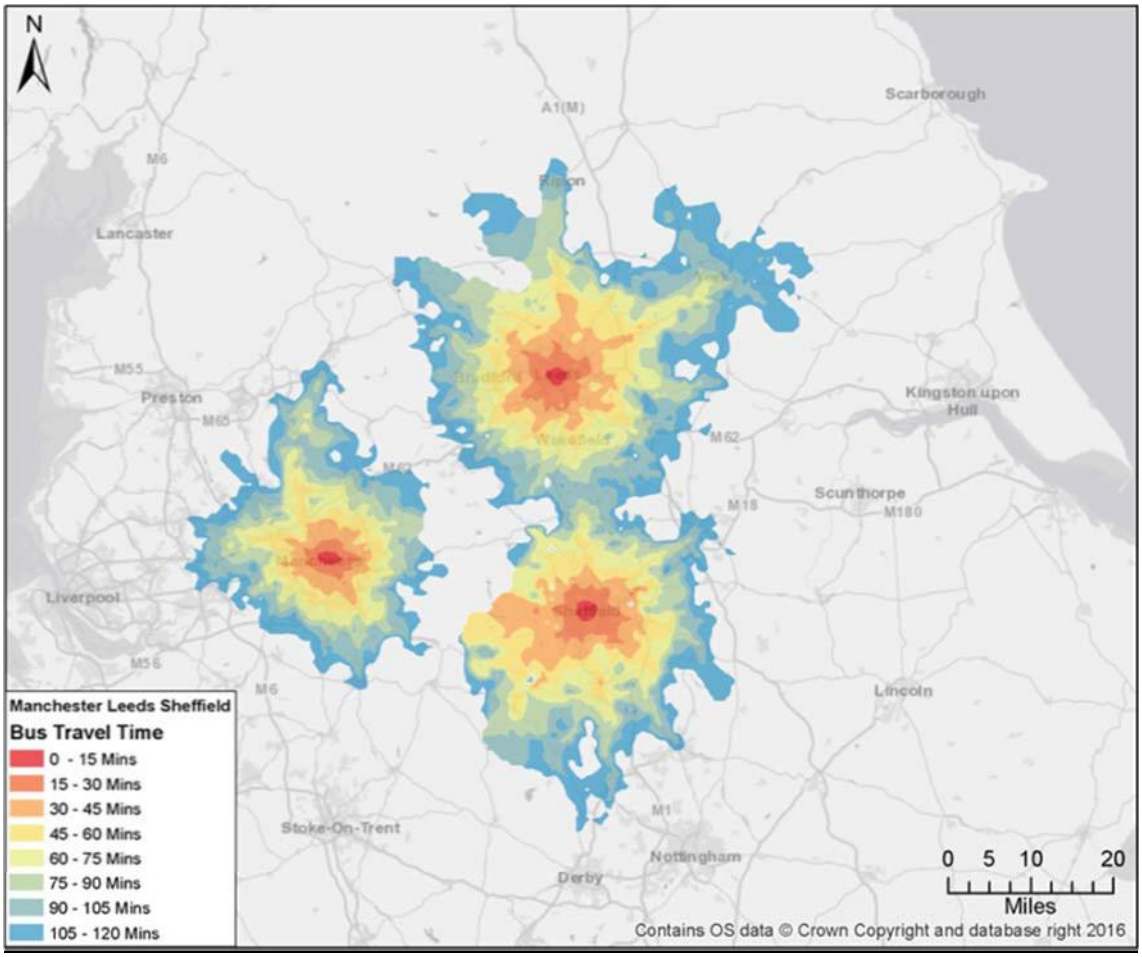
Figure B11 – Key Rail Improvements for South Trans-Pennine Route (Network Rail, 2016)



APPENDIX B-12

BUS TRAVEL ISOCHRONES MAP

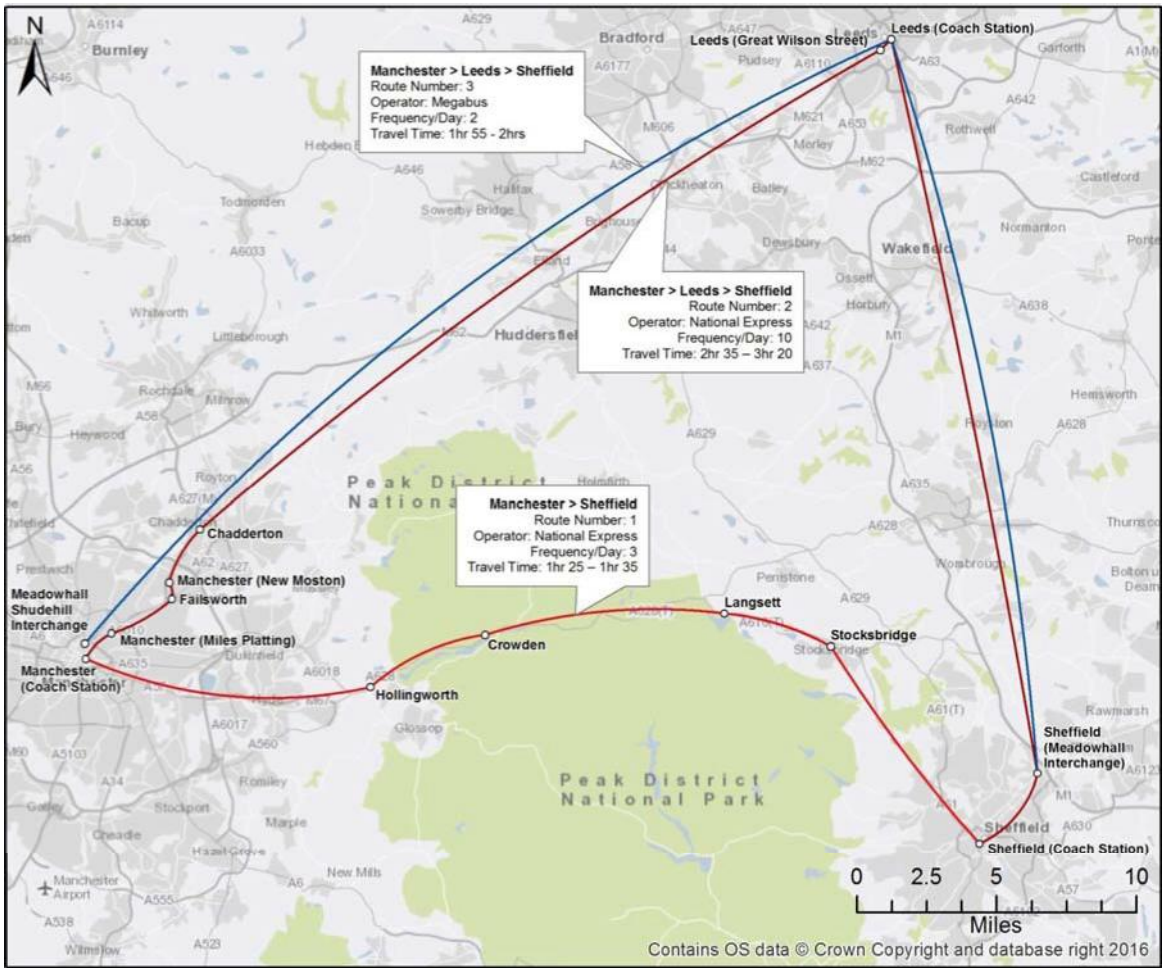
Figure B12 – Bus Travel Isochrones for Leeds, Manchester and Sheffield Combined



APPENDIX B-13

MAP OF KEY COACH ROUTES IN AREA OF INTERVENTION

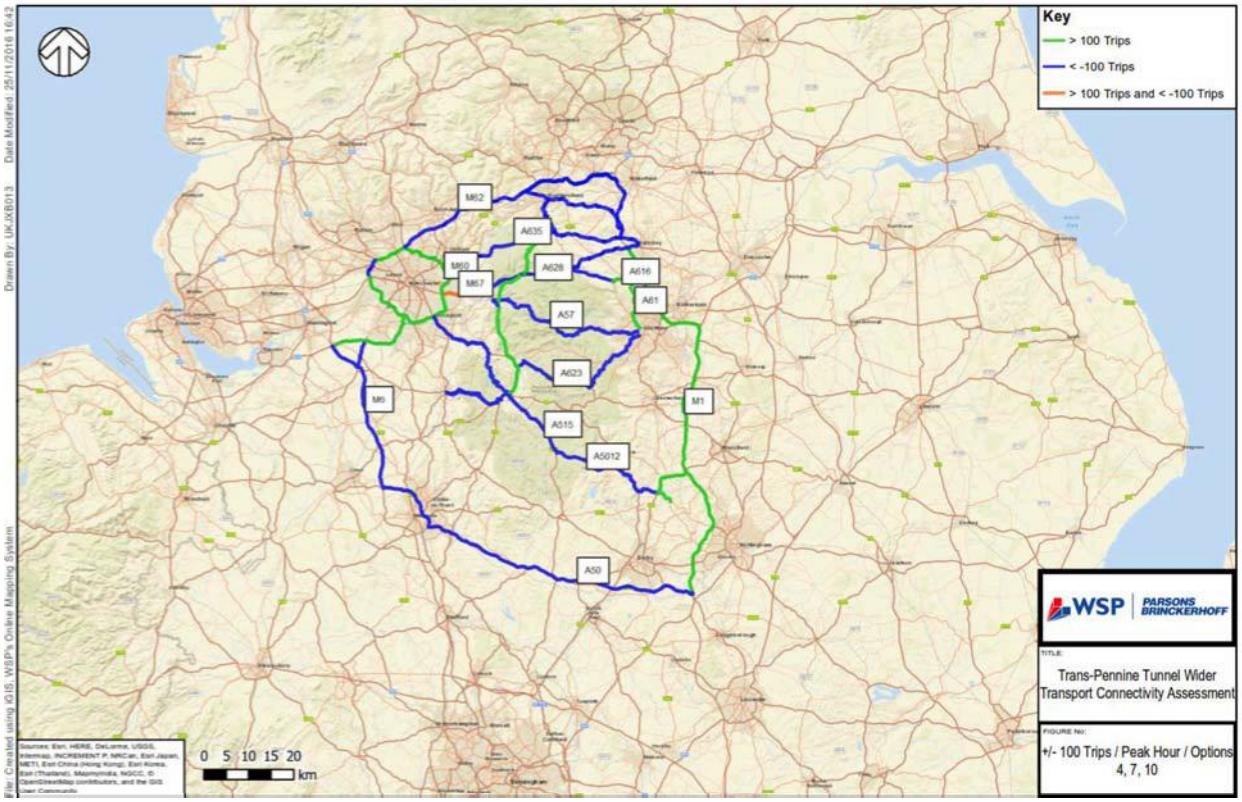
Figure B13 – Key Coach Routes



APPENDIX B-14

FUTURE TRAFFIC FLOW IMPACT WITHIN WIDER AREA OF IMPACT

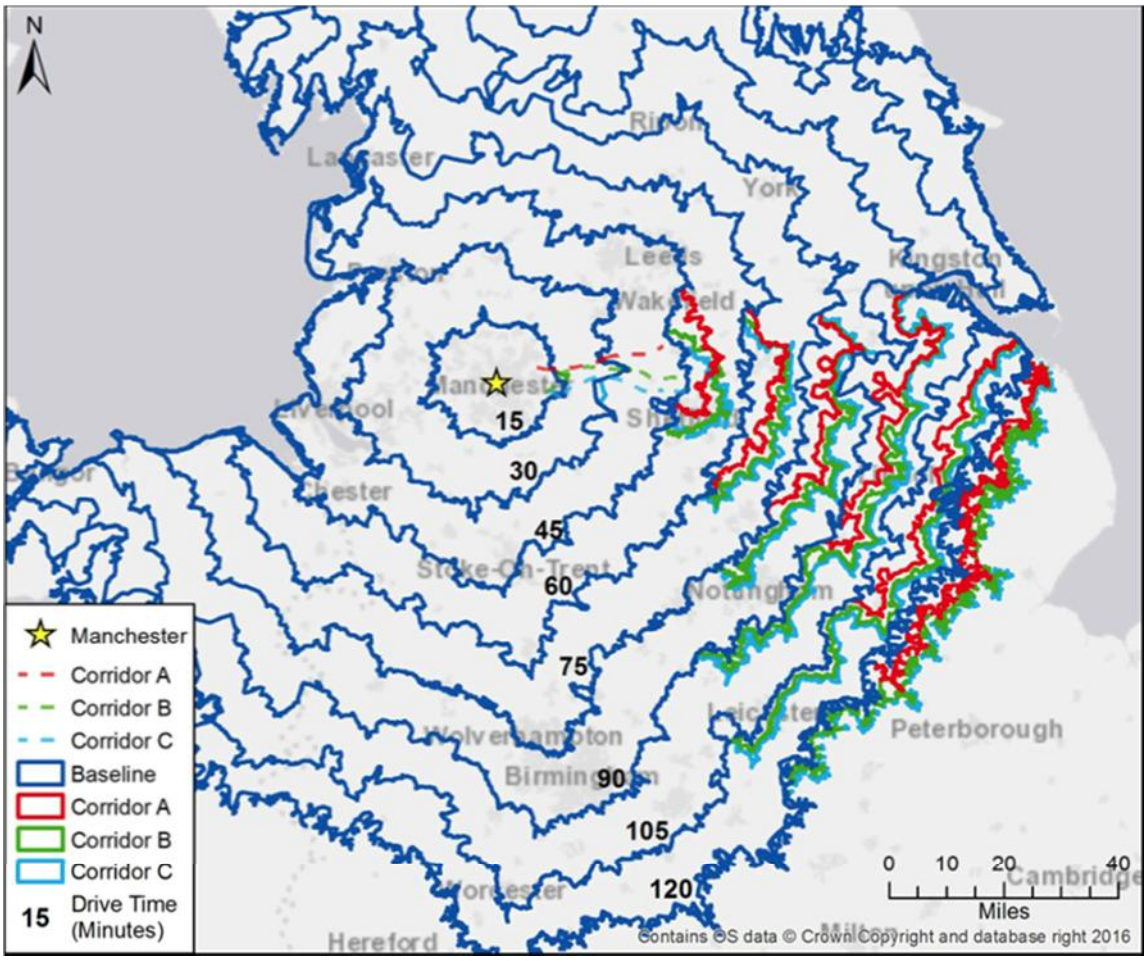
Figure B14 – Future Traffic Flow Impact within Context of Area of Impact



APPENDIX B-15

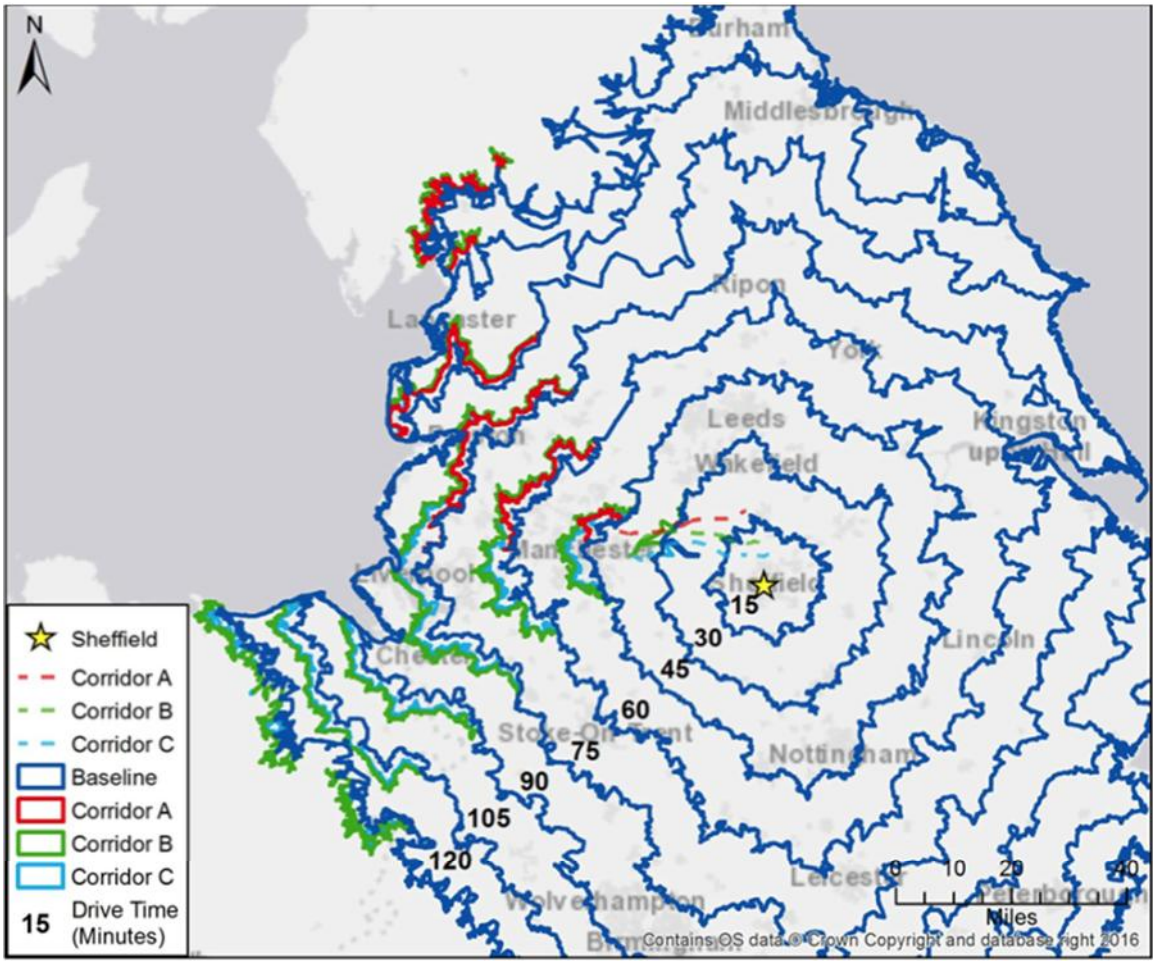
INFORMATION ON JOURNEY TIMES AND IMPACT OF TUNNEL

Figure B15 – Map showing Tunnel Impact on Journey Times for Manchester



1.1.19 It can be seen that the catchment area gains for Manchester are to the east of the M1 corridor, focussed between the South Humber Bank and Northamptonshire (for the 120 minute boundary in the image shown). There are no catchment area gains to the north east of England. Corridor C provides the greatest gains, with Corridor A the lowest gains. Corridor C is connected to the SRN (M1) further south than Corridor A, and therefore, greater distance is achieved for Corridor C to the south east of the country. Corridor B gains lie between those of Corridor A and C.

Figure B16 – Map showing Tunnel Impact on Journey Times for Sheffield

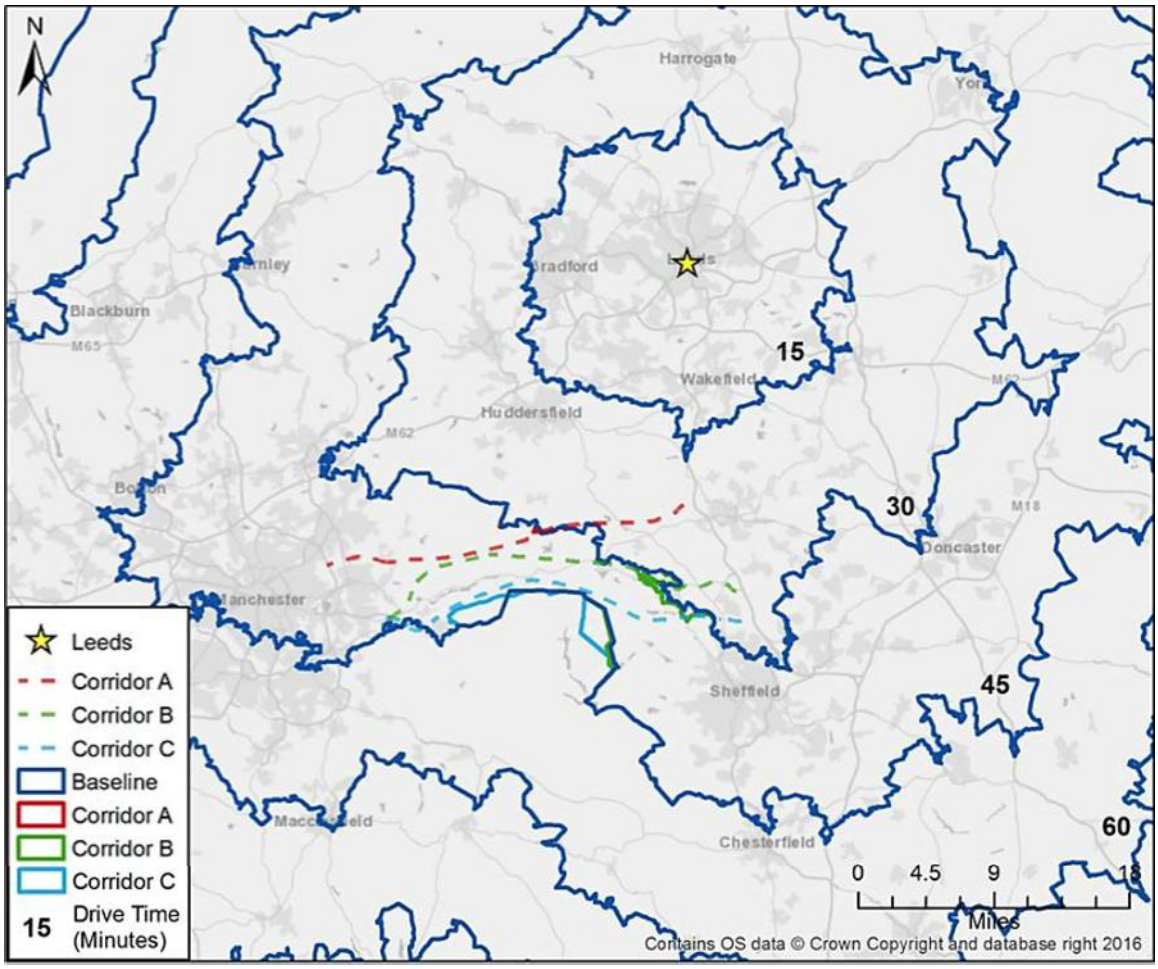


1.1.20 It can be seen that the catchment area gains for Sheffield are both to the North West and South West of England between Shropshire and Cumbria (for the 120 minute boundary in the image shown). Corridor B and C provide increased catchment coverage north west and south west, although Corridor A only provides benefit to the north west. Corridor A joins the SRN (M60) further north than Corridor's B and C, thus providing benefit to the north rather than the south.

1.1.21 Figure B17 shows minimal impact in terms of catchment area gains from Leeds. This is due to the availability of alternative routes serving Leeds, and the fact that the proposed tunnel will primarily serve as a link between Manchester and Sheffield, rather than Leeds.

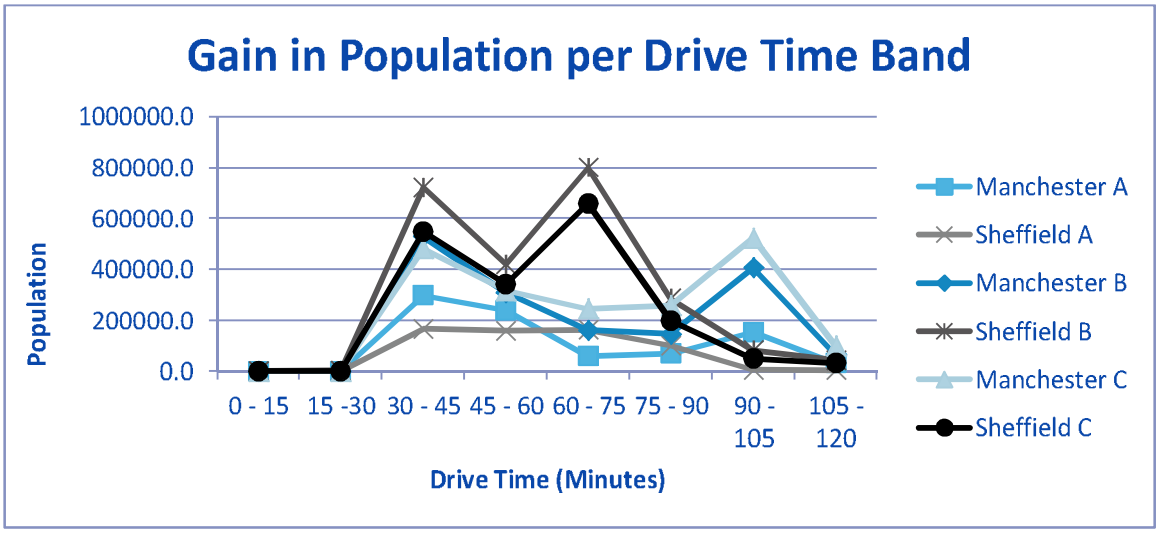
1.1.22 However, despite the fact that Leeds is not expected to benefit directly from the provision of a new high performance road link between Manchester and Sheffield, it is expected that other areas of the road network, such as those key roads around Leeds, will benefit in terms of reduced traffic flows.

Figure B17 – Map showing Tunnel Impact on Journey Times for Leeds



1.1.23 Figure B18 shows the gain in population per drive time band. This clearly demonstrates that the centre of Sheffield is more accessible to a greater population. There is a population of up to 800,000 within the 60 to 75 minute catchment area which would have been within the 75 to 90 minute catchment area. These gains are primarily from the Merseyside area, but extend as far north as Preston.

Figure B18 – Chart showing Gain in Population per Drive Time Band



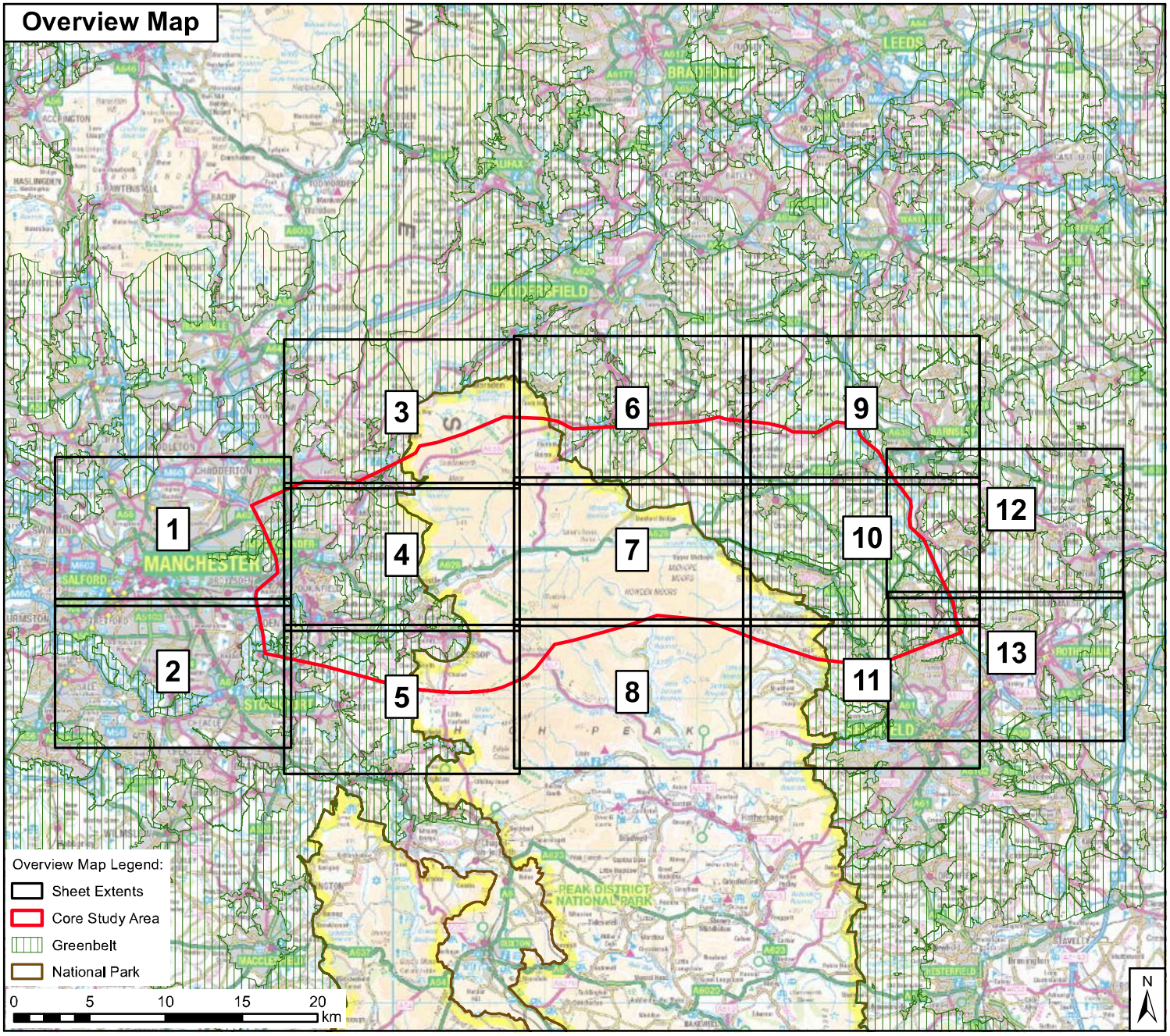
Appendix C

CHAPTER 5 – ENVIRONMENTAL EVIDENCE

APPENDIX C-1

CORE ENVIRONMENTAL CONSTRAINTS

Overview Map



Sheets 1 to 13 Legend:

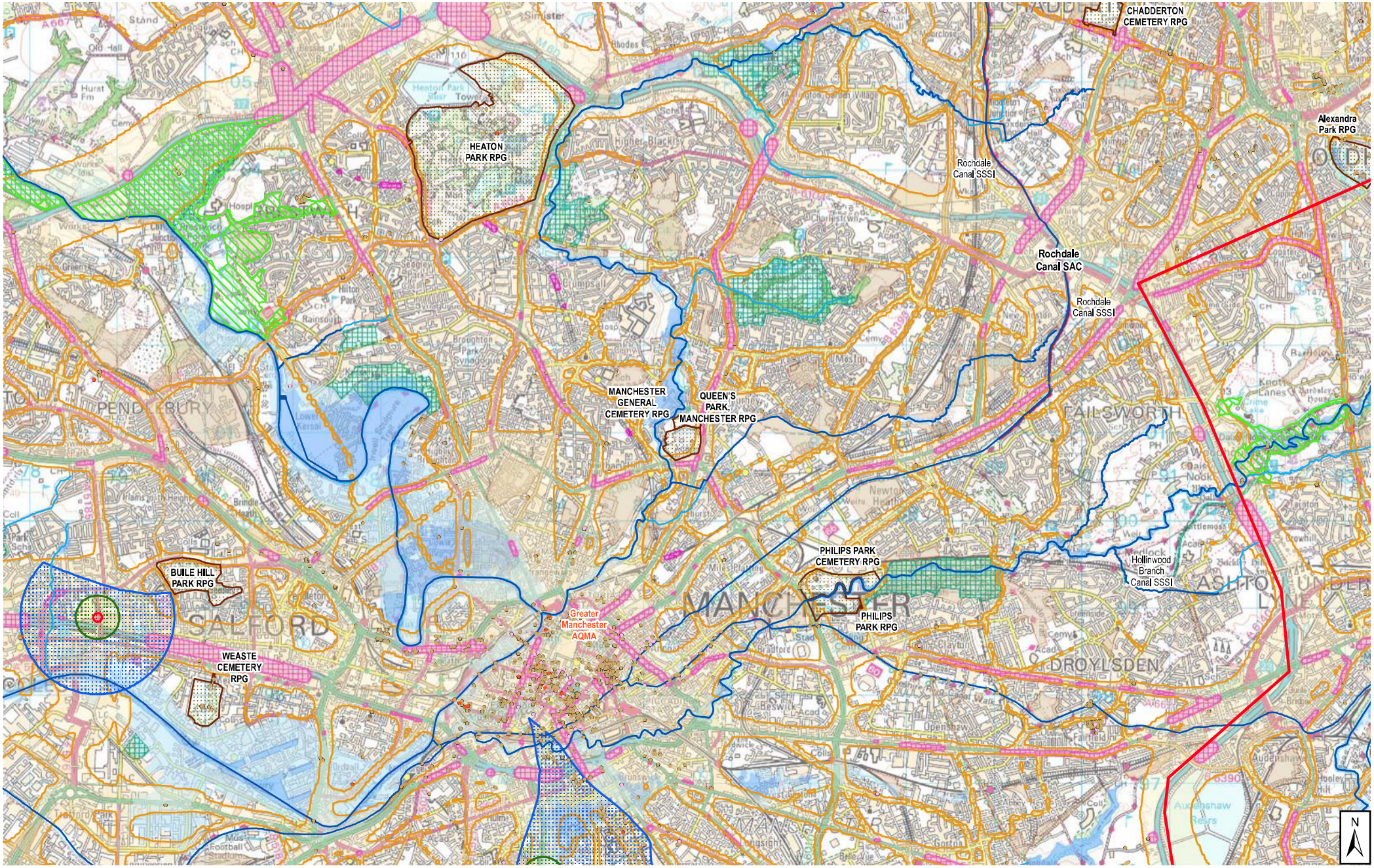
- Core Study Area

Environmental Constraints

- Grade I Listed Building
- Grade II* Listed Building
- Grade II Listed Building
- Statutory Main Rivers
- WFD Waterbody
- National Trail
- Air Quality Management Area (AQMA)
- Noise Action Planning Important Areas (NIA)
- Special Area of Conservation (SAC)
- Special Protection Area (SPA)
- Wetland of International Importance (Ramsar)
- Site of Special Scientific Interest (SSSI)
- National Nature Reserve (NNR)
- Local Nature Reserve (LNR)
- Ancient Woodland Inventory
- Registered Park and Gardens (RPG)
- Scheduled Monument
- Country Park
- Flood Zone 3
- Flood Zone 2
- Historic Landfill

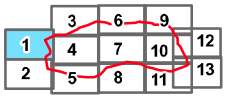
Source Protection Zones (SPZ)

- Zone I - Inner Protection Zone
- Zone II - Outer Protection Zone
- Zone III - Total Catchment

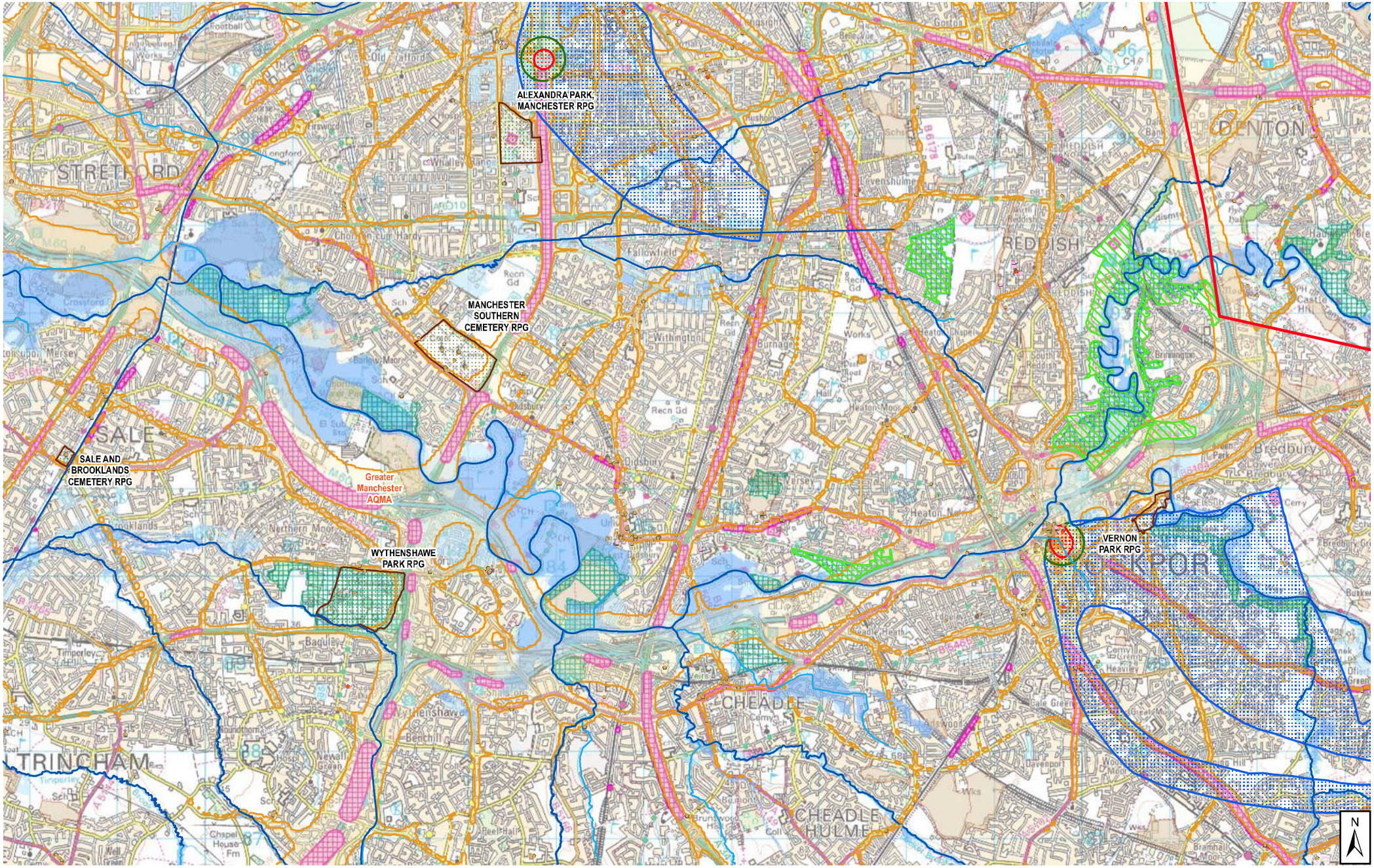


PROJECT: Trans Pennine Tunnel Wider Connectivity Assessment
PROJECT No: 70026162
Client: Transport for the North / Highways England

Drawn: TG
Checked: VW
Approved: KS
Revision: A
Date: January 2017



WSP | PARSONS BRINCKERHOFF

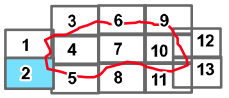


PROJECT: Trans Pennine Tunnel Wider Connectivity Assessment

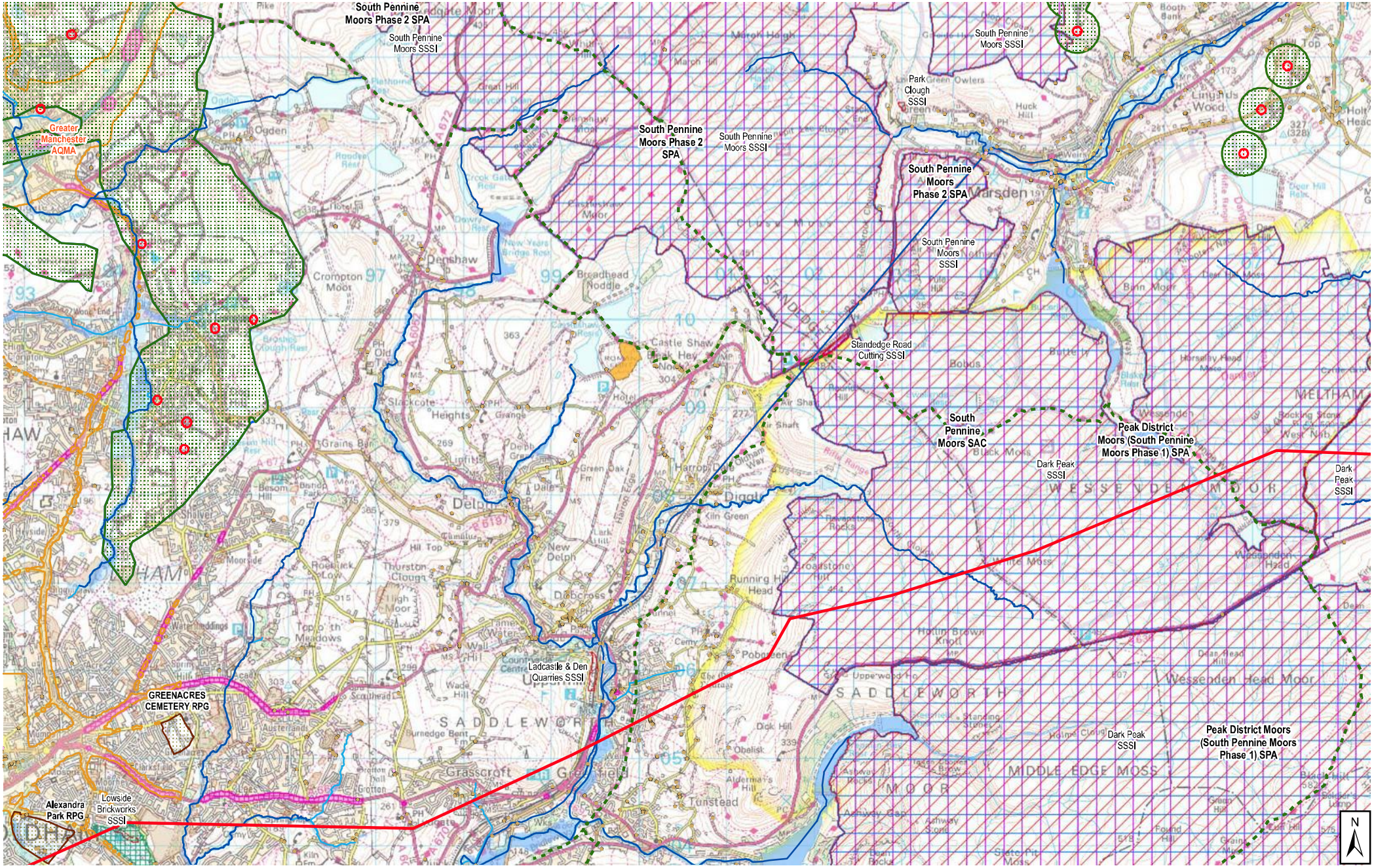
PROJECT No: 70026162

Client: Transport for the North / Highways England

Drawn: TG
Checked: VW
Approved: KS
Revision: A
Date: January 2017

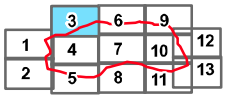


WSP | PARSONS BRINCKERHOFF

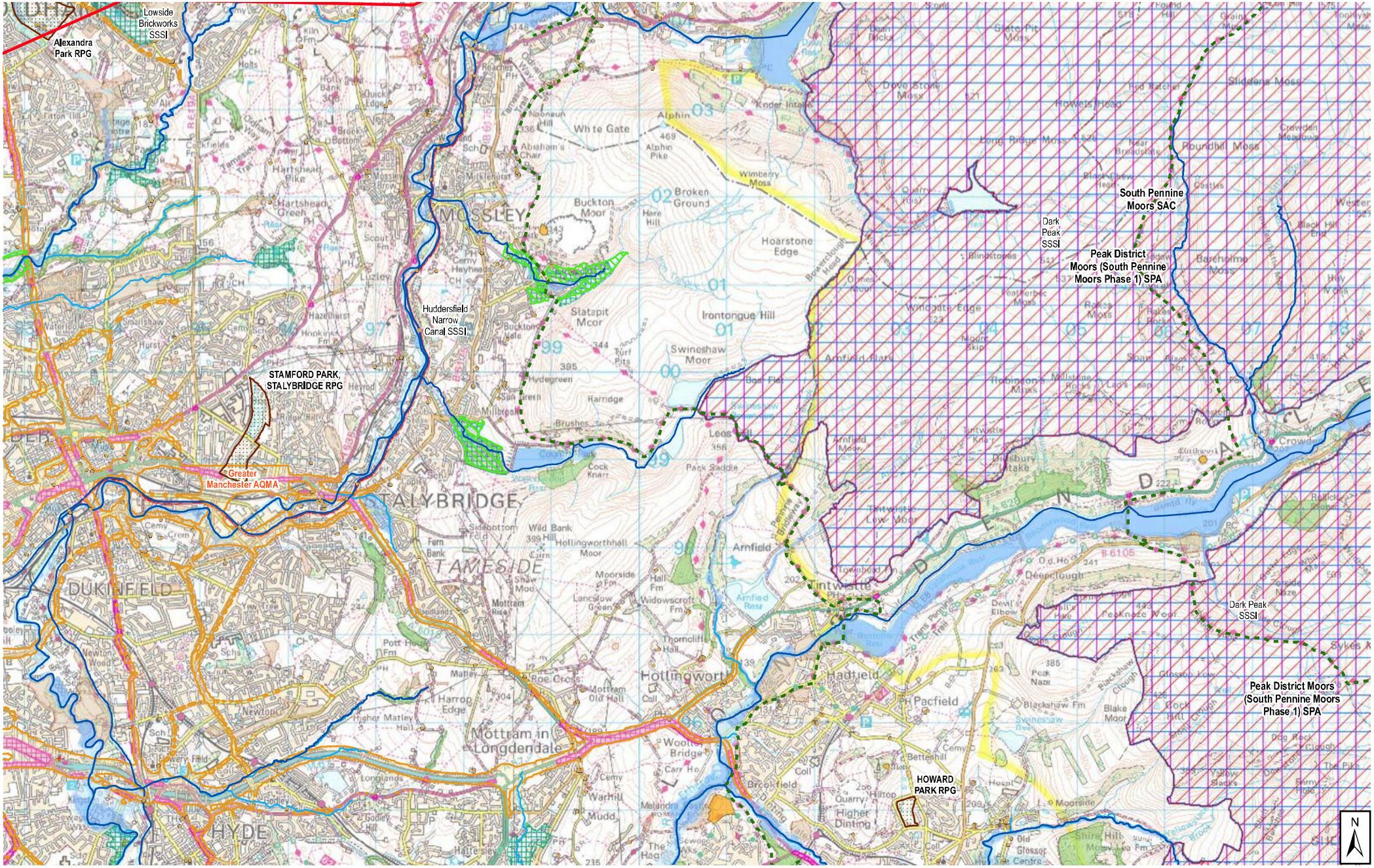


PROJECT: Trans Pennine Tunnel Wider Connectivity Assessment
PROJECT No: 70026162
Client: Transport for the North / Highways England

Drawn: TG
Checked: VW
Approved: KS
Revision: A
Date: January 2017

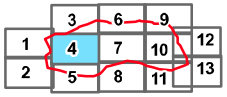


WSP | PARSONS BRINCKERHOFF

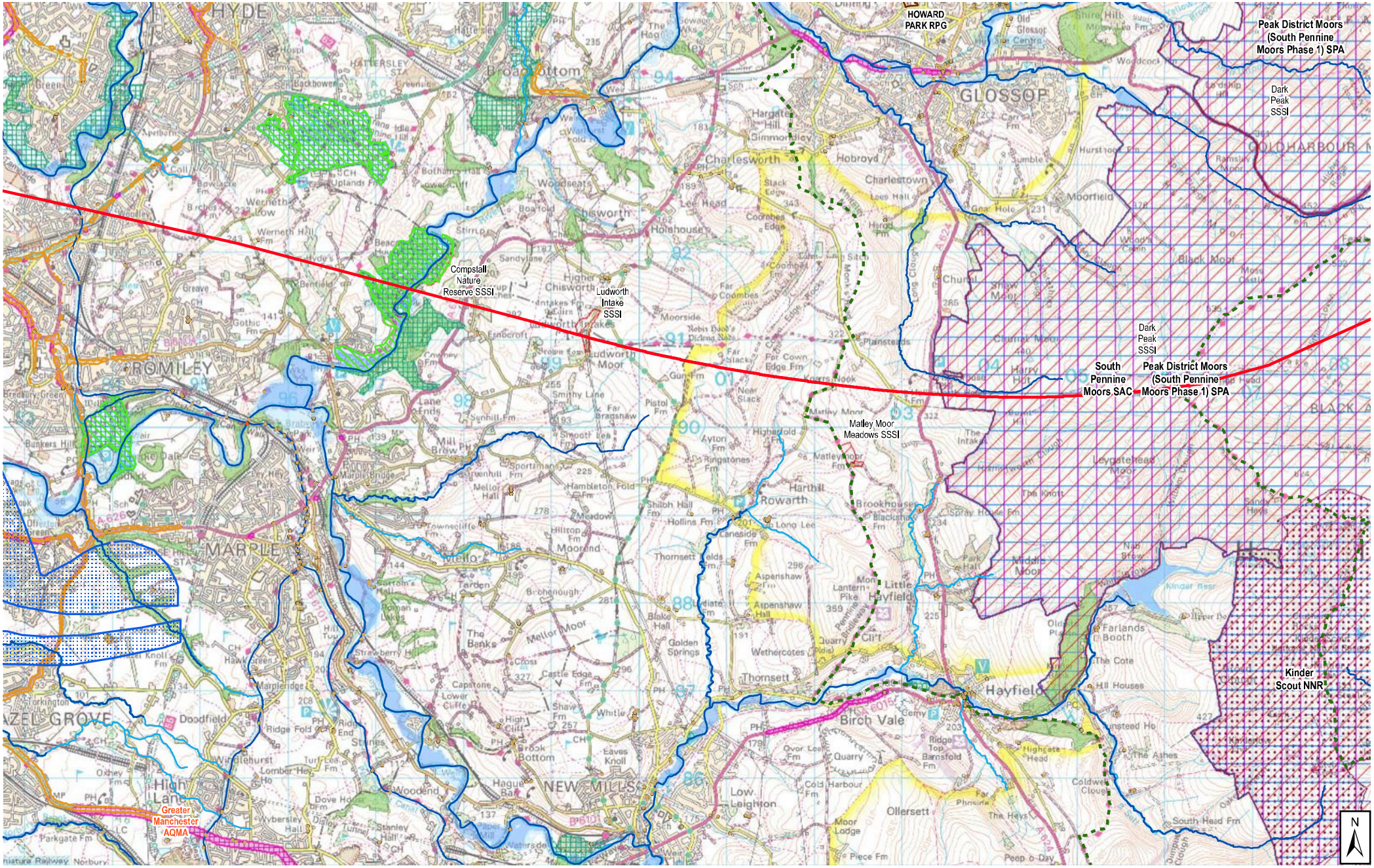


PROJECT: Trans Pennine Tunnel Wider Connectivity Assessment
PROJECT No: 70026162
Client: Transport for the North / Highways England

Drawn: TG
Checked: VW
Approved: KS
Revision: A
Date: January 2017

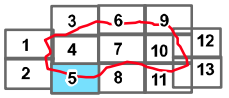


WSP | PARSONS BRINCKERHOFF

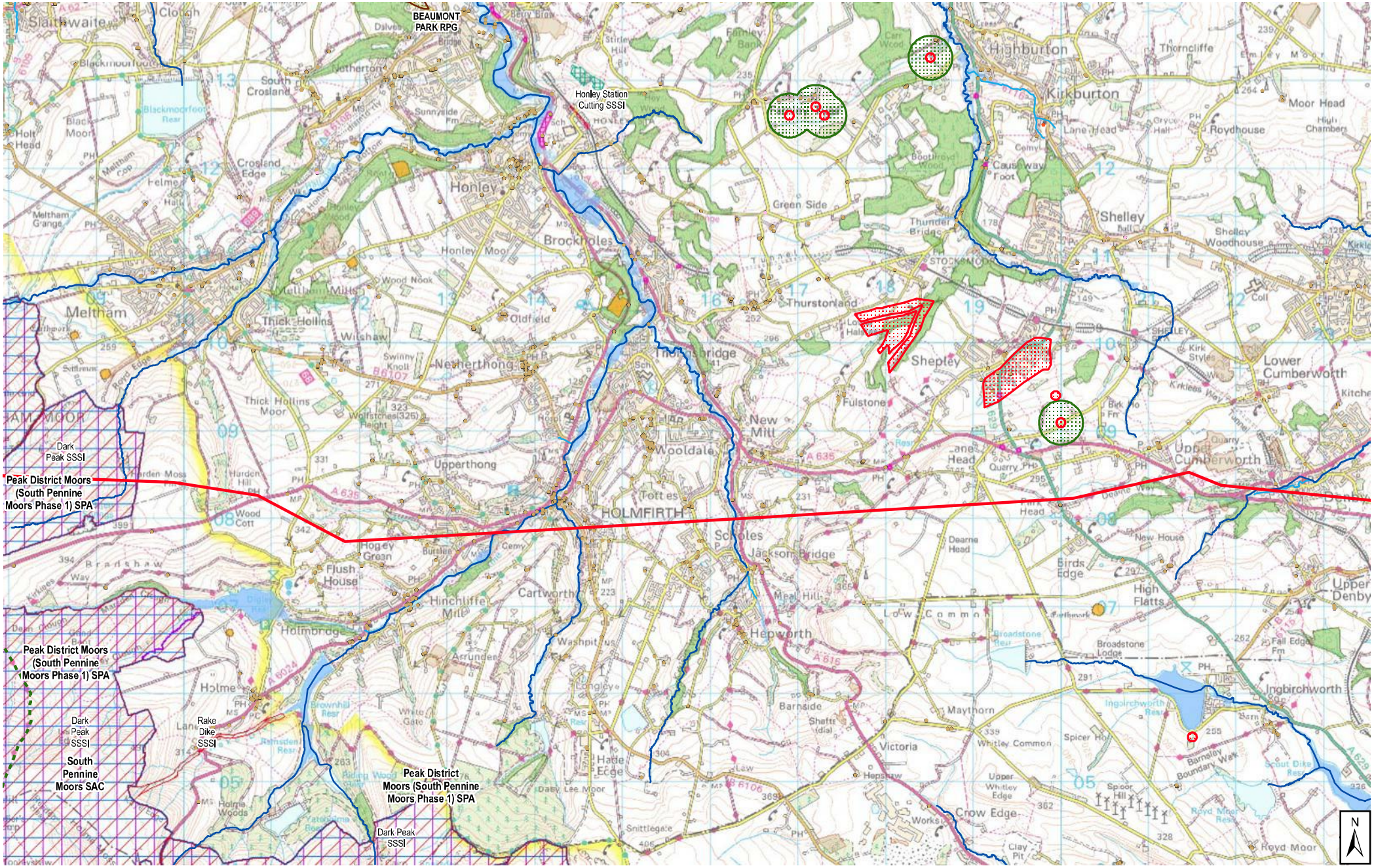


PROJECT: Trans Pennine Tunnel Wider Connectivity Assessment
PROJECT No: 70026162
Client: Transport for the North / Highways England

Drawn: TG
Checked: VW
Approved: KS
Revision: A
Date: January 2017

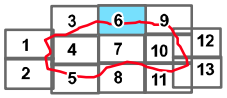


WSP | PARSONS BRINCKERHOFF

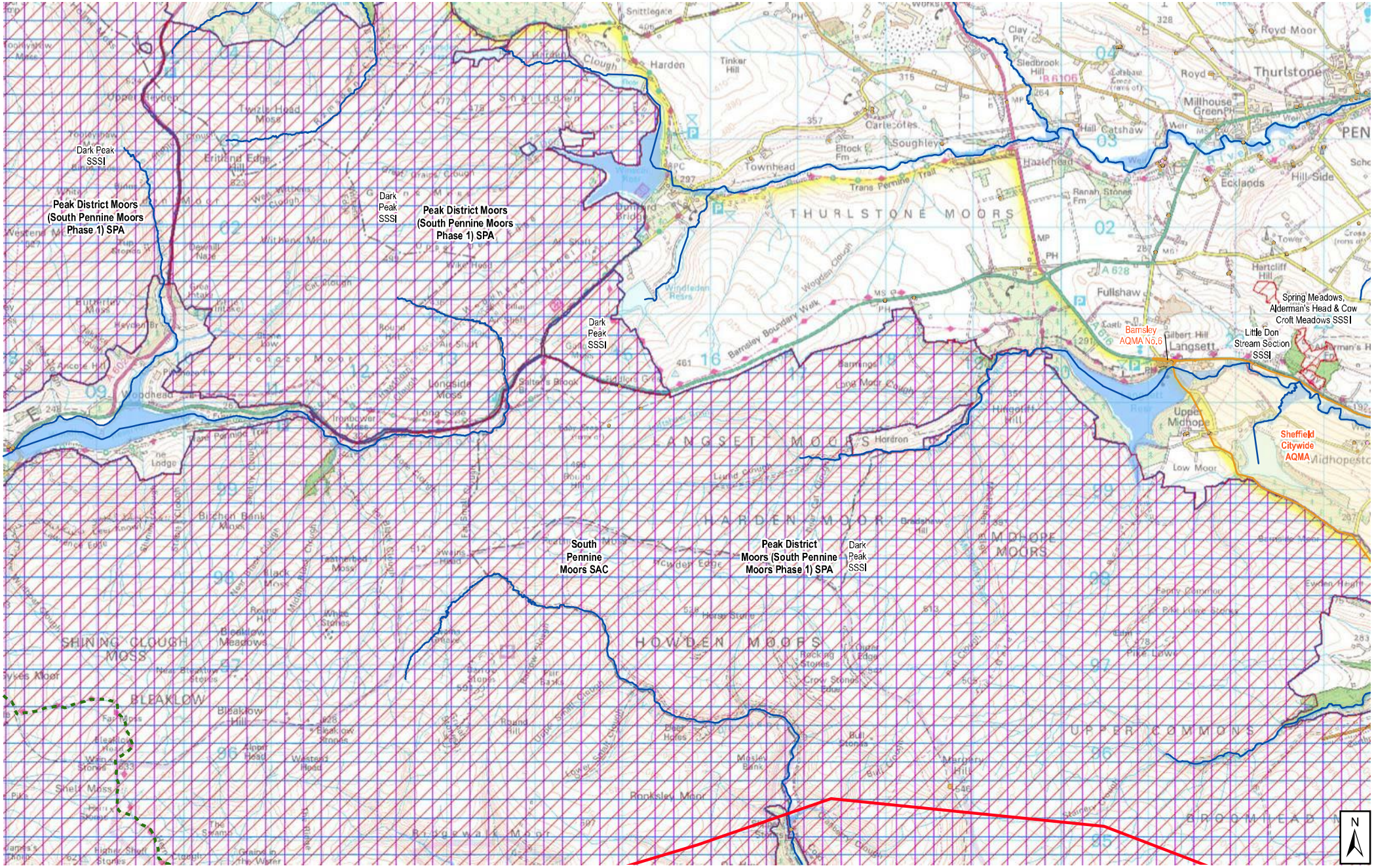


PROJECT: Trans Pennine Tunnel Wider Connectivity Assessment
PROJECT No: 70026162
Client: Transport for the North / Highways England

Drawn: TG
Checked: VW
Approved: KS
Revision: A
Date: January 2017

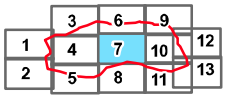


WSP | PARSONS BRINCKERHOFF

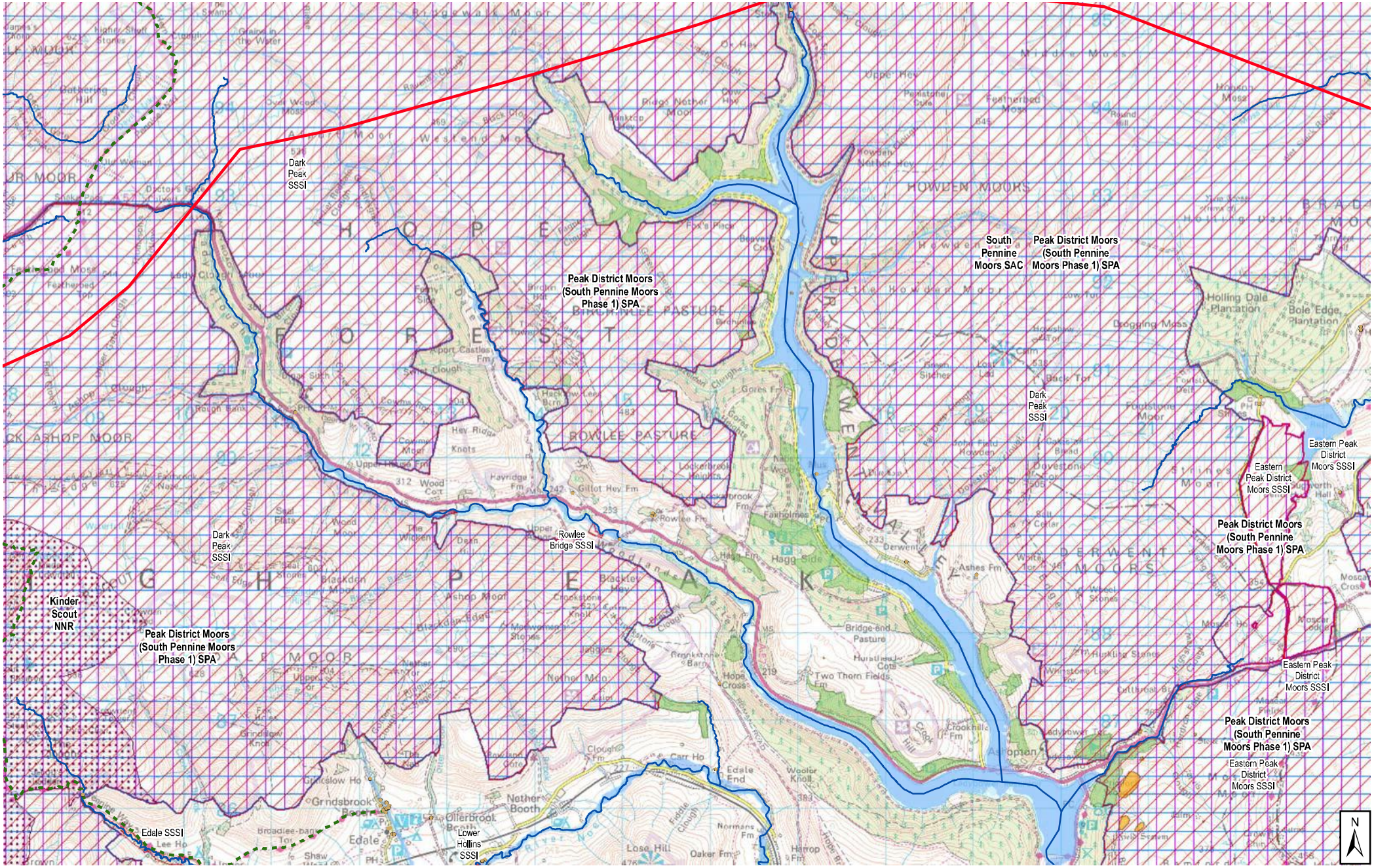


PROJECT: Trans Pennine Tunnel Wider Connectivity Assessment
PROJECT No: 70026162
Client: Transport for the North / Highways England

Drawn: TG
Checked: VW
Approved: KS
Revision: A
Date: January 2017

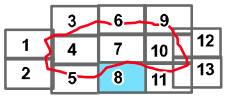


WSP | PARSONS BRINCKERHOFF



PROJECT: Trans Pennine Tunnel Wider Connectivity Assessment
PROJECT No: 70026162
Client: Transport for the North / Highways England

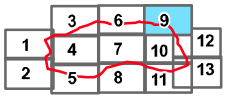
Drawn: TG
Checked: VW
Approved: KS
Revision: A
Date: January 2017



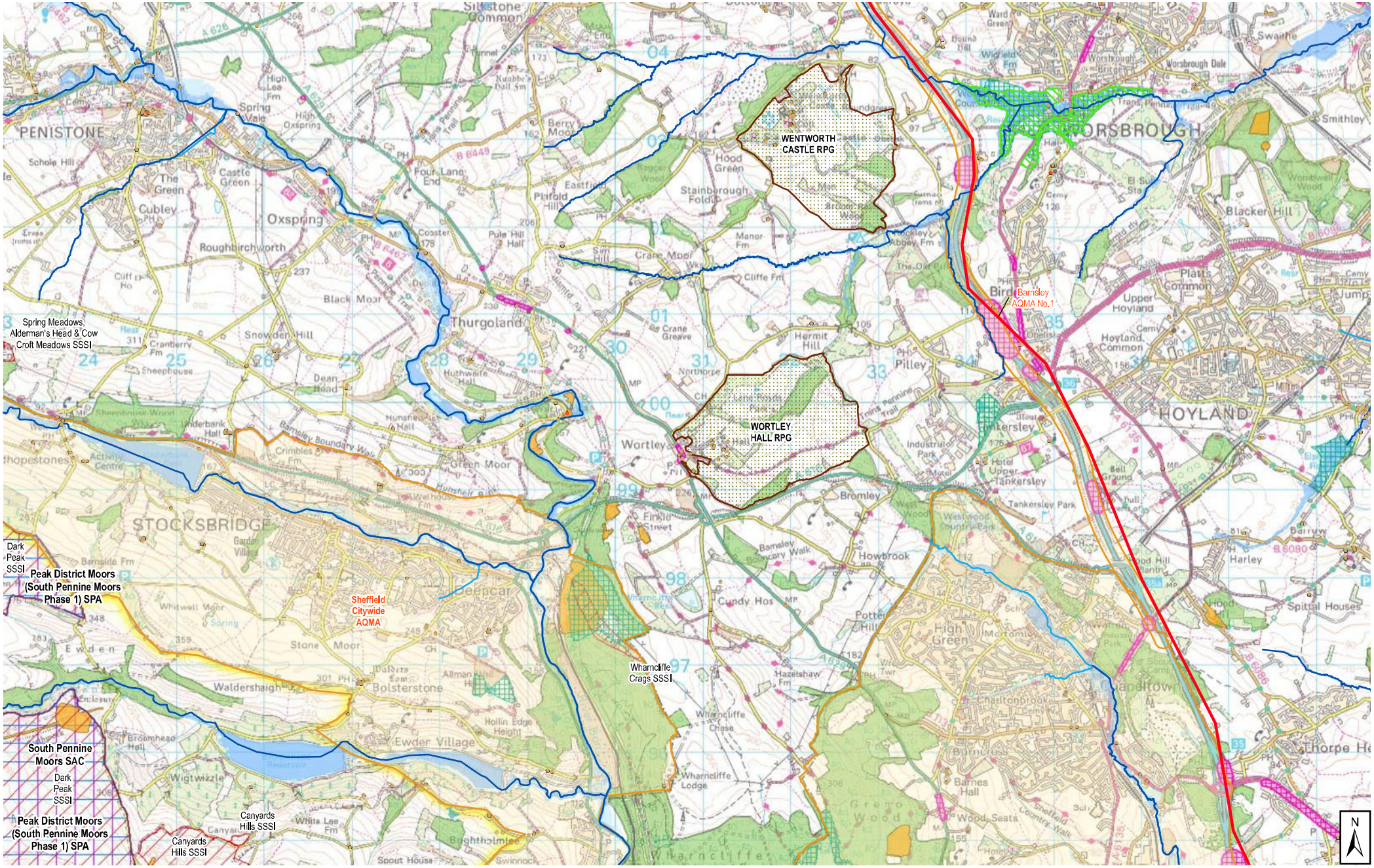
WSP | PARSONS BRINCKERHOFF

PROJECT: Trans Pennine Tunnel Wider Connectivity Assessment
PROJECT No: 70026162
Client: Transport for the North / Highways England

Drawn: TG
Checked: VW
Approved: KS
Revision: A
Date: January 2017

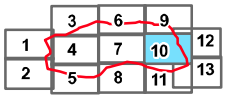


WSP | PARSONS BRINCKERHOFF

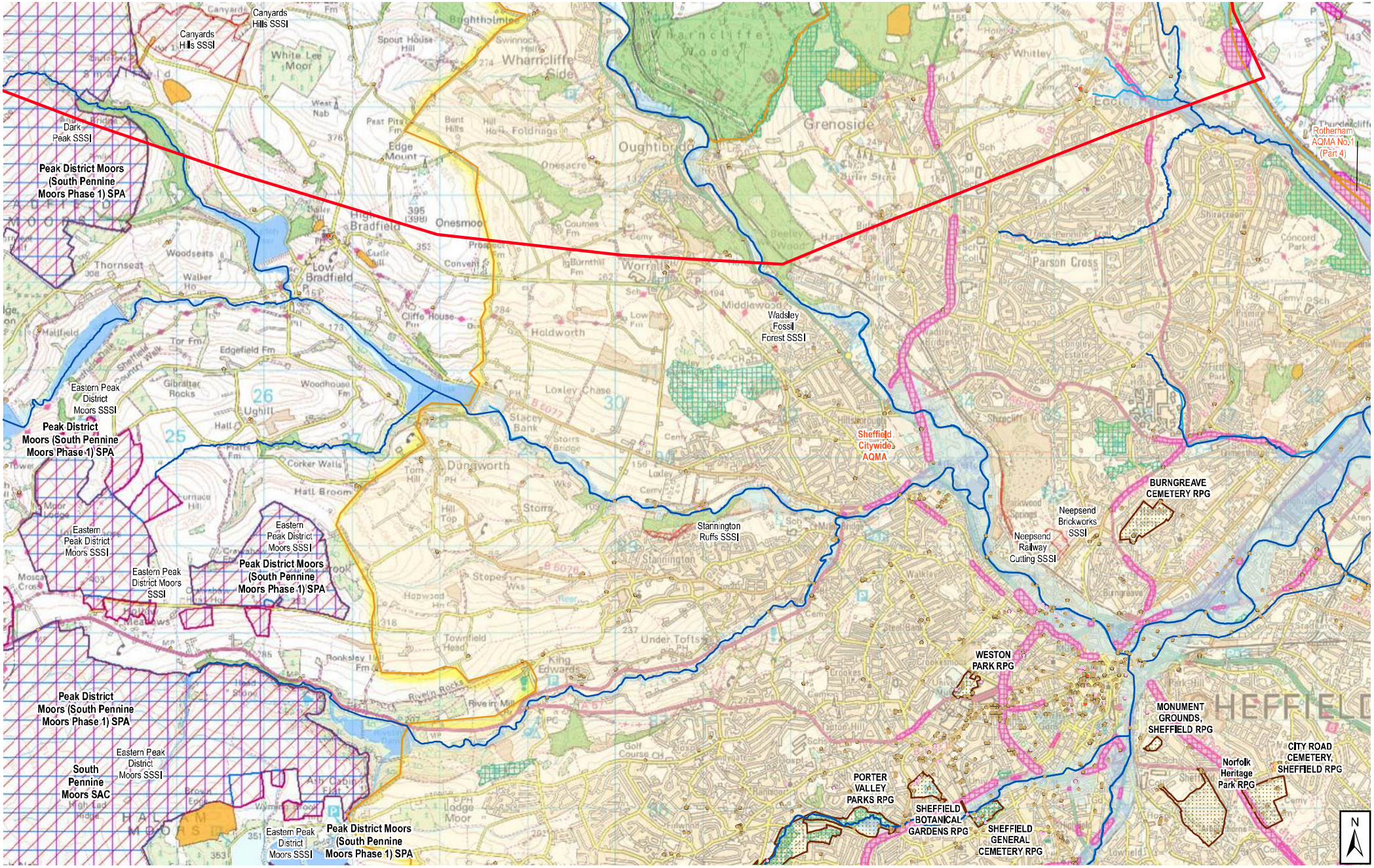


PROJECT: Trans Pennine Tunnel Wider Connectivity Assessment
PROJECT No: 70026162
Client: Transport for the North / Highways England

Drawn: TG
Checked: VW
Approved: KS
Revision: A
Date: January 2017

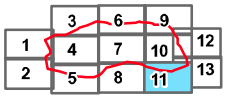


WSP | PARSONS BRINCKERHOFF

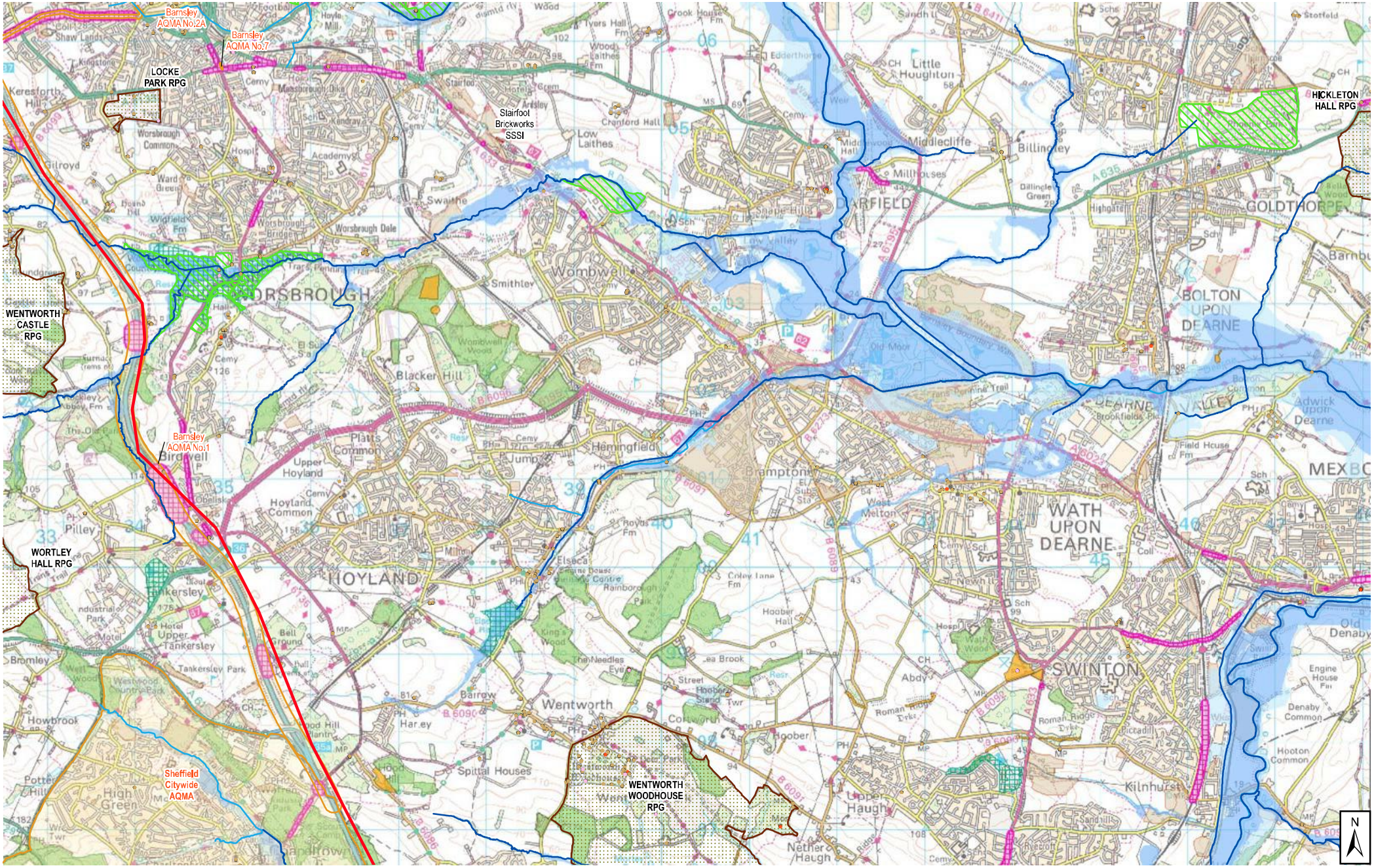


PROJECT: Trans Pennine Tunnel Wider Connectivity Assessment
PROJECT No: 70026162
Client: Transport for the North / Highways England

Drawn: TG
Checked: VW
Approved: KS
Revision: A
Date: January 2017

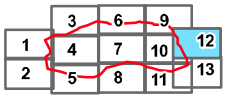


WSP | PARSONS BRINCKERHOFF

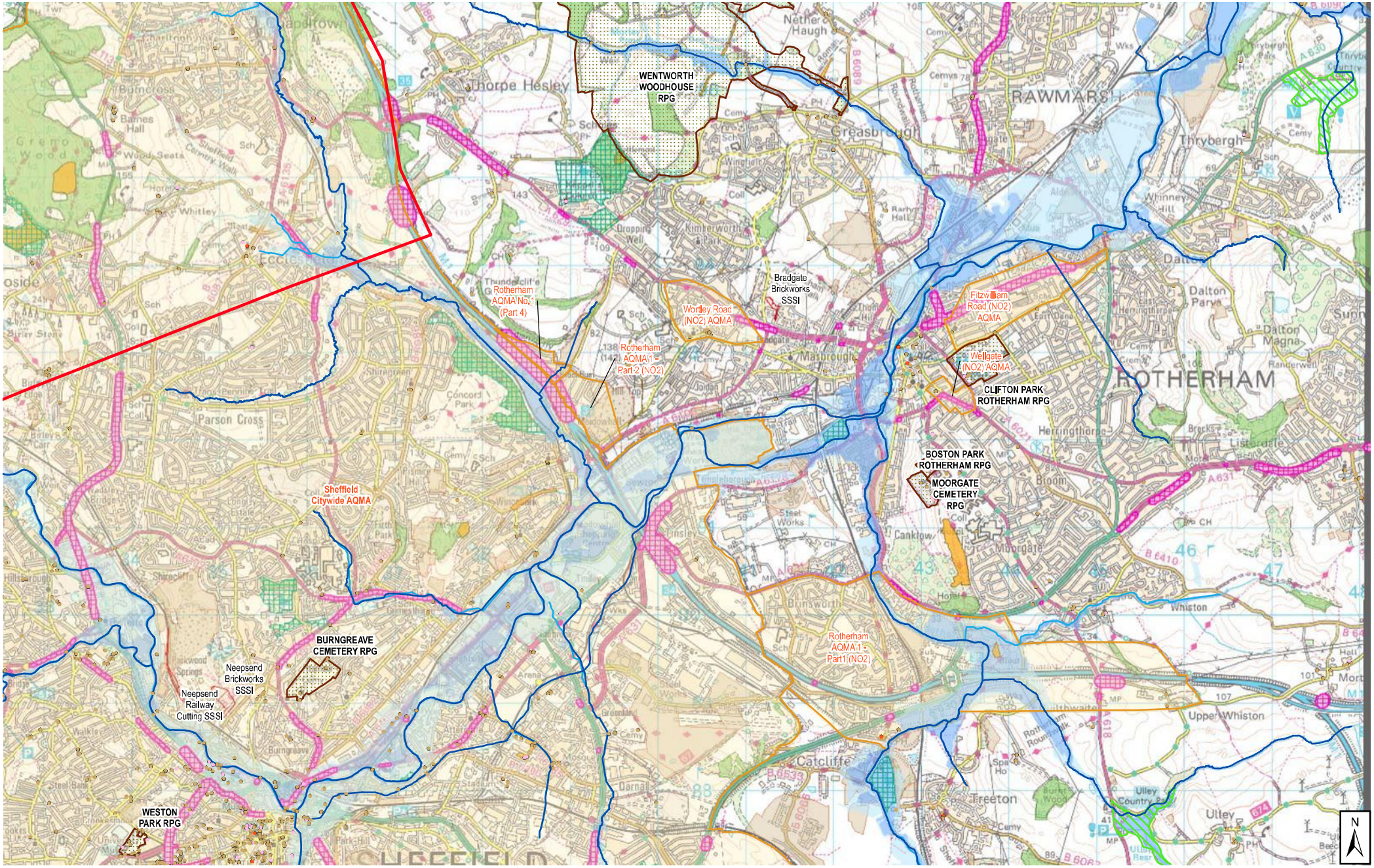


PROJECT: Trans Pennine Tunnel Wider Connectivity Assessment
PROJECT No: 70026162
Client: Transport for the North / Highways England

Drawn: TG
Checked: VW
Approved: KS
Revision: A
Date: January 2017



WSP | PARSONS BRINCKERHOFF

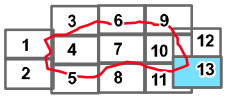


PROJECT: Trans Pennine Tunnel Wider Connectivity Assessment

PROJECT No: 70026162

Client: Transport for the North / Highways England

Drawn: TG
Checked: VW
Approved: KS
Revision: A
Date: January 2017



WSP | PARSONS BRINCKERHOFF