highways england

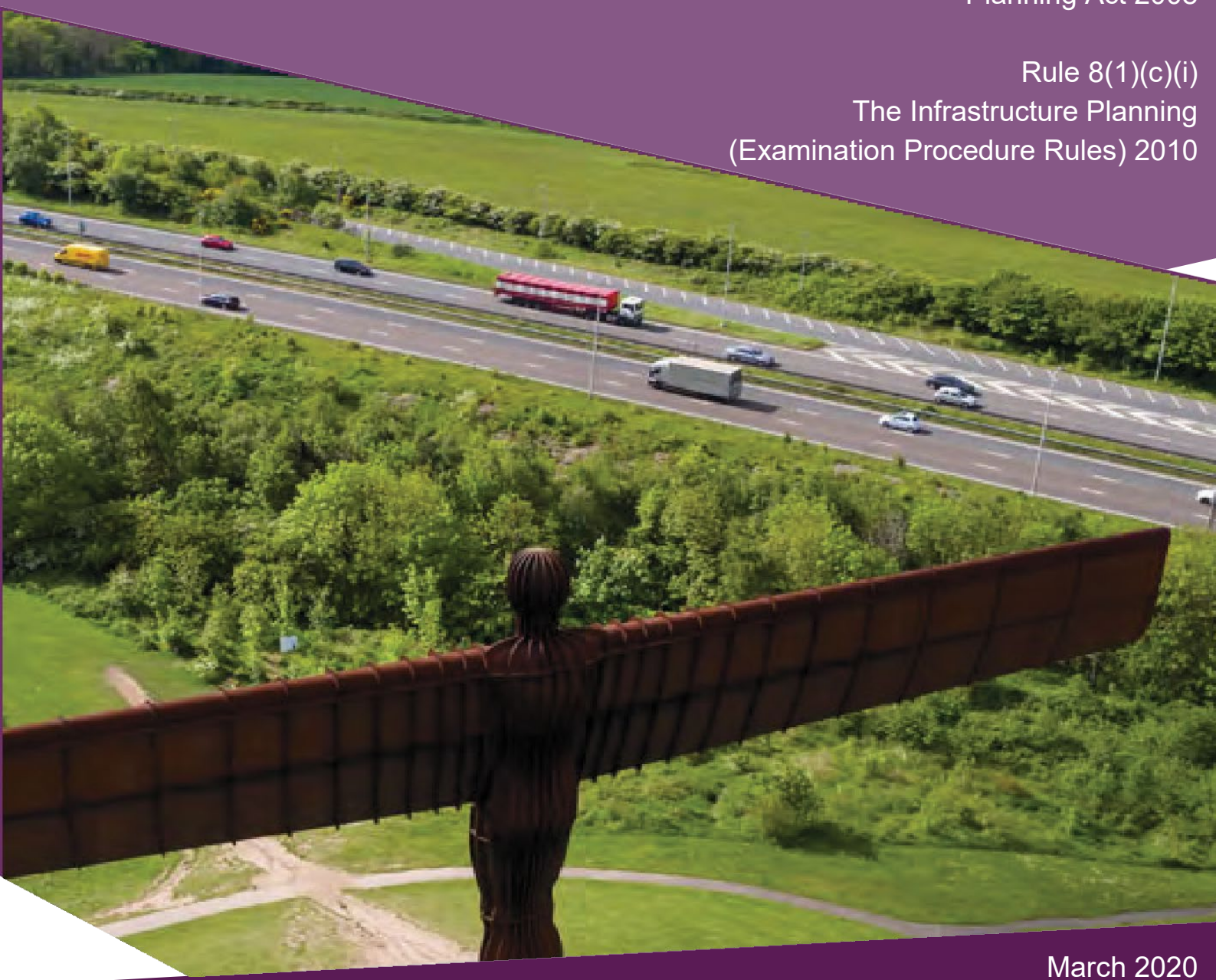
A1 Birtley to Coal House

Scheme Number: TR010031

EXA/D3/002 Applicant's Comments on Local Impact Report

Planning Act 2008

Rule 8(1)(c)(i)
The Infrastructure Planning
(Examination Procedure Rules) 2010



March 2020

Infrastructure Planning

Planning Act 2008

The Infrastructure Planning (Examination Procedure Rules) 2010

The A1 Birtley to Coal House
Development Consent Order 20[xx]

APPLICANT'S COMMENTS ON LOCAL IMPACT REPORT

Rule Number:	Rule 8(1)(c)(i)
Planning Inspectorate Scheme Reference	TR010031
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Author:	A1 Birtley to Coal House Project Team, Highways England

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Table 1.1 – Applicant's Comments on Local Impact Report

Para No.	Local Impact Report Statement	Applicant's Response
1	**Introduction**	
1.1	A Local Impact Report (LIR) is defined according to Section 60(3) of the Planning Act 2008 as 'a report in writing giving details of the likely impact of the proposed development on the authority's area.' It should be used by Local Authorities as the means by which their existing body of knowledge and evidence of local issues can be fully and robustly reported to the Examining Authority. It should draw on existing local knowledge and experience.	
1.2	This is a Local Impact Report relating to the application by Highways England to widen the A1 from 2/3 lanes to 4 lanes in both directions between Junction 65 (Birtley), Junction 66 (Eighton Lodge) and Junction 67 (Coal House). This report has been produced in accordance with Version 2 of the Local Impact Report Guidance (the Advice Note) produced by The Planning Inspectorate dated April 2012 and considers the likely impacts of the proposed development on Gateshead, being the Local Authority within whose administrative area where the works will take place.	With reference to the Scheme description provided in the LIR, it should be noted that the Scheme does not provide four lanes for its full length on the northbound carriageways. Furthermore, it is not a "widening" scheme. The Scheme would provide additional road capacity by widening of the southbound carriageway from three to four lanes and widening of the northbound carriageway from two to three lanes (with an additional lane between junctions) between junction 67 (Coal House) and Junction 65 (Birtley). It also provides for the replacement of ageing infrastructure such as Allerdene Bridge. This is illustrated on the General Arrangement Plans [APP-010] and in the Scheme Description in Chapter 2 (paragraphs 2.5.1 to 2.5.9) of the ES [APP-023].
1.3	The Advice Note states that when the Examining Authority decides to accept an application, it will ask the relevant local authorities to prepare a Local Impact Report and this should be prioritised whether or not the local authority considers that the development would have a positive, negative or neutral effect on the area. The Report may include any topics that they consider to be relevant to the impact of the development on their area as a means by which their existing body of knowledge and evidence on local issues can be fully and robustly reported to the Examining Authority.	
1.4	The LIR may also comment on the development consent obligations and the requirements and also any relevant representations.	
1.5	In producing the LIR the Council has not sought the views of local interest groups as to any particular matters that should be reflected in the report because the parish councils and other local groups have the opportunity, through the consultation process, to make their observations direct to the National Infrastructure Directorate. It should be noted here that there is one Parish Council in Gateshead (Lamesley).	Lamesley Parish Council were consulted with during the pre-application stage of the DCO. Comments received are outlined in Annex N (Table 26) of the Consultation Report [APP-019]. No further responses have been received from Lamesley Parish Council during the examination period.
1.6	The LIR has been written so as to incorporate the topic areas suggested in the Advice Note (set out above), the subject areas in the Environmental Statement, and the obligations and proposed requirements submitted with the application for Development Consent Order (DCO).	

Para No.	Local Impact Report Statement	Applicant's Response
2	**Gateshead Context**	
2.1	Gateshead sits within the Tyne and Wear conurbation. It has the natural boundary of the River Tyne to the north, with Newcastle City Council's area on the north bank of the Tyne. The Council also has neighbouring local authority boundaries with Sunderland to the south/east, South Tyneside to the east, Northumberland to the west and Durham to the south/west.	
2.2	The Tyne and Wear conurbation is relatively remote from other major conurbations. The nearest English Core City, Leeds is 95 miles south of Gateshead, and it is 106 miles north to Edinburgh. Rail and air connections are good. There is a fast and frequent rail service on the East Coast Main Line to London and Scotland, with regular cross-country services to most other major cities.	
2.3	The Borough is bisected north/south by the A1(T) Western Bypass and a number of other key roads that intersect the A1(T) to provide east/west links across and beyond the Borough to the neighbouring authorities of Sunderland, South Tyneside, Newcastle, Durham and Northumberland.	
2.4	Gateshead benefits from access to the Tyne and Wear Metro system, which provides public transport accessibility in the eastern and central parts of the Borough, with 5 metro stations giving access to Gateshead Town Centre, Gateshead Quays area as well as further afield to Newcastle, South Tyneside and Sunderland.	
2.5	Gateshead also benefits from access to local rail services, which provides access to Sunderland and South Tyneside to the east, Newcastle for national rail services, and west to the Tyne Valley and ultimately Carlisle.	
2.6	Gateshead also benefits from extensive bus services that transverse the length and breadth of the Borough and provide good accessibility to and from the major centres and transport hubs.	
3	**Details of the Proposal**	
3.1	The Scheme is approximately 6.5km in length and is situated between land to the north of junction 67 (Coal House) and junction 65 (Birtley).	Correct as per paragraph 2.3.1 of ES Chapter 2 [APP-023].
3.2.a	A summary of the Scheme features are as follows: a) New verge mounted traffic signs north of junction 67 (Coal House).	Correct as per paragraph 2.5.3 of ES Chapter 2 [APP-023].
3.2.b	Upgrade of existing technology along the route, including upgrade or installation of new systems where required to include Variable Messaging Systems (VMS), closed circuit television (CCTV) cameras and Motorway Incident Detection Automatic Signaling (MIDAS). Where the existing technology does not meet current standards, it would be upgraded to current standards.	Correct as per paragraph 2.5.3 of ES Chapter 2 [APP-023].
3.2.c	Widening the existing carriageway through junction 67 (Coal House) from two lanes to three lanes in each direction. In addition, Kingsway Viaduct, which carries the A1 over the junction 67 (Coal House) roundabout would be retained but widened to accommodate the additional lanes.	Correct as per paragraph 2.5.4 of ES Chapter 2 [APP-023].
3.2.d	Between junction 67 (Coal House) and junction 66 (Eighton Lodge) the A1 would be widened from two lanes to three with lane gain/drop arrangement on the northbound carriageway; and from two lanes (and partial climbing lane) to four lanes on the southbound carriageway. Smithy Lane Overbridge would be retained.	Correct as per paragraph 2.5.5 of ES Chapter 2 [APP-023].

Para No.	Local Impact Report Statement	Applicant's Response
3.2.e	Through junction 66 (Eighton Lodge) the A1 would be widened from two lanes to four on the northbound carriageway and from two lanes (with a partial climbing lane) to four lanes on the southbound carriageway. All three bridges (known as 'Eighton Lodge underbridges') on this section would be widened.	With reference to the Scheme description provided in the LIR, the Scheme does not provide four lanes for its full length on the northbound carriageway. The Scheme would provide additional road capacity by widening of the southbound carriageway from three to four lanes and widening of the northbound carriageway from two to three lanes (with an additional lane between junctions) between junction 67 (Coal House) and Junction 65 (Birtley). This is stated in paragraph 2.5.7 of ES Chapter 2 [APP-023].
3.2.f	Between junction 66 (Eighton Lodge) and junction 65 (Birtley) the carriageway in each direction would be widened from three lanes to four lanes. Of the three bridges on this section; North Side Overbridge would be retained; North Dene Footbridge would be demolished and reconstructed; and Longbank Bridleway Underpass would be widened.	Correct as per paragraph 2.5.8 of ES Chapter 2 [APP-023].
3.2.g	Replacement bridge structure where the A1 crosses over the ECML, 40m to the immediate south of the existing Allerdene Bridge structure which would tie into the existing carriageways at junction 67 (Coal House) and north of junction 66 (Eighton Lodge).	Correct as per Application Form [APP-002].
4	**Local and National Development Plans/Policy**	
4.1	The current development plan for Gateshead comprises the Core Strategy and Urban Core Plan for Gateshead and Newcastle upon Tyne 2010 – 2030 (Adopted 2015) together with saved polices of the Gateshead Unitary Development Plan 2007.	The Scheme has been assessed against these policies in paragraphs 5.3.3- 5.3.30 and 5.3.32 - 5.3.44 in Section 5 of the Planning Statement [REP2-048] [REP2-049]. This confirms the Scheme is in conformity with the Core Strategy and Urban Core Plan in bringing forward one of two key transport infrastructure schemes that are said to be fundamental to the delivery of the Plan's spatial strategy. This is considered by the Plan as important not only to improving connectivity on the SRN but in particular to relieve congestion on the A1 Newcastle Gateshead Bypass. Gateshead UDP saved policies do not contain any policies relevant to the Scheme although the Scheme conformity with those that seek to protect and enhance the environment are addressed in paragraphs 5.3.43 to 5.3.44 of the Planning Statement [REP2-048] [REP2-049].
4.2	The Core Strategy and Urban Core Plan is a strategic planning framework that will guide development in Gateshead and Newcastle to 2030. It has been developed jointly by Gateshead Council and Newcastle City Council (the "Councils") and covers the whole of the area within the administrative boundaries of Gateshead and Newcastle.	The Scheme has been assessed against these policies in paragraph 5.3.28 in Section 5 of the Planning Statement [REP2-048] [REP2-049].
4.3	The Core Strategy and Urban Core Plan Form Part 1 and 2 of the Local Plan and will be supplemented in due course by Making Spaces for Growing Places ("MSGP") which will form Part 3 of the Local Plan. The MSGP sets out more detailed policies for the Borough, including development management policies to guide decision making on planning applications. It defines areas allocated or designated, for specific purposes. The draft MSGP was published for consultation in October 2017. A further draft was published in October 2018 and this Draft Plan is the version of the MSGP that the Council submitted for examination in 2019. The	The Scheme has been assessed against these policies in paragraphs 5.3.31 to 5.3.42 in Section 5 of the Planning Statement [REP2-048] [REP2-049]. This confirms the Scheme is in conformity with the Submission Draft MSGP in that it brings forward one of its key infrastructure proposals, using land identified in MSGP18.5 as a safeguarded site for the A1 Birtley to Coalhouse transport

Para No.	Local Impact Report Statement	Applicant's Response
	Council expects a decision on the MSGP Spring/Summer 2020.	improvement.
4.4	Once the MSGP is adopted, Parts 1, 2 and 3 of the Local Plan will supersede the remaining saved policies from Gateshead's Unitary Development Plan (UDP). However, at the time of writing the saved policies of the UDP carry greater weight since the MSGP has not yet been approved for adoption.	The Scheme has been assessed against these policies in 5.3.31 to 5.3.42 of Section 5 of the Planning Statement [REP2-048] [REP2-049].
4.5	Gateshead Council has a number of supplementary planning documents (SPDs) that provide further guidance on specific matters and are considered capable of being material considerations in planning decisions. Relevant to the Scheme is the Gateshead Placemaking SPD.	The Scheme has been assessed against the Gateshead Placemaking SPD in paragraphs 5.3.46 -5.3.47 of Section 5 of the Planning Statement [REP2-048] [REP2-049].
4.6	Core Strategy and Urban Core Plan (Local Plan Parts 1 and 2) The most up-to-date part of the adopted development plan is the Core Strategy and Urban Core Plan (the "Plan") and therefore this takes precedence in decision making	The Scheme has been assessed against the Core Strategy and Urban Core Plan policies in paragraphs 5.3.3- 5.3.30 of Section 5 of the Planning Statement [REP2-048] [REP2-049].
4.7	The Plan sets an ambitious agenda for achieving economic prosperity, delivering healthy sustainable communities and tackling climate change. During the Plan period to 2030 it aims to provide 8,000 new jobs and 11,000 new homes in Gateshead. In the Plan area overall 22,000 jobs and 30,000 homes are proposed.	The Scheme has been assessed against the Core Strategy and Urban Core Plan policies in paragraphs 5.3.9 and 5.3.28-5.3.30 of Section 5 of the Planning Statement [REP2-048] [REP2-049].
4.8	Many of the new homes are planned for a new community, Metrogreen, which is located on the south bank of the Tyne accessed from the A1.	The Scheme has been assessed against the Core Strategy and Urban Core Plan policies in paragraphs 5.3.9 and 5.3.28-5.3.30 of Section 5 of the Planning Statement [REP2-048] [REP2-049]. The Scheme will facilitate improved access and connections to and from the proposed Metrogreen development.
4.9	The Plan, in describing the spatial characteristics of Gateshead and Newcastle at paragraph 3.6, notes that road links are dominated by the A1 to the south and north, and the A69 west to Carlisle and sets out: "within the conurbation capacity on the A1 continues to be an issue. It is one of the most congested strategic routes in England"	The Scheme has been assessed against Paragraph 3.6 of the Core Strategy and Urban Core Plan policies in paragraphs 5.3.10 and 5.3.28-5.3.30 of Section 5 of the Planning Statement [REP2-048] [REP2-049]. The Scheme will assist with alleviating congestion on this stretch of the A1 and evidence to demonstrate this is provided in Section 4 of the Transport Assessment Report [APP-173].
4.10	Whilst the Gateshead and Newcastle area provides 299,000 jobs (2010) approximately 45% of workers live outside the area, indicating a high level of inward commuting.	This provides evidence in support of the need for appropriate transport capacity on the highway network to sustain this level of in-bound commuting. The Scheme would include additional capacity resulting in reduced congestion and delay, improved road safety and improved access to businesses.
4.11	The Plan sets out at paragraph 4.3 twelve strategic objectives (SO) to deliver its vision, SO 07 is to "Manage and develop our transport system to support growth and provide sustainable access for all housing, jobs, services and shops".	The strategic objectives of the Core Strategy and Urban Core Plan are considered in paragraphs 5.3.12 and 5.3.28-5.3.30 of Section 5 of the Planning Statement [REP2-048] [REP2-049]. The Scheme is an improvement to the existing transport system which will support growth and provide improved access. It will therefore contribute to meeting the strategic objective SO 07 of the plan.
4.12	The Plan identifies four Key Employment Areas, the largest of which by area is Team Valley Trading Estate, which focuses on advanced manufacturing and engineering. The Plan refers at Paragraph 7.12 to the Team	The Scheme has been assessed against the Core Strategy and Urban Core Plan policies in paragraphs 5.3.13 and 5.3.28-5.3.30 of Section 5

Para No.	Local Impact Report Statement	Applicant's Response
	Valley Trading Estate as follows: "Strategically it is important to protect and enhance Team Valley Trading Estate given its importance in the region as the premier industrial estate. It continues to be a major economic driver in the region providing a wide range of marketable office and industrial premises, in a well laid out and attractive environment that benefits from direct access to the A1".	of the Planning Statement [REP2-048] [REP2-049]. The Scheme will provide improved capacity, reduced congestion, and improved journey times which in turn will protect and enhance access to the strategically important Team Valley Trading Estate.
4.13	The Plan sets out Strategic Policies for the Gateshead and Newcastle area, the first of which relate to economic prosperity. Paragraph 9.5 explains that while housing policies will encourage more economically active households to live and work in Gateshead and Newcastle, the area will continue to rely on some incommuting for a proportion of its skilled labour force. Sustainable growth measures will ensure that while there will be a slight increase in commuting, the proportion of jobs filled by in-commuters will decrease.	The Scheme has been assessed against the Core Strategy and Urban Core Plan policies in paragraphs 5.3.14 and 5.3.28-5.3.30 of Section 5 of the Planning Statement [REP2-048] [REP2-049]. The Scheme will provide improved access and journey times for economically active households who use the A1.
4.14	The Plan recognises the importance of transport and other infrastructure which supports economic activity. It highlights Newcastle International Airport as a major asset, which provides easy access to surrounding areas. It should be noted that Newcastle International Airport is accessed from Gateshead via the A1 at junction 77 (Ponteland Road) meaning that journey time reliability over the section of the A1 will inevitably affect the travel decisions of airport users.	The Scheme has been assessed against the Core Strategy and Urban Core Plan policies in paragraphs 5.3.15 and 5.3.28-5.3.30 of Section 5 of the Planning Statement [REP2-048] [REP2-049]. The Scheme is a transport scheme which the Plan recognizes supports economic activity.
4.15	Section 11 is concerned with Transport and Accessibility, which are said to be fundamental to the delivery of the Plan's spatial strategy. Policy CS13 Transport is concerned with measures to deliver an integrated transport network, including improving the operation of the transport network and its wider connections by various measures such as:	The Scheme has been assessed against the Core Strategy and Urban Core Plan policies in paragraphs 5.3.16 and 5.3.28-5.3.30 of Section 5 of the Planning Statement [REP2-048] [REP2-049]. The relevant parts of Section 11 of the Core Strategy and Urban Core Plan policies are considered further below in response to the points raised by the Council.
4.15.i	Promoting and facilitating improvements to wider networks where it is demonstrated that they have an acceptable impact on the local transport network and environment"	The Scheme represents an improvement to the wider transport network and Section 4 of the Transport Assessment Report demonstrates that it would have an acceptable impact on the local transport network [APP-173]. The ES Summary Chapter 16 summarises the likely significant effects on the environment and the mitigation and enhancement measures, as well as the delivery mechanism for each mitigation measure [APP-037].
4.15.iv	The creation of additional capacity on the Strategic Road Network, including the provision of an additional lane on the A1 in both directions from the A1/A19 Interchange at Seaton Burn to the Scotswood sliproads, and between the southern extent of the Lobley Hill Major Scheme improvements at Coalhouse and the A1/A194(M) bifurcation at Birtley"	The Scheme will create the additional capacity on the Strategic Road Network at Birtley sought by the Plan and therefore directly supports this policy aspiration of the Core Strategy and Urban Core Plan.
4.16	The Plan notes at paragraph 11.16 that the Councils have a statutory duty to manage the rights of way network and to publish a Rights of Way Improvement Plan (part of the Local Transport Plan). The Plan confirms that the Councils will seek to ensure that development accommodates the network, or if this is not possible, to provide suitable replacement links.	A Walking, Cycling and Horse-Riding Assessment and Review (WCHAR) is provided at Appendix D of the Transport Assessment Report [APP-173]. Paragraph 6.4.5 states that walkers, cyclists and horse riders would be directly impacted during the construction of the Scheme due to the requirement to temporarily close footpaths and PROWs in the vicinity whilst works to the A1 are carried out. Wherever possible, alternative routes for WCHs will be provided, although some may be longer than the permanent routes that they temporarily

Para No.	Local Impact Report Statement	Applicant's Response
		substitute. These temporary replacement links will also ensure the existing PROW network is maintained during construction. Once the construction is complete, the existing PROW network will be reinstated. A number of permanent improvements to footpaths and PROW in the vicinity of the scheme are identified in the WCHAR and have been included in the works that form part of the Scheme.
4.17	Paragraph 11.23 of the Plan states that Park and Ride facilities "will play a role in reducing congestion". Facilities need to have convenient car access and be located on high-frequency transport corridors. Bus-based Park and Ride will be pursued primarily at the following locations: • Eighton Lodge • Follingsby • Lobley Hill	The Scheme will support the delivery of Bus-based Park and Ride locations identified. Improved capacity on the A1 will improve access to and from these facilities if brought forward.
4.18	Of these locations, Eighton Lodge will be accessed via junction 66 of the A1 in the vicinity of the Scheme. The junction is currently affected by the congestion experienced on the A1.	As stated in paragraph 5.3.19 of the Planning Statement [REP2-048] [REP2-049], the current congestion experienced on the A1 at junction 66 (Eighton Lodge) will be improved by the Scheme facilitating access to the proposed Eighton Lodge P&R site.
4.19	A key theme of the Plan's transport policy is to improve the operation of existing air, rail and road transport networks that can help link the area nationally and internationally. Developing these networks to meet local demands and to strengthen strategic connections will be crucial to sustainable development in the Plan area.	The Scheme is an enhancement of the national road network. It supports the Plan's Transport policies helping to link the area nationally, whilst ensuring it meets local demands and strengthens strategic corridors. The Scheme has been assessed against the Core Strategy and Urban Core Plan policies in Section 5 of the Planning Statement [REP2-048] [REP2-049]
4.20	Paragraph 11.28 states that: "Strategic international, national and regional connections are very important in the way that Gateshead and Newcastle are seen by the rest of the world. Perceived isolation has an impact on the image of Gateshead and Newcastle as a place to live and to do business. Improvements on this scale will predominantly be delivered in partnership with outside agencies such as the Highways Agency or Network Rail as part of national programmes".	The Scheme is an enhancement of the national road network which is being promoted by Highways England (being the successor to the Highways Agency) in the manner recognised by paragraph 11.28. The Scheme supports the Plan's Transport policies for strategic national and regional connections and has been assessed against the Core Strategy and Urban Core Plan policies in paragraphs 5.3.21 and 5.3.28-5.3.30 of Section 5 of the Planning Statement [REP2-048] [REP2-049].
4.21	The Plan goes on to explain at paragraphs 11.31 to 11.34 its support for improvement to the SRN in detail: "The Strategic Road Network serving the area (A1, A69, A194(M) and A696) is essential for connectivity which will help secure economic growth and prosperity for Gateshead and Newcastle. The councils will work with the Highways Agency to facilitate enhancements to these strategic corridors, giving better access to other major towns and cities and to international gateways." "While supporting improvements across the Strategic Road Network is important, tackling congestion on the A1 is our priority. As part of the Newcastle City Deal (July 2012), it was agreed that the Department of	The Scheme has been assessed against the Core Strategy and Urban Core Plan policies in paragraphs 5.3.22 and 5.3.28-5.3.30 of Section 5 of the Planning Statement [REP2-048] [REP2-049]. The Scheme complies with Paragraphs 11.31 to11.34 by delivering enhancements to the A1 strategic corridor giving better access to major towns, cities and international gateways. The Scheme will tackle congestion on this part of the A1 and forms one of the 'further interventions' referred to by providing additional lanes from the southern extent of the Lobley Hill

Para No.	Local Impact Report Statement	Applicant's Response
	Transport, the Highways Agency, the councils and other local partners would develop an investment programme to reduce congestion on the A1 Western Bypass, and finalise a business case for an improvement scheme at Lobley Hill. The funding for this scheme is now in place to allow completion by 2017. The Highways Agency has also now published its wider route-based strategy for this section of the A1 which sets out a number of possible further interventions, including schemes to provide additional capacity, reduce speed limits and introduce traffic signal-controlled access to the route. Further work by the Highways Agency has suggested that the A1 is likely to require an additional lane of capacity in both directions along much of this route. These additional lanes are likely to be needed from Seaton Burn to the Scotswood Road north-facing slip roads, and then from the southern extent of the Lobley Hill Major Scheme to the A1/A194(M) bifurcation at Birtley." "The promotion of sustainable modes of transport and the delivery of infrastructure improvements will be supported by further development of the area's intelligent transport system - Urban Traffic Management Control (UTMC). The introduction of UTMC will make best use of the existing road network for all modes of transport and provide valuable information to those who seek to move around the Urban Core. The system will manage traffic flows, car parking and priority for sustainable modes of transport giving valuable information to the travelling public, enabling them to make more informed travel choices".	Major Scheme to the A1/A194(M) bifurcation at Birtley, providing additional capacity and reduce speed limits. The Scheme will therefore a priority project for the Core Strategy and Urban Core Plan.
4.22	Policy CS5 is concerned with employment and economic growth opportunities, including amongst other things advanced manufacturing and engineering at Team Valley and expanding the rural economy by supporting growth in leisure, culture and tourism.	By improving capacity on the network, journey time reliability and access, the Scheme will support economic growth opportunities and existing employment in compliance with Policy CS5 of the Core Strategy and Urban Core Plan.
4.23	Further to paragraph 4.3 of the Plan referred to previously, SO5 seeks to "Expand leisure, culture and tourism providing for all age groups". Paragraph 9.37 of the Plan sets out that Gateshead's leisure, culture and tourism attractions are spread across 3 spatial character areas, of which the Angel of the North is specifically referenced within the "Rural and Village Area". In response to that policy CS8 is concerned with leisure, culture and tourism and seeks to improve the range and quality of leisure, culture and tourism within Gateshead.	As above by improving capacity on the network, journey time reliability and access, the Scheme will support access to Gateshead's leisure, culture and tourism attractions, including the Angel of the North.
4.24	Policy CS9 is concerned with existing communities, including amongst other things maintaining and improving facilities, services and the local environment.	Chapter 12 of the ES (Population and Human Health) provides an assessment of the Scheme on existing local communities [APP-033]. It concludes that there will be temporary impacts during construction on users of the highway network, walkers, cyclists and horse riders. However, in operation the Scheme will deliver, improvements to journey times, reduced road traffic noise, and improvements to community connectivity and all are likely to have a permanent, slight beneficial effect (not significant) on the local population health.
4.25	Policy CS14 is concerned with wellbeing and health, including amongst other things preventing negative impacts on residential amenity and wider public safety from noise, ground instability, ground and water contamination, vibration and air quality.	Chapters 5 (Air Quality), 9 (Geology and Soils), 11 (Noise and Vibration); and 12 (Population and Human Health) of the ES assess the impacts of the Scheme on well-being and health [APP-026, APP-030, APP-032 and APP-033]. They conclude that there will be temporary impacts during construction on users of the highway network, walkers, cyclists and horse riders. However, in operation the

Para No.	Local Impact Report Statement	Applicant's Response
		Scheme will deliver improvements to journey times, reduced road traffic noise, and improvements to community connectivity and all are likely to have a permanent, slight beneficial effect (not significant) on the local population health.
4.26	Policy CS15 is concerned with place making, including amongst other things responding positively to local distinctiveness and character, and respecting and enhancing significant views and the setting of heritage assets.	Chapters 6 (Cultural Heritage) and 7 (Landscape and Visual) of the ES assess the impact of the Scheme on the local character, views and setting of heritage assets [APP-027 and APP-028]. Chapter 6 (Cultural Heritage) of the ES [APP-027] assesses the impact of the scheme on above and below ground heritage assets. During operation there would be permanent impacts on the setting of Bowes Railway Scheduled Monument (SM) due to the loss of original or old building materials, however the effects would not be significant. In particular, the assessment of effects of the Scheme on landscape character in Chapter 7 concludes that the majority of visual receptors identified during the assessment phase would be subject to impacts at the lower end of the scale of magnitude. Upon completion of the construction phase, views for the majority of the receptors would be comparable with those currently experienced, and particularly for those with longer distance views.
4.27	Policy CS16 is concerned with climate change, including amongst other things minimising its contributions and providing resilience to the ongoing and predicted impacts of climate change.	Chapter 14 (Climate) of the ES [APP-035] acknowledges that there will be an increase of GHG emissions. As GHG emissions result in the same global climate change effects wherever and whenever they occur, the sensitivity of different human and natural receptors is not considered by the GHG assessment. The outcome of the assessment of GHG emissions associated with the Scheme is considered not significant.
4.28	Policy CS17 is concerned with flood risk and water management, which sets out that development will avoid and manage flood risk from all sources, taking into account the impact of climate change over its lifetime.	Chapter 13 (Road Drainage and the Water Environment) of the ES [APP-034] concludes that the likely significant effect on the water environment for the operation phase is: Flood Risk – neutral – runoff rates have been appropriately restricted, and flood plain compensation has been provided, these together ensure that there is no adverse impact as a result of the Scheme. Water quality – neutral or slight beneficial – this has been agreed with the Environment Agency as the measures are on the path to betterment with regards to the WFD (Appendix 13.2) [APP-164]. It is considered therefore that the Scheme seeks to avoid and manage flood risk from all sources in accordance with this policy.

Para No.	Local Impact Report Statement	Applicant's Response
4.29	Policy CS18 is concerned with green infrastructure and the natural environment, including amongst other things protection, enhancement and management of green infrastructure assets.	The Scheme will contribute towards the enhancement of green infrastructure as outlined within the Landscape Mitigation Design at Figure 7.6 of the ES [APP-061].
4.30	Policy CS19 is concerned with the Green Belt and confirms that the designated Tyne and Wear Green Belt will be protected in accordance with national policy.	The Applicant's case for development within the Green Belt is outlined in Section 5.4 of the Planning Statement [REP2-048] [REP2-049]AP and concludes very special circumstances exist that override the limited harm identified to the Green Belt.
4.31	The Core Strategy and Urban Core Plan for Gateshead and Newcastle upon Tyne 2010-2030… https://www.gateshead.gov.uk/media/7765/Core-Strategyand-Urban-Core-Plan-for-Gateshead-and-Newcastle/pdf/Core-Strategy-andUrban-Core-Plan-for-Gateshead-andNewcastle_SMALLER.pdf?m=636619103092500000	
4.32	Gateshead UDP Saved Policies Policy DC1 relates to the general considerations in constructing new development and states that planning permission will be granted where it:	
4.32.c	Achieves an improved landform, landscape or beneficial after-use;	Chapter 7 (Landscape and Visual) of the ES assesses the impact of the scheme on the land form and landscape [APP-028] and concludes that the majority of visual receptors identified during the assessment phase would be subject to impacts at the lower end of the scale of magnitude. In respect of landscape character, the assessment has concluded that the Scheme has avoided substantial changes to land form within the existing corridor.
4.32.d	Does not have an impact on statutorily protected species;	Chapter 8 (Biodiversity) of the ES [APP-029] states that the Scheme would result in the loss of a bat roost (a place where a single individual bat may use to rest) at Eighton Lodge South Underbridge. Bats also use Longbank Bridleway Underpass as a bat commuting route and would be adversely affected by the widening of the structure. As bats are a protected species a license for these works would be applied for and mitigation agreed with Natural England. Mitigation would include the provision of bat boxes at Eighton Lodge South Underbridge to provide roosting opportunities. At Longbank Bridleway Underpass trees and hedgerows would be planted to attempt to funnel bats down under the A1 so bats continue to use the underpass. With mitigation in place there would not be significant effects on bats. An area of habitat suitable for great crested newts would be lost because of the Scheme. With the implementation of precautionary working methods there would not be any significant effects. These measures include timing works so that great crested newts are in their breeding ponds or using a suitably experienced ecologist to search

Para No.	Local Impact Report Statement	Applicant's Response
		areas of suitable habitat.
4.32.e	Takes opportunities to undertake advance planting/screening;	The Scheme will contribute towards the enhancement of green infrastructure as outlined within the Landscape Mitigation Design at Figure 7.6 of the ES [APP-061].
4.32.g	Is located and designed to conserve energy and be energy-efficient, and uses sustainable building techniques in construction…	Chapter 10 (Material Resources) of the ES [APP-031] outlines the measures that will be taken to conserve energy and use sustainable building techniques. In particular, during site preparation, construction and demolition it is expected that a proportion of site materials and waste generated would be suitable for recovery (processing / reuse / recycling) both on-site and off-site. A Site Waste Management Plan (SWMP) and Materials Management Plan (MMP) would be produced with the aim to divert as much of the excess material from the Scheme away from landfill.
4.32.h	Does not significantly pollute the environment with dust, noise, light, emissions, out-fall, or discharges of any kind;	Chapter 5 (Air Quality), 11 (Noise and Vibration), 12 (Population and Human Health) and Chapter 13 (Road Drainage and the Water Environment) of the ES assess the impacts of the Scheme on the environment from dust, noise, emissions or discharges [APP-026, APP-032, APP-033 and APP-034]. Mitigation measures for controlling emissions associated with the Scheme, are contained in the Outline CEMP [REP2-050] [REP2-051]] and the Draft DCO [REP2-044] [REP2-045]. With mitigation in place, no significant effects have been identified for the construction or operational phases of the Scheme for Air Quality or Road Drainage and the Water Environment. Overall, the majority of noise impacts during construction would not be significant apart from a small number of properties adjacent to Allerdene Bridge night-time works which would be managed by the adoption of Best Practicable Means specified in N5 of the Outline CEMP [REP2-050] [REP2-051]. During operation, there would know no significant adverse effects but would be some significant beneficial effects for properties screened by the noise barrier at Birtley.
4.32.j	Has no adverse impact on the substrata drainage or the quality of water in watercourses, lakes, ponds or groundwater;	Chapter 13 (Road Drainage and the Water Environment) of the ES [APP-034] confirms the design has incorporated several mitigation measures, including flood plain compensation within the Coal House roundabout to offset the loss associated with the additional piers. With these design and mitigation measures in place there would be no significant adverse effects on the water environment.

Para No.	Local Impact Report Statement	Applicant's Response
4.32.i	Includes a waste audit or site waste management plan, where large volumes of waste or secondary aggregates are likely to be produced during development;	Refer to the Applicant's response to 4.32g above.
4.32.p	Addresses the issues of potential land contamination, derelict land, hazardous substances and ground stability;	Chapter 9 (Geology and Soils) of the ES [APP- 030] has considered the sensitivity of the geology and soils (including underground water and contaminated land) located near the Scheme that has the potential to be affected by the construction and operation of the Scheme. The assessment has considered the risk to construction workers from a variety of activities and sources, such as ground contamination being released when soil is disturbed, this contamination could lead to the release of hazardous gases. The assessment has also considered the risk from ground collapse associated with historic coal mining. It is considered that with the implementation of mitigation measures including earthworks being carried out in accordance with a Materials Management Plan (MMP) and the use of appropriate personal protective equipment, risk assessments, training and permits would minimise the risks to construction workers and there would be no effects on human health receptors. Mitigation measures would be put in place to prevent the pollution of water bodies caused by, for example, disturbance of contaminated ground, pollution incidents during construction and excavation dewatering. The Outline CEMP [REP2-050] [REP2-051] would include measures to control environmental effects from these aspects and effects would not be significant.
4.33	Policy DC2 seeks to protect residential amenity.	With the mitigation measures proposed, the Scheme would have no significant effect on residential amenity. Chapter 5 (Air Quality), 11 (Noise and Vibration), 12 (Population and Human Health) of the ES [APP-026, APP-032, and APP-033] provide further information to support this.
4.34	Policy ENV44 and ENV47 seek the protection and possible enhancement of trees and wildlife habitats.	The Scheme has, through the design and assessment process, sought to avoid unnecessary removal of vegetation (secured through reference to L3 of Table 3.1: Register of Environmental actions and Commitments in the Outline CEMP [REP2-050] [REP2-051]) and where necessary removal would arise, identified appropriate mitigation measures to replace and/or enhance woodland within the landscape strategy, outlined in Figure 7.6 Landscape Mitigation Design [APP-061], that is secured through reference to L4 – L15 of Table 3.1: Register of Environmental actions and Commitments in the Outline CEMP [REP2-050] [REP2-051].
4.35	Policy ENV51 seeks to safeguard wildlife corridors.	To enhance the functionality of woodland habitats within the vicinity of the Scheme, new woodland corridors are proposed which will link existing woodland at Robin's Wood to the River Team and enhance

Para No.	Local Impact Report Statement	Applicant's Response
		the wildlife corridors between Longacre Wood LWS and the existing wildlife corridor to the west. The design provides a benefit with an increase in the green wildlife corridors along the south of the scheme as outlined in Figure 7.6: Landscape Mitigation Design of the ES [APP-061].
4.36	Policy ENV61 sets a limit on the changes in noise levels, stating "New noise generating development will not be permitted if the rating level would exceed the pre-existing background noise level by 10 dB(A) or more for existing noise sensitive land uses. Where the increase in the noise level would be less than 10 dB(A), the developer will be expected to demonstrate that acceptable noise levels can be achieved."	Chapter 11 (Noise and Vibration) of the ES [APP-032] states that overall, during construction, following the implementation of mitigation measures, there would be significant night-time noise effects at Willowbeds Farm, Lamesley Vicarage and Cottages and dwellings on Salcombe Gardens. There would be no significant day-time noise or vibration effects. During operation, the Scheme has included design measures to reduce noise and vibration levels induced by road traffic. These include installation of a Thin Surface Course System (a road surface which will minimise noise levels from traffic using the A1) for the length of the Scheme, installation of a three-metre-high, 670 metre long acoustic barrier at Birtley (within an NIA) and minor adjustment to the existing noise barrier at Lady Park (see Figure 11). These measures would result in an overall decrease (significant beneficial effect) in noise and road traffic induced airborne vibration levels across the Scheme with the main cluster of properties that benefit being those at North Dene and Crathie. This is secured through reference to N1-N3 of Table 3.1: Register of Environmental actions and Commitments in the Outline CEMP [REP2-050] [REP2-051].
4.37	Policy CFR26 requires that "Natural greenspace accessible to the public should be available so that, as far as possible, sites of at least two hectares are within 0.5 kilometres of all homes".	The Scheme will not reduce existing access arrangements to greenspace for members of the public. Temporary PROW diversions will be in place whilst works are undertaken to Longbank Bridleway and whilst the North Dene Footbridge is replaced which may lengthen journeys between residential properties on the south side of the A1 and open countryside on the north. However, this impact will be temporary in nature during the construction period.
4.38	The saved policies from Gateshead Council's Unitary Development Plan (UDP) 2007… https://www.gateshead.gov.uk/media/1935/Gateshead-UnitaryDevelopment-Plan2007/pdf/GatesheadUnitaryDevelopmentPlan2007.pdf?m=636669086176200 000	
4.39	Making Spaces for Growing Places (Local Plan Part 3) The Draft MSGP sets out proposed site allocations and development management policies for Gateshead, that will complement and support the Core Strategy and Urban Core Plan. The Draft MSGP as emerging policy it is relevant in demonstrating the direction of travel for policy making in Gateshead and provides further details with regard to planned development areas.	Compliance with policies in the Draft MSGP are considered in detail in paragraph 5.3.31 -5.3.42 of Section 5 of the Planning Statement REP2-048] [REP2-049].

Para No.	Local Impact Report Statement	Applicant's Response
4.40	The Team Valley Trading Estate is confirmed in Policy MSGP2 as one of Gateshead's two Key Employment Areas. Six Main Employment Areas are identified in Policy MSGP3, including Durham Road and Portobello both in Birtley, which are described collectively at paragraph 4.7 as "a significant asset for the region's economy" and situated in accessible locations across the Borough.	The Scheme will improve access to allocated key Employment Areas, supporting Council Policy MSGP2.
4.41	Policy MSGP10 Housing sites allocation states that provision is made for 104.17 hectares (gross) of housing land supply over the plan period. Of these allocated sites there are none adjacent to the Scheme and the closest is in Harlow Green (10.65 hectares) and three in Birtley (10.62, 10.66 and 10.67 hectares). All the sites identified in Birtley are within the built-up area.	The Scheme will improve access to allocated housing sites in Policy MSGP10 facilitating their delivery for development.
4.42	Section 6 of the Draft MSGP deals with Transport and Accessibility including at MSGP18, safeguarding land for transport improvements. MSGP18.5 identifies the "A1 Birtley to Coalhouse" as one of the safeguarded sites.	This is identified in Paragraph 5.3.34 and Figure 4 of the Planning Statement [REP2-048] [REP2-049]. The Scheme will deliver a key transport scheme which is safeguarded by the Draft MSGP.
4.43	MSGP18.2 safeguards a triangle of land near junction 66 of the A1 at Eighton Lodge for a Park and Ride.	The Scheme would not affect the future delivery of the site at junction 66 (Eighton Lodge) for a park and ride facility. Indeed, delivering improvements to the A1 would improve access to this site.
4.44	Section 7 People and Places of the Draft MSGP refers to issues that may affect people's quality of life such as noise, traffic and parking congestion, smells and fumes.	
4.45	MSGP19 addresses residential amenity.	As above, the Scheme would have no significant effect on residential amenity. Chapters 5 (Air Quality), 11 (Noise and Vibration), 12 (Population and Human Health) of the ES [APP-026, APP-032, and APP-033] provide further information to support this.
4.46	MSGP20, 21 and 22 address noise, air quality and ground contamination respectively.	As above, the Scheme would have no significant effect on residential amenity. Chapters 5 (Air Quality), 11 (Noise and Vibration), 12 (Population and Human Health) of the ES [APP-026, APP-032, and APP-033] provide further information to support this
4.47	MSGP25 promotes quality design, especially within key routeways such as the A1 corridor.	The Scheme aims to provide high quality design, including the landscape strategy, in accordance with MSG25. The Scheme has, through the design and assessment process, sought to avoid significant impacts on the A1 corridor and wider landscape through option selection, the design of the proposals and the unnecessary removal of vegetation (secured through reference to L3 of Table 3.1: Register of Environmental actions and Commitments in the Outline CEMP [REP2-050] [REP2-051]). Where necessary removal would arise, appropriate mitigation measures to reinstate the design qualities of the corridor within the landscape strategy are outlined in Figure 7.6 Landscape Mitigation Design [APP-061], that is secured through reference to L4 – L15 of Table 3.1: Register of Environmental actions and Commitments in the Outline CEMP [REP2-050] [REP2-051].

Para No.	Local Impact Report Statement	Applicant's Response
4.48	MSGP26 addresses heritage assets.	Chapter 6 (Cultural Heritage) of the ES [APP-027] assesses the impact of the scheme on above and below ground heritage assets. During operation there would be permanent impacts on the setting of Bowes Railway Scheduled Monument (SM) due to the loss of original or old building materials, however the effects would not be significant. There would be permanent beneficial impacts on the setting of the Angel of the North as a result of a less dense woodland edge planting, proposed within Figure 7.6: Landscape Mitigation Design [APP-061] between chainage 12300 – 12560 giving greater potential for views which would improve the experience of the asset. However, views from the road towards the Angel of the North would be slightly more restricted due to the installation of gantries.
4.49	MSGP28 addresses archaeology.	Following consultation with the Tyne and Wear Archaeology Officer a geophysical survey has been undertaken to investigate the potential for archaeological remains. The survey revealed no results of archaeological interest or archaeological features other than evidence of past ploughing. Therefore, the potential of unknown archaeological remains is low. Further details are provided in Chapter 6 (Cultural Heritage) of the ES [APP-027]. A Written Scheme of Investigation (WSI) is under preparation in consultation with the Tyne and Wear Archaeology Officer to mitigate for any unknown archaeological remains which may be encountered during construction.
4.50	MSGP30 Flood Risk Management makes specific reference to the River Team catchment, and states that development within the River Team catchment should consider the Team Valley Surface Water Management Plan and River Team Flood Masterplan.	The Flood Risk Assessment [APP-163] does not reference the Team Valley Surface Water Management Plan (SWMP), however, the assessment of flood risk to the Scheme has used the underlying hydraulic model, as provided by the Environment Agency, and the SWMP report, focuses on how to retrofit and redevelop the estate to provide reductions in surface water runoff rates and thus flood risk through the use of SUDS. The FRA demonstrates that the Scheme will not have an adverse impact in this area, therefore it is considered that the Scheme accords with the SWMP requirements, which is in accordance with MGSP30. MGSP30 does not make reference to the River Team Flood Masterplan.
4.51	MSGP31 Water Quality and the Water Environment requires that the quantity and possible enhanced in accordance with the Northumbria River Basin Management Plan.	The current Northumbrian River Basin Management Plan (RBMP) is discussed in Section 13.7 of ES Chapter 13 Road Drainage and the Water Environment [APP-034]. The Environment Agency have agreed

Para No.	Local Impact Report Statement	Applicant's Response
		that the significant effects of the Scheme in terms of water quality / Water Framework Directive are to be considered beneficial as the measures are "on the path" to betterment with regards to the WFD (refer to **Appendix 5.5** of this document).
4.52	MSGP32 addresses green infrastructure and flood management.	Green Infrastructure is discussed in Table 8-3 of ES Chapter 8 Biodiversity [APP-029]. The Scheme will directly impact on the green wildlife corridor to the north of the Longacre Wood Local Wildlife Site (LWS), with some permanent loss of woodland, alongside temporary impacts on the LWS. However, changes to the design have occurred to minimise habitat loss and mitigation planting includes reinstatement of habitats and woodland, alongside creation of woods and woodland corridors. Refer to 4.50 for flood management response.
4.53	MSGP33 aims to ensure that the development protects and, where appropriate, contributes to green infrastructure. Green infrastructure includes the Team Valley which is identified as presenting opportunities for improvement.	The Scheme has, through the design and assessment process, sought to avoid unnecessary removal of vegetation that contributes to the green infrastructure (secured through reference to L3 of Table 3.1: Register of Environmental actions and Commitments in the Outline CEMP [REP2-050] [REP2-051]) and where necessary removal would arise, identified appropriate mitigation measures to replace and/or enhance woodland within the landscape strategy, outlined in Figure 7.6 Landscape Mitigation Design [APP-061], that is secured through reference to L4 – L15 of Table 3.1: Register of Environmental actions and Commitments in the Outline CEMP [REP2-050] [REP2-051]].
4.54	MSGP37 and 38 address woodland, trees and hedgerows, and biodiversity and geodiversity respectively.	The Scheme has, through the design and assessment process, sought to avoid unnecessary removal of woodland, trees and hedgerows (secured through reference to L3 of Table 3.1: Register of Environmental actions and Commitments in the Outline CEMP [REP2-050] [REP2-051]) and where necessary removal would arise, identified appropriate mitigation measures to replace and/or enhance woodland within the landscape strategy, this is outlined in Figure 7.6 Landscape Mitigation Design [APP-061], and would be secured through reference to L4 – L15 of Table 3.1: Register of Environmental actions and Commitments in the Outline CEMP [REP2-050] [REP2-051].
4.55	The Draft MSGP, which is intended to replace the UDP, is expected to be adopted in Spring/Summer 2020…. https://www.gateshead.gov.uk/media/10000/MSGP-Submission-DraftOctober2018/pdf/MSGP_Submission_Draft__2018.pdf?m=636765968077930000	
4.56	Placemaking Supplementary Planning Document (SPD) The Placemaking SPD expands on policy MSGP25. The purpose of the Placemaking SPD is to set out detailed planning policy guidance on the principles of good design for all types of development within	The Placemaking SPD is referenced in paragraphs 5.3.46 – 5.3.47 of Section 5 of the Planning Statement [REP2-048] [REP2-049]. The Scheme has, through the design and assessment process, sought to

Para No.	Local Impact Report Statement	Applicant's Response
	Gateshead, and to explain how policies will be applied. The intention is to achieve a distinctive, accessible, safe and sustainable built and natural environment reflecting the special character of the Borough's heritage and its varied townscapes and landscapes.	avoid unnecessary removal of vegetation, to reduce the risk of harm from adjacent development (secured through reference to L3 of Table 3.1: Register of Environmental actions and Commitments in the Outline CEMP [REP2-050] [REP2-051]) and where necessary removal would arise, identified appropriate mitigation measures to replace and/or enhance woodland within the landscape strategy, outlined in Figure 7.6 Landscape Mitigation Design [APP-061], that is secured through reference to L4 – L15 of Table 3.1: Register of Environmental actions and Commitments in the Outline CEMP [REP2-050] [REP2-051].
4.57	Although much of the SPD is focused on buildings, section D4.4 is concerned with routeways and gateways. Seven key routeways have been identified and these include the A1 corridor and the ECML. Development located adjacent to these routeways should endeavour to "to ensure developments in the vicinity of these gateways and routeways are of the highest design standard and make a positive contribution to the arrival experience".	The Scheme has, through the design and assessment process, considered appropriate design solutions in accordance with Policy D4.4 to ensure a positive contribution to the arrival experience of users of the A1. In particular the route option chosen minimises disruption through this corridor; works to Longbank Bridleway underpass have been designed in keeping with the existing structure; and the Applicant has sought to avoid unnecessary removal of vegetation. Unnecessary removal of vegetation will be secured through reference to L3 of Table 3.1: Register of Environmental actions and Commitments in the Outline CEMP [REP2-050] [REP2-051]) and where necessary removal would arise, identified appropriate mitigation measures to replace and/or enhance woodland within the landscape strategy, outlined in Figure 7.6 Landscape Mitigation Design [APP-061], that is secured through reference to L4 – L15 of Table 3.1: Register of Environmental actions and Commitments in the Outline CEMP [REP2-050] [REP2-051].
4.58	Gateshead's Placemaking SPD https://www.gateshead.gov.uk/article/3093/Gateshead-Placemaking-SPD	
4.59	National Networks National Policy Statement The National Networks National Policy Statement (NPS) was published in December 2014. It sets out Government policy relating to the delivery of nationally significant infrastructure projects relating to the road and rail networks. It reflects the importance given to maintaining well connected and high performing networks with sufficient capacity to meet long term needs and support economic growth, including need at a local level. The A1 Birtley to Coal House Scheme will deliver improved connectivity and increased capacity on the A1 Western Bypass.	The Scheme compliance with the NNNPS is addressed in the National Networks National Policy Statement (NNNPS) Accordance Table [APP-172]. As stated in Table 1 (2.21), the Scheme will reduce journey times during peak hours, thus reducing congestion and improving the performance of this section of the A1 for road users. This benefits all direct users of the Strategic Road Network, as well as everyone who obtains goods and services that are delivered by road.
4.60	It recognises that the consequences of traffic congestion can be both economic, in terms of constraining economic activity and growth as well as environmental such as harmful emissions affecting air quality. Measures to improve the road network will include junction upgrades and increased capacity on trunk roads and these will be implemented alongside measures to encourage less reliance on the private vehicle and rolling out improved technology.	The Scheme compliance with the NNNPS is addressed in the National Networks National Policy Statement (NNNPS) Accordance Table [APP-172]. In particular, Chapter 4 of the Transport Assessment Report [APP-173] demonstrates that there will be improvements to the experience of users of the Scheme by reducing stop-start traffic congestion and reduced journey times. Chapter 5 provides an overview of road safety. It states that while the

Para No.	Local Impact Report Statement	Applicant's Response
		Scheme does not improve safety on the A1 itself, benefits are generated from drawing traffic from roads that have higher accident rates than the A1. Whilst this means an increase in accidents on the A1, it is outweighed by the reduction in accidents on local roads. Environmental factors are addressed in the ES and a summary of the benefits is provided in paragraph 3.2 of the NNNPS Accordance Table [APP-172]. Section 5.6 to 5.9 of Table 4 discusses Air Quality and confirms that no significant effects have been identified for the operational phase of the Scheme and no additional monitoring is necessary. The Scheme would not bring about the need for a new Air Quality Management Area (AQMA) or change the size of an existing AQMA; or bring about changes to exceedances of Limit Values or EU Limit Values.
4.61	Detailed guidance is provided about the need to ensure that new development is appropriately mitigated to avoid environmental and social impacts, but it is also recognised that some adverse local effects may remain. A range of specific impacts are set out in the guidance.	The Scheme compliance with the NNNPS is addressed in the National Networks National Policy Statement (NNNPS) Accordance Table [APP-172]. The Scheme has sought to mitigate all effects wherever possible. However, it is recognised in Table 16-2 Summary of Significant Effects in Chapter 16 of the ES (Summary) [APP- 037] that some adverse and local effects of development will need to be mitigated and the mechanism for securing these will be delivered through the Outline CEMP [APP-174] and draft DCO [APP-013]
4.62	National Planning Policy Framework The revised National Planning Policy Framework (NPPF) came into effect in 2019 and promotes sustainable development. It replaced and simplified a large number of policy pages about planning. The Planning Practice Guidance to support the NPPF is published online and regularly updated. These act as guidance for Local Planning Authorities and decision-takers, both in drawing up plans and making decisions about planning applications.	The 2019 NPPF is discussed in Paragraph 5.2.12 to 5.2.18 of Chapter 5 of the Planning Statement [REP2-048] [REP2-049]APP-171].
4.63	Separate National Policy Statements have been produced to set out the material considerations relating to nationally significant infrastructure projects and these reflect the key aims of sustainable development set out in the NPPF.	
4.64	North East Strategic Economic Plan The Strategic Economic Plan (SEP) was published in March 2014 by the North East Local Enterprise Partnership, and then refreshed in 2019. Its overall vision is to provide over one million jobs in our economy by 2024. It is expected much of this will be achieved through growth in business services, where the A1 Western Bypass already provides a vital link to a range of medium and large businesses; new economies such as creative and technology, media and telecoms; low carbon and renewable technologies.	Compliance with the North East Strategic Economic Plan is addressed in Paragraphs 3.4.1 to 3.4.5 of the Transport Assessment Report [APP-173]. The Scheme will deliver improvements to the A1 between junctions 65 (Birtley) and 67 (Coal House), part of the A1 Western Bypass, thereby improving access which will in turn attract and facilitate growth in business services in the area.
4.65	The SEP sets out six strategic themes to address challenges and deliver economic growth – one of these is to develop the places for business to invest and for people to live and another is transport and digital connectivity to allow people to move around for work and leisure and connect the North East to the national	The Scheme will help address the SEP challenges in delivering economic growth by improving journey times and relieving congestion. The SEP recognises key priorities are known bottlenecks on the A1

Para No.	Local Impact Report Statement	Applicant's Response
	and international economy. In completing A1 Birtley to Coal House Improvement Scheme, it is considered that this will help address the SEP challenges on delivering economic growth.	and a programme of improvements on the A1 including the renewal of Allerdene Bridge and secure a rolling programme for additional capacity along the whole length of the A1 Western Bypass, with the objective of dual three lanes along all of its length are proposed. Further details from the SEP are provided in Paragraphs 3.4.1 to 3.4.5 of the Transport Assessment Report [APP-173].
4.66	In terms of transport, the SEP notes that to achieve its economic growth aspirations, it will be necessary for people and goods to be transported within, into and out of the area. It goes on to note that the presence and effectiveness of road, rail, air and sea connections can limit aspiration and the north east will not attract investment if the transport networks do not function effectively.	The Scheme will deliver significant improvements to users of the A1, supporting economic growth and attracting investment.
4.67	It recognises that reducing congestion on the road network, namely the A1 and A19, is necessary to ensure that constraints on economic investment are relieved. Investment in the road network will have significant economic benefits for the region and enable developments in growth corridors to be delivered. The SEP identifies investment in known bottlenecks on the network and in additional capacity and traffic management, as well as encouraging more use of sustainable transport among its priorities.	The Scheme will reduce congestion on the A1 road network, which it is noted in the SEP as necessary to ensure the constraints on economic investment are relieved.
4.68	Tyne and Wear Local Transport Plan Local Transport Plan 3 (LTP3) was the third Local Transport Plan for Tyne and Wear and includes a ten-year strategy (2011 – 2021) covering all forms of transport in Tyne and Wear. It was produced by the former Tyne and Wear Integrated Transport Authority (ITA) on behalf of the six LTP Partners – the five Tyne and Wear local authorities (including South Tyneside and Sunderland) and Nexus, the local Passenger Transport Executive. The responsibilities of the ITA passed to North East Combined Authority (NECA) from April 2014.	
4.69	The vision for transport in Tyne and Wear was that the area will have a fully integrated and sustainable transport network, allowing everyone the opportunity to achieve their full potential and have a high quality of life. The strategic networks will support the efficient movement of people and goods within and beyond Tyne and Wear, and a comprehensive network of pedestrian, cycle and passenger transport links will ensure that everyone has access to employment, training, community services and facilities. Five goals were adopted to meet the vision: • To support the economic development, regeneration and competitiveness of Tyne and Wear, improving the efficiency, reliability and integration of transport networks across all modes; • To reduce carbon emissions produced by local transport movements, and to strengthen our networks against the effects of climate change and extreme weather events; • To contribute to healthier and safer communities in Tyne and Wear, with higher levels of physical activity and personal security; • To create a fairer Tyne and Wear, providing everyone with the opportunity to achieve their full potential and access a wide range of employment, training, facilities and services; and • To protect, preserve and enhance our natural and built environments, improving quality of life and creating high quality public places.	The Scheme will support economic development, regeneration and competitiveness of Tyne and Wear through increased capacity on the network resulting in improved journey times. Better reliability will be provided with the replacement of Allerdene Bridge.

Para No.	Local Impact Report Statement	Applicant's Response
4.70	Transport Manifesto 2016 – 2036 The Transport Manifesto sets out the aims and ambitions of NECA, which has established a single identity for travel in the region known as Transport North East. The Manifesto states its support for existing proposals to improve roads including the "A1 dualling in Northumberland, Western Bypass enhancements and A19 junction upgrades".	Support for the Scheme in the Transport Manifesto is noted and outlined at Paragraph 5.3.62 of the Planning Statement [REP2-048] [REP2-049].
4.71	In terms of the A1, the need for improvements to the Western Bypass was identified a number of years ago with the Department for Transport (DfT) having accepted that the A1 is experiencing significant network stress with corresponding impacts on the economy, environment and quality of life. The DfT later announced that it would work with local partners on the development of measures to address the issues with road safety and congestion on the A1 Western Bypass. Improvements at Birtley to Coal House remain a regional priority and the major scheme investment is welcomed.	It is noted that the Council agree that improvement to the A1 between Birtley to Coal House is a regional priority. The need for these improvements is further supported by the number of studies undertaken on behalf of the DfT identified in Table 2 of the Planning Statement [REP2-048] [REP2-049] [APP-171].
4.72	North East Combined Authority [NECA] Regional Transport Plan Transport is of strategic importance to the North East, and the collaborative working of both Combined Authorities allows effective decision making across the region, which ensures that the local needs and priorities are delivered. The creation of North East Combined Authority in 2014 placed the responsibility for strategic decision making for transport, economic development and skills onto a new body made up of the seven local authority leaders and the chairman of the North East Local Enterprise Partnership. The North East Joint Transport Committee brings together a total of seven members from each of the Constituent Authorities of the region; four Members from the North East Combined Authority and three Members from the North of Tyne Combined Authority in accordance with the Order that was created in November 2019.	
4.73	As part of this process, the third Tyne and Wear Transport Plan (LTP3) is to be replaced by a Regional Transport Plan covering the North-East area. This plan will set out our key policies, the new and collaborative ways in which we work and establishes a delivery programme which will aid us in achieving our goals.	
5	**Local Impacts Assessment**	
5.1	Gateshead Council has assessed the local impacts resulting from the scheme proposals and designated them in terms of whether the impact is on balance considered to be positive, neutral or negative. This determination has been completed using the suite of supporting evidence available as part of the DCO application (TR010031) for the scheme.	
Air Quality / Noise and Vibration		
	Air Quality/ Noise and Vibration – Neutral Impact	For air quality – the assessment concluded that there would be no likely significant effects. For noise, with the implementation of proposed mitigation measures, the residual impacts would be considered Neutral for the vast majority of the construction programme and working areas. However, for some dwellings closest to the night-time activities at Allerdene Bridge there would be a Negative Impact.
5.2	The Council agrees with the methodologies used and the assessments of the impacts (construction and operational). In respect of air quality, the assessment conclusion is accepted that there will not be any exceedance of the NO2 air quality standards (residential receptors), nor any impact on the town centre	

Para No.	Local Impact Report Statement	Applicant's Response
	AQMA or proposed Tyneside CAZ.	
5.3	Fugitive dust emissions from construction will need to be controlled and the outlined dust management plan is a necessity. A point of contact, for public complaints/information and local authority liaison (dust, noise, etc), will need to be established.	Control of dust is covered by the commitments in Table 3-1 of the Outline CEMP [APP-174] specifically [A1], this measure includes that the contractor will record any complaints relating to dust and air quality, including likely causes and mitigation measures. As detailed in [G3] of the Outline CEMP, the main contractor will inform the public of the nature, timing and duration of particular construction activities and the duration of the construction works, for example, by newsletters, letter drops and liaison with the local authority. A Communication Plan (that includes community engagement) will be developed before work commences on site. Similarly, as detailed in [N6] of the CEMP, the site manager, or other appointed site representative, will be responsible for logging all received environmental noise and vibration comments/complaints, as well as the action that is taken in response to each point raised, and whether this was successful. Where not successful, supplementary actions will be carried out and resulting effects logged. The contact details for the site representative will be openly advertised so that local residents have a point of contact in case of any issues arising. The site representative will be responsible for keeping an open line of contact with local residents and advising the timing and programming of potentially noisy works.
5.4	During the construction phase, the Council is concerned with the adverse noise impacts of the scheme given that a number of properties lie in close proximity to it. However, the Council respects that a number of mitigation measures are proposed to minimise this noise as part of the CEMP.	The assessment of likely significant noise effects during the construction phase is detailed in paragraphs 11.10.1 to 11.10.22 of the ES Noise and Vibration chapter [APP-032]. The assessment of likely significant noise effects during the construction phase is detailed in paragraphs 11.10.1 to 11.10.22 of the ES Noise and Vibration chapter [APP-032]. The assessment of construction phase noise effects was undertaken for a sample of properties, but it is acknowledged that there are a number of properties along the entire length of the Scheme that could be adversely affected by the construction works. However, with the implementation of proposed mitigation measures, the construction noise effects arising from the scheme have been identified to be not significant for the vast majority of the construction programme and working areas.

Para No.	Local Impact Report Statement	Applicant's Response
		Significant residual effects have been identified at three assessment locations (refer to Figure 11.1 Construction Phase Study Areas and Assessment Location [APP-077]) where night-time works associated with the new Allerdene Bridge are required. Two of these assessment locations (AL1 and AL2) are to the south of the A1 and are only representative of a few isolated receptors. AL3, which is to the north of the A1, is representative of the most exposed residential receptors at Salcombe Gardens. At this stage the worst case duration of these night-time works is assumed to be in the region of 18 consecutive weekends. The proposed mitigation measures are detailed in paragraphs 11.9.5 to 11.9.8 of the ES Noise and Vibration chapter [APP-032], including compliance with the principles of Best Practicable Means (BPM), would serve to ensure that all construction phase effects are minimised. The– control of noise is covered by the commitments in Table 3-1 of the Outline CEMP [APP-174] specifically at [G3], and [N1] to [N8].
5.5	To minimise the local noise impact of construction works on residential receptors close to the construction area, the Council is content with the identified measures in the CEMP and REAC.	Noted
Biodiversity, Ecology and Natural Environment		
	Biodiversity, Ecology and Natural Environment – Negative Impact	It is considered that following successful implementation of the mitigation secured the through Outline CEMP [APP-174] over the long term the Scheme would result in effects of neutral significance.
5.6	The proposals will result in the direct loss of 14.13ha combined priority woodland habitat (Embankment) and 13.83ha combined priority woodland habitat (Viaduct). This includes the loss of 57m2 of Long Acre Wood Local Wildlife Site. Replacement/compensation woodland creation totaling 14.88ha (Embankment) and 14.33 (Viaduct) is proposed. Given the considerable time lag in achieving the same level of ecological value and function as that to be lost; it is considered that a significant increase in the provision of replacement/compensation woodland creation is required.	A response from the Applicant is provided in their response to Gateshead's written representation [REP1-005]. As confirmed by Gateshead Council, a greater area of woodland will be created than that lost. The strategy has followed the mitigation hierarchy that states that the steps of mitigation should be approached in the following order: Avoidance, Minimisation, Restoration and Compensation. In accordance with this, the area of woodland loss has been reduced by changes to the design of the Scheme, which has included minimising habitat loss associated with Scheme design and construction activities at Long Acre Wood Local Wildlife Site (LWS) and other wooded areas. Woodland loss at Longacre Wood LWS has been reduced by steepening of the earthworks adjacent to the carriageway from 1:3 to 1:2 to reduce the footprint, and thus reducing the number of trees that would need to be removed from Longacre Wood. This reduction in

Para No.	Local Impact Report Statement	Applicant's Response
		area also ensured that there would be no permanent land take within the LWS. To enhance the functionality of woodland habitats within the vicinity of the Scheme, improvements in habitat connectivity have been proposed (refer to Figure 7.6 Landscape Mitigation Design of the ES [APP-061]. This includes new woodland corridor creation, including links between existing woodland at Robin's Wood to the River Team and enhancing the wildlife corridors between Longacre Wood LWS and the existing wildlife corridor to the west. Improvements such as improving quality by strengthening connective corridors and improving retained woodland habitats enhances the effectiveness of the mitigation design. Additionally, the mitigation designs include areas of improvement of existing and newly created woodland thus improving the overall quality of woodland across the Scheme. With reference to the desire for the Scheme to provide compensation habitat, the objective of the Scheme is to mitigate its effects, the measures to do so would be secured through reference to L15 of the Outline CEMP [APP-174] and Figure 7.6 Landscape Mitigation Design of the ES (APP-061). Any further provision of habitat which is related to enhancements to habitats as opposed to mitigation is strictly speaking outside its scope. Therefore, the mitigation strategy has been designed based on an understanding of the areas of habitat loss and gain. In addition, the strategy seeks to improve habitat quality and provide additional connectivity. Hence, it is considered that a significant increase in the area of replacement/compensation woodland creation is not required.
5.7	The Guidelines for Ecological Impact Assessment in the UK and Ireland (CIEEM, 2018) state: 6.7 Replacement ratios of compensatory habitat greater than one-to-one are frequently appropriate because of the uncertainty inherent in compensation, particularly in cases which require ecological restoration, habitat creation or translocation of species or habitats. The scientific basis for deriving appropriate rations is not exact and will vary depending on the habitat or species concerned. Increased replacement ratios can also help take account of the time lag in delivering compensation and regaining the same maturity, complexity and diversity of habitats and the full complement of species as those affected.	A response from the Applicant is provided in their response to Gateshead's written representation [REP1-005]. It is not considered that the Scheme has any adverse effect upon ecosystems services in the Borough of Gateshead or more widely. In terms of the air quality consequences as a result of temporary lost woodland, the potential receptors in the vicinity of Long Acre Wood are over 150m from the A1. At this distance, no significant effects on air quality are modelled. This conclusion will not be affected by the removal of the woodland. The Scheme includes measures (paragraph 13.9.2 of Chapter 13: Road Drainage and the Water Environment of the ES [APP-034]) to

Para No.	Local Impact Report Statement	Applicant's Response
		improve the water quality in the watercourses which receive discharges from the Scheme, this will help offset any loss offered by the mature woodland which is to be lost. Whilst the temporary loss of woodland would result in loss of the carbon sequestration benefits of semi-mature/mature woodland, woodland of at least the same area lost will be planted within the Scheme. The woodland area lost and created for each of the Scheme options (embankment and viaduct) is detailed below: Embankment: Area Lost - 14.13Ha; Area Created: 14.88 Viaduct: Area Lost - 13.83 Ha; Area Created: 14.33 Research by Natural England (2012) states that after establishment of woodland planting, carbon sequestration increases substantially as growth rates increase before slowing down when the trees reach maturity, thereby restoring the carbon sequestration properties once the proposed replanting is established. The mitigation strategy has been designed based on an understanding of the areas of habitat loss and gain. In addition, the strategy seeks to improve habitat quality and provide additional connectivity. Therefore, ratios were not utilised as a standard in the creation of the mitigation design.
5.8	In addition to impacts on biodiversity, the proposed loss of c.14ha of established, semi-mature/mature woodland has implications for the borough in terms of reduced ecosystems services, including air and water quality and carbon sequestration.	A response from the Applicant is provided in their response to Gateshead's written representation [REP1-005]. **Priority grassland habitat: Dense / continuous scrub habitat** **Running water:** In terms of the air quality consequences as a result of temporary lost woodland, the potential receptors in the vicinity of Long Acre Wood are over 150m from the A1. At this distance, no significant effects on air quality are modelled. This conclusion will not be affected by the removal of the woodland. The Scheme includes measures (paragraph 13.9.2 of **Chapter 13: Road Drainage and the Water Environment** of the ES [APP-034]) to improve the water quality in the watercourses which receive discharges from the Scheme, this will help offset any loss offered by the mature woodland which is to be lost. Whilst the temporary loss of woodland would result in loss of the

Para No.	Local Impact Report Statement	Applicant's Response
		carbon sequestration benefits of semi-mature/mature woodland, woodland of at least the same area lost will be planted within the Scheme. The woodland area lost and created for each of the Scheme options (embankment and viaduct) is detailed below: • Embankment: Area Lost - 14.13Ha; Area Created: 14.88 • Viaduct: Area Lost - 13.83 Ha; Area Created: 14.33 Research by Natural England (2012) states that after establishment of woodland planting, carbon sequestration increases substantially as growth rates increase before slowing down when the trees reach maturity, thereby restoring the carbon sequestration properties once the proposed replanting is established. It is therefore not considered that the Scheme has any adverse effect upon ecosystems services in the Borough of Gateshead or more widely, due to air quality and hydrological mitigation already included within the scheme design.
5.9	Both options are anticipated to result in the direct loss of 6.79ha of priority grassland habitat. Replacement/compensation species rich grassland habitat creation of 6.41ha (Embankment) and 5.94ha (Viaduct) is proposed. Again, the replacement ratio of species rich grassland is considered to be inadequate. Similarly, the proposals are predicted to result in a net loss of dense/continuous scrub habitat and running water. Hedgerow is the only habitat type for which a significant increase is area/length is proposed.	A response from the Applicant is provided in their response to Gateshead's written representation [REP1-005]. With reference to the desire for the Scheme to provide compensation habitat, the objective of the Scheme is to mitigate its effects, the measures to do so would be secured through reference to L15 of the Outline CEMP [APP-174] and Figure 7.6: Landscape Mitigation Design of the ES [APP-061]. Any further work which is related to enhancements to habitats is strictly speaking outside its scope. The habitats included within the Landscape and biodiversity planting design (as detailed within Figure 7.6: Landscape Mitigation Design of the ES [APP-061]) include the provision of a mosaic of habitats throughout the entire Scheme Footprint. These habitats include the provision of woodland, linear tree belts of shrubs and trees, scattered trees, hedgerow and grassland. The design aims to not only create new areas of habitat but, once established, to increase connectivity of habitats throughout the area. With regard to the issue of non-priority habitats, reinstatement of areas of nonpriority habitat are included in the Scheme design, which include arable, semi improved grassland, improved grassland, and amenity grassland. Details of this are shown on Figure 7.6: Landscape Mitigation Design of the ES [APP061] as: All slopes and verges are to be LE1.1 Amenity Grass (unless otherwise stated); and all areas temporarily required for construction are to be reinstated to reflect their

Para No.	Local Impact Report Statement	Applicant's Response
		former vegetation cover (unless otherwise stated). These are not set out within the key to Figure 7.6: Landscape Mitigation Design of the ES [APP-061]. However, these are areas within the Scheme Footprint (not required for carriageway), that have not been allocated a habitat do include habitat reinstatement. **Priority grassland habitat:** It is correct that there will be a loss in area of priority grassland habitat. However, there will be an increase in quality with the creation of species rich grassland areas. The 6.41ha (Embankment) and 5.94ha (Viaduct) grassland habitat provided includes newly created species rich grassland, improvements to the quality of neutral grassland and semi-improved grassland across the Scheme Footprint. Priority habitat creation across the Scheme Footprint from the ES (APP-029) detailing the priority habitat creation across the Scheme has been added into the updated Outline CEMP [APP-174] in B1. **Dense/continuous scrub habitat** The Scheme results in the loss of 1.71ha of scrub habitat and the creation of 1.09ha of scrub habitats. The loss of this scrub does not impact on the local Biodiversity Action Plan scrub target which is to expand the area of maritime scrub in the Durham BAP area (Gateshead are covered under the Durham Biodiversity Action Plan). Scrub habitats are widespread and commonly occurring as well as being relatively easily recreated. The species present within these habitats are fast growing. Therefore, this type of habitat whilst a planted area of 1.09ha, this area will increase in the short-term. **Running water:** The c.78m loss associated with the culvert will be addressed by improvement of the quality of the realigned Allerdene culvert. These improvements currently include naturalised design features, inclusion of species rich grassland on the banks and deculverting of sections. Replacement of running water habitat is secured within B1 of the Outline CEMP [APP-174]. Other measures for improvement of Allerdene culvert will be progressed at detailed design stage as

Para No.	Local Impact Report Statement	Applicant's Response
		detailed in W10 of the Outline CEMP [APP-174] the following measures will be considered at detailed design: • Improving the channel design and providing enhancement to the river environment and morphology by, for example, inclusion of pools and riffles (or similar features to increase biodiversity) constructing a two-stage channel; • Adopting bioengineering techniques, such as rock rolls and mattresses, to maintain the channel profile and by re-vegetating the banks of the proposed channel realignment.; • Where new culvert inlets are required, naturalised design features will be utilised, if design allows. Measures such as avoiding planting at the openings to the culvert to increase natural light entering the internal space, and an inclusion of a layer of soil and debris within the culvert to create a natural bed to encourage use will be considered. The design would be submitted to the SoS for approval after Gateshead Council has been consulted. With reference to the desire for the Scheme to provide compensation habitat, the objective of the Scheme is to mitigate its effects, the measures to do so would be secured through reference to L15 of the Outline CEMP (APP-174) and Figure 7.6 Landscape Mitigation Design (APP-061). Any further work which is related to enhancements to habitats is strictly speaking outside its scope as explained above. The mitigation design included an increase in quality with the creation of species rich grassland areas and running water habitats. Scrub was included as part of the mitigation design. However, given that scrub habitats are widespread and commonly occurring as well as being relatively easily recreated, this type of habitat included a planted area of 1.09ha, (from a loss of 1.71ha), which will increase in the short-term.
5.10	There appears to be some discrepancy between the figures provided for habitat loss and habitat creation within different sections of the Biodiversity chapter of the Environmental statement (e.g. Pg. 53 Table 8.17 – Priority habitat creation across the scheme footprint and Pg. 64 para. 8.10.7).	Noted, and it can be confirmed that Table 8.17 of Chapter 8: Biodiversity of the ES [APP-029] contains the correct figures.
5.11	The need to ensure the proposed scheme delivers appropriate and proportionate levels of ecological compensation, particularly with regards to the creation of replacement priority habitat(s), is of particular concern as the scheme does not propose to provide any compensation for the direct/permanent loss of non-priority habitats and as a national infrastructure project is exempt from having to provide biodiversity net gains.	A response from the Applicant is provided in their response to Gateshead's written representation [REP1-005]. Both designs provide a benefit with an increase in the green wildlife corridors along the south of the scheme, with created planting linking

Para No.	Local Impact Report Statement	Applicant's Response
		along the south of the scheme. Figure 7.6: Landscape Mitigation Design of the ES [APP-061]. The largest differences between the two options are regarding the habitat loss and creation, Figure 7.6: Landscape Mitigation Design of the ES [APP-061]. Embankment benefits compared to the viaduct: • Provides a greater area for woodland and grassland habitat creation • The larger area of grassland creation will be beneficial to the extant wintering bird population. Embankment disbenefit compared to the viaduct: • Results in a slightly greater area of woodland loss of 0.3ha. Viaduct benefit compared to the Embankment: • Provides a greater area for hedgerow habitat creation. • Provides greater connectivity for species movements. • The viaduct provides the greatest length of naturalised channel and habitat improvement for Allerdene Burn. Viaduct disbenefit compared to the Embankment: • Results in a longer length of hedgerow loss of 51m. With reference to the desire for the Scheme to provide compensation habitat, the objective of the Scheme is to mitigate its effects, the measures to do so would be secured through reference to L15 of the Outline CEMP [APP-174] and Figure 7.6: Landscape Mitigation Design of the ES [APP-061]. With regard to the issue of non-priority habitats, reinstatement of areas of nonpriority habitat are included in the Scheme design, which include arable, semi-improved grassland, improved grassland, and amenity grassland. However, these areas are not included within the habitat tables in Chapter 8: Biodiversity of the ES [APP029].

Para No.	Local Impact Report Statement	Applicant's Response
5.12	In addition to the above, the opportunity to better understand, discuss and address the following key issues with the 'project team' and Council colleagues is considered necessary: • The relative benefits/disbenefits of the two options (i.e. embankment and viaduct) for biodiversity. • Realignment of the Allerdene culvert. • Appropriate mitigation for the areas of Council land to be impacted by the scheme. • Compensatory habitat creation and maintenance issues relating to Bowes Railway LWS and Longbank underpass. • Mitigation measures for otter during the construction and operation of the proposed scheme. • Predicted impacts and proposed mitigation relating to breeding and wintering waders. • Impacts on ecological connectivity and wildlife mortality associated with the use of acoustic fencing and concrete step barriers. • Details of landscaping proposals/habitat creation. • Provision of species specific mitigation/enhancement measures including bat and bird boxes (what and where)	A response from the Applicant is provided in their response to Gateshead's written representation [REP1-005]. As these responses are lengthy in nature they are not replicated here. Each point was addressed individually, and further information provided to Gateshead Council's ecological representative on 28th February 2020. No responses have been received from the Council's ecological representative to date.
5.13	On the basis of the information available; it is currently considered that delivery of the proposed Scheme (both options) is not achievable within acceptable ecological limits.	A response from the Applicant is provided in their response to Gateshead's written representation [REP1-005]. It considered that all impacts have been taken into consideration and mitigated within Chapter 8: Biodiversity of the ES [APP029]. The Scheme Footprint mainly consists of habitats of widespread habitats with little distinctiveness, with the exception of the Local Wildlife Sites, green wildlife corridors and priority habitats identified within Table 8-7 and Table 8-8, respectively, of the Chapter 8: Biodiversity of the ES [APP029]. The mitigation hierarchy has been adhered to by avoiding and reducing impacts to these sites and habitats where possible. This includes ensuring that there is no permanent land-take for the Longacre Wood local wildlife site paragraph 8.9.2, bullet point a of the Chapter 8: Biodiversity of the ES [APP029]. Additionally, construction impacts have been mitigated by limiting construction land-take, which is secured through the Outline CEMP [APP-174] [B13]. Following construction, the habitat creation plan includes reinstatement and creation of suitable habitats throughout the Scheme Footprint. This design is further bolstered by including areas of improved habitat quality and providing additional connectivity. Protected and notable species receptors are largely considered to be of Local value across the Scheme, with the exception of fish, which are of national value. Land-take associated with protected and notable species are small in-comparison to the habitats available across the wider landscape. Additionally, following successful implementation of

Para No.	Local Impact Report Statement	Applicant's Response
		the mitigation, loss of habitat that is suitable to support protected and notable species is considered to be mainly restricted to the construction period. The Outline CEMP [APP-174] secures not only protective measure during construction [G6; B3; B5; B6; B7; B9; B11; B10; B14; B15; B18; B24], but secures post-constructions mitigation to ensure the favourable conservation of protected and notable species is maintained [G6; B3; B4; B16; B19]. The inclusion of oil interceptors, silt control and reduction of the rate of surface water runoff have been designed to mitigate for hydrological impacts. However, these measures would have a dual benefit, including a reduction of impacts to the LWSs, green wildlife corridor, fish, otter and water vole populations. These elements of mitigation are secured via the Outline CEMP [APP-174.W1; W3; W4; W5; W7]. Additionally, as detailed in Chapter 13: Road Drainage and the Water Environment of this ES [APP-029], the likelihood of pollution road discharges occurring in the River Team would be reduced. This reduction in pollution road discharge would be beneficial to the fish population. Taking account of the comments detailed above and the ongoing discussions with Gateshead Council, it is considered that the species mitigation design is sufficient to deliver the Scheme within the ecological limits and is achievable.
Archaeology and Cultural Heritage		
	Archaeology and Cultural Heritage – Significantly harmful to the Angel and Neutral (all other areas)	Historic England are content that the gantries are not intrusive but defer to the local authority as the Angel is not statutorily designated. The removal of trees at the Angel of the North has been assessed as moderate beneficial, opening up views and allowing the artwork to be seen more as originally intended. The introduction of gantries would restrict some views, but these would be fleeting and not apparent to all travelers experiencing the monument. The minor adverse impact (slight adverse significance of effect) is only to the views of road users and does not affect the heritage value of the asset. The Applicant has assessed that there will be a moderate adverse significance of effect on the Bowes Railway and also on the ridge and furrow earthworks to the west of the Bowes Incline Hotel. The harm will be offset by the measures outlined in CH1-7 of the REAC in the CEMP.
5.14	The Environmental Statement (ES) dated August 2019 has been produced by Highways England (HE). Chapter 6 of the document refers to the Cultural Heritage assessments that have been undertaken. Chapter 7 refers to the landscape and visual assessments that have been undertaken.	Agreed
5.15	The Council considered that the approach set out in chapter 6 is appropriate. The Tyne & Wear Archaeology Officer who provides advice to Gateshead Council was consulted by Highways England on the preparation	Noted

Para No.	Local Impact Report Statement	Applicant's Response
	of this chapter of the ES and is satisfied with the methodology used and the baseline assessments.	
5.16	The impacts on the defined archaeology sites have been assessed during the construction phase, with the impacts foreseen to be of negligible and low value. Further to this, the assets are well understood in terms of their function and date.	Agreed
5.17	The impacts on the Bowes Scheduled Ancient Monument have been discussed with Historic England. The Council agrees with the Historic England that the assessment of harm set out in chapter 6 of the ES does not properly reflect the impact of the proposed works on the significance of the Bowes Railway. There will be substantial harm to a limited section of the monument but overall, a moderate adverse effect.	Whilst the Applicant acknowledges Historic England's position that there will be substantial harm to a limited section of the monument, the Applicant assessed the impact to the monument as a whole. It is noted that both the Council and Historic England are in agreement with the overall assessment of a "moderate adverse significance of effect" which equates to less than substantial harm.
5.18	The Council welcomes the initial survey work of the areas of land to be used for compounds. However, this work does not include the additional land use to the east of Lamesley Conservation Area. This level of survey should be extended to that site.	A geophysical and topographical survey have been undertaken on the additional land. The topographical survey results have noted that there are no extant earthwork remains within the additional land, outside of the conservation area. The geophysical survey results recorded the location of a former hedgerow and a remnant watercourse. It should be noted that additional land proposals are not part of the Application currently under Examination but updated information for the ExA is being provided for Deadline 4. A survey has been undertaken for the additional land and the report will be available to be submitted at Deadline 4.
5.19	During the construction phase, there is an appreciation that the siting of the temporary site compound to the east of Lamesley Conservation Area will have adverse impacts on the setting of the conservation area. The Council recognises that this is a temporary effect and that there is no long-term harm to the significance of the conservation area.	Noted and agreed
5.20	From reviewing the above, the Council considers that the archaeological impacts of the scheme are not substantial, and the referenced issues are mitigated through the measures identified within the CEMP and draft requirement 9.	Noted and agreed and further to this all mitigation measures will be outlined within the CEMP [APP-174] and the Outline WSI [due to be submitted at Deadline 4 future Deadline].
5.21	Chapters 6 and 7 of the ES refer to the culturally significance Angel of the North and its setting. The Council also references the NECT study (2018) – A Study of the Significance which the Angel gains from its Setting and the Southern Green Options Appraisal for Managing and Enhancing the Angel (January 2020).	Noted. The Applicant has a copy of the NECT study and has recently been issued (3/3/20) with the final Southern Green Options Appraisal the contents of which are being considered by the Applicant and will form the basis for a planned workshop with Gateshead Council on the 24 March 2020.
5.22	The cultural assessment states that the scheme will have short term impacts on the setting of, and views of the Angel due to construction works. The scheme allows for continued access to the Angel by visitors and residents during the course of the construction works which is welcome. The Council accepts that this impact arising from the construction works is short term.	Noted
5.23	The scheme will have longer term impacts on the setting of, and views of, the Angel. The Council considers that the impacts arising from the number and position of gantries along the A1, and the design of the	The Applicant does not agree with the assessment of significant harm to the setting of, and views of the Angel. The Scheme comprises

Para No.	Local Impact Report Statement	Applicant's Response
	proposed footbridge, from the approach to the footbridge through to Team Valley/Lamesley junction are significantly harmful not neutral.	improvements to an existing major highway corridor that runs immediately adjacent to the Angel of the North, the location of which was chosen to be conspicuous to the users of the A1 and the wider Team Valley. The Council considers that the impacts arising from the number and position of gantries along the A1 and the design of the replacement North Dene Footbridge would give rise to significant harm. The number, placement, type, sign face design and structural form of the gantries have been determined in accordance with Highways England's guidance at the time. The main driver for the guidance in respect of gantry locations is being the safe operation of the highway. The Applicant has undertaken an assessment of the gantries against viewpoints and associated receptors previously agreed with Gateshead Council (refer to emails dates 26/02/2018 and 16/03/2018 in Table 2.1 - Record of Engagement in the Deadline 2 Submission - 7.5A Statement of Common Ground with Gateshead Council). The assessment of the gantries is described in "Applicant's Responses to ExA's First Written Questions – Appendix 1.5B – Gantry Assessment Schedule". The Applicant has also prepared a Technical Landscape Paper, providing a narrative of the views of the Angel of the North, experienced along the southbound A1 between junctions 67 (Coal House) and junction 66 (Eighton Lodge), and northbound between junction 65 (Birtley) and 66 (Eighton Lodge), this is provided in Deadline 2 Submission - Applicant's Responses to ExA's First Written Questions – Appendix 1.5 A - Angel of the North Narrative. Further to the assessment of gantries, photomontages have been updated where they include gantries and the Angel of the North to demonstrate the nature and scale of the impacts. These are included within the following documents: • Deadline 2 Submission - Applicant's Responses to ExA's First Written Questions - Appendix 1.5 C - Banesley Lane Woodland Photomontage • Deadline 2 Submission - Applicant's Responses to ExA's First Written Questions - Appendix 1.5 D -Lamesley Road Photomontage • Deadline 2 Submission - Applicant's Responses to ExA's First Written Questions - Appendix 1.5 E - Angel of the North Photomontage • Deadline 2 Submission - Applicant's Responses to ExA's First Written Questions - Appendix 1.5 G - Kibblesworth Photomontage

Para No.	Local Impact Report Statement	Applicant's Response
		The replacement of the North Dene footbridge has been assessed within the assessment of landscape character and where relevant the views, outlined in Chapter 7: Landscape and visual [APP-028] and Appendix 7.1: Visual Effects Schedule [APP-121]. This is a replacement structure within the context of the existing A1 corridor and is therefore not anticipated to give rise to a significant impact, although its form would similarly interrupt the view of the Angel of the North in a northerly direction and for users of the A1. The design of the footbridge and options considered are outlined in **Appendix 5.1** of this document. The conclusions of the above assessment supports the findings of Chater 7: Landscape and visual [APP-028] within the ES, and has not identified a significant effect following construction and associated with views from the Angel of the North, nor in views that include the Angel of the North from the agreed receptors and viewpoints with the exception of three receptor locations (R7, R8 and P3), the occupants and users of the receptors being subject to a significant effect (moderate adverse) as a result of the proposed Allerdene viaduct option. The views and appreciation of the Angel of the North would not be significantly impacted by the presence of the gantries on the basis that the Scheme has identified mitigation as outlined on Figure 7.6: Landscape Mitigation Design [APP-061] which is based on the existing landscape which is the appropriate basis for assessment and mitigation, the mitigation being secured through L4 – L15 of the Outline CEMP [APP-174].
5.24	The scheme will initially remove a large amount of the existing tree growth around the Angel in order to facilitate the construction works. The Council commissioned Southern Green in 2019 to produce an options appraisal for the Angel landscape setting. The Council's preferred option is to implement option 3 'Revealing the Angel'. This follows directly from the tree clearance works which will be carried out to facilitate construction. Therefore, the impact of the proposed gantries and new footbridge must be assessed against a cleared landscape background and not the existing tree cover.	The Scheme will only remove that which is necessary to construct the proposed changes to the A1 corridor. The assessment has correctly undertaken the assessment against the existing baseline and has developed mitigation proposals that reflect a requirement to replace landscape features where appropriate or to mitigate significant effects. This has included the replacement of woodland identified between chainage 12300 and 12560 on Figure 7.6: Landscape Mitigation Design [APP-061]. The Applicant currently does not intend to undertake further assessment against an assumed background of cleared vegetation. A copy of the mentioned Southern Green Report has been received from Gateshead (3rd March 2020). This sets out options that could be taken forward to improve the context and setting to the Angel of the North. However, this is simply an expression of the Council's preference. As previously stated, the Applicant has made arrangements to hold a workshop with Gateshead Council to discuss supporting the Council's vision for the site, that reflects Option 3 in the Southern Green Options Report.

Para No.	Local Impact Report Statement	Applicant's Response
5.25	The Council commissioned a study examining the significance of the setting of, and views of the Angel in 2018. The report observes that the Angel is intended to be boldly exposed to the passing traffic. The effects of the proposed bridge design and gantries can be clearly understood from the images set out on page 57 of the NECT report. The design of the bridge will fully obscure views of the Angel on the northbound approach. Once past the footbridge the views remain obscured by the proposed gantries. The effects of the infrastructure proposed on the north bound approach to the Angel are replicated on the south bound approach. This harmful impact on the views of, and experience of the Angel as you pass by on the A1 is significant.	The Applicant has prepared a Technical Landscape Paper, providing a narrative of the views of the Angel of the North, experienced along the southbound A1 between junctions 67 (Coal House) and junction 66 (Eighton Lodge), and northbound between junction 65 (Birtley) and junction 66 (Eighton Lodge), this is provided in Deadline 2 Submission - Applicant's Responses to ExA's First Written Questions – Appendix 1.5 A - Angel of the North Narrative. This includes views comparable to those identified on page 57 of the NECT report. The replacement of the North Dene Footbridge would result in a structure that interrupts rather than obscures the transient views experienced by the users of the A1 in a northbound direction. The final design of the bridge could be subject to a requirement of the DCO to construct a design that avoids unnecessary interruption to views of the Angel of the North. The Applicant disagrees with the statement that the effects of the infrastructure on south bound approach are replicated and would be significant. The narrative provided in the above document identifies that for the most part, the views of the Angel of the North are not frequently interrupted. Rather, it is a combination of woodland and landform in the intervening landscape that obscures views for the occupants of vehicles. As previously stated, the Applicant has undertaken an assessment of the gantries against viewpoints and associated receptors previously agreed with Gateshead Council (refer to emails dates 26/02/2018 and 16/03/2018 in Table 2.1 - Record of Engagement in the Deadline 2 Submission - 7.5A Statement of Common Ground with Gateshead Council). The Applicant has undertaken an assessment of the gantries, and this is described in "Applicant's Responses to ExA's First Written Questions – Appendix 1.5B – Gantry Assessment Schedule". The conclusions of the assessment are that the inclusion of gantries within some of the views would not give rise to the modification of the findings described within Chapter 7: Landscape and visual [APP-028] to give rise to a significant effect.
5.26	The draft CEMP part CH1 states that less dense replanting will be implemented to enable greater visibility of the Angel, and at L14, that the woodland to the south of the Angel would be subject to tree management to improve the visibility of the Angel. Draft requirement 5 refers to the detail of the approved landscape plan. The proposed landscape plan is set out at figure 7.6 of the ES.	The council's observations are noted and responded to below.
5.27	From reviewing the above, the Council considers that the scheme submitted in the ES and referred to at CH1 and L14 of the draft CEMP does not respond to the issues set out in the NECT report. The Council	As stated above, The Scheme will only remove that which is necessary to construct the proposed changes to the A1 corridor. The assessment

Para No.	Local Impact Report Statement	Applicant's Response
	requests that the scheme presented at figure 7.6 is revised to align with the Council's preferred option (option 3) set out in the SG report. The scheme as presented has a harmful and negative effect on the significance of the Angel.	has correctly undertaken the assessment against the existing baseline and has developed mitigation proposals that reflect a requirement to replace landscape features where appropriate. This has included the replacement of woodland identified between chainage 12300 and 12560 on Figure 7.6: Landscape Mitigation Design [APP-061]. As previously stated, the Applicant has made arrangements to hold a workshop with Gateshead Council to discuss supporting the Council's vision for the site, and that reflects Option 3 in the Southern Green Options Report. The Applicant may make amendments to the proposed mitigation in the vicinity of the Angel of the North as indicated on Figure 7.6: Landscape Mitigation Design [APP-061], subject to the outcome of the workshop and to support Gateshead Council in their vision for the Angel of the North. The design that emerges from the workshop and is agreed with Gateshead Council should be cognisant of the presence of the proposed gantries.
Landscape and Visual Effects		
	Landscape and Visual Effects – Negative Impact	The Applicant agrees that in the short to medium term (up to the Design Year at Year 15) there would be a negative impact on the perception of landscape character, this would remain significant for the Allerdene viaduct option in year 15. Negative visual impacts are anticipated to remain in year 15, following the establishment of the mitigation design (refer to Figure 7.6: Landscape Mitigation Design [APP-061], as a result of the Allerdene viaduct option. However, the assessment of visual effects has concluded that overall the effect on visual receptors would not be significant.
5.29	The Council is satisfied with the methodology, initial assessment of the baseline conditions and agreed selection of viewpoints, receptors and photomontage locations. However, the extent and adverse impact of the overhead signage and replacement footbridge became apparent at a later stage, and assessment and mitigation of this is ongoing.	The applicant acknowledges the agreement on the methodology, initial assessment of the baseline conditions and selection of viewpoints, receptors and photomontages locations. As identified by the Council further consideration of the proposed gantries is required along with identification of appropriate mitigation. This has been undertaken as described below. The Applicant does not agree with the assessment of significant harm to the setting of, and views of the Angel of the North. The Scheme comprises improvements to an existing major highway corridor that runs immediately adjacent to the Angel of the North, the location of which was chosen to be conspicuous to the users of the A1 and the wider Team Valley. The Council considers that the impacts arising from the number and position of gantries along the A1 and the design of the replacement North Dene Footbridge would give rise to

Para No.	Local Impact Report Statement	Applicant's Response
		significant harm. The number, placement, type, sign face design and structural form of the gantries have been determined in accordance with Highways England's guidance at the time. The main driver for the guidance in respect of gantry locations is being the safe operation of the highway. The Applicant has undertaken further assessment of the gantries, and this is described in "Applicant's Responses to ExA's First Written Questions – Appendix 1.5B – Gantry Assessment Schedule". The Applicant has also prepared a Technical Landscape Paper, providing a narrative of the views of the Angel of the North, experienced along the southbound A1 between junctions 67 (Coal House) and junction 66 (Eighton Lodge), and northbound between junction 65 (Birtley) and junction 66 (Eighton Lodge), this is provided in Deadline 2 Submission - Applicant's Responses to ExA's First Written Questions – Appendix 1.5 A - Angel of the North Narrative. Further to the assessment of gantries, photomontages have been updated where they include gantries and are included within the following documents: • Deadline 2 Submission - Applicant's Responses to ExA's First Written Questions - Appendix 1.5 C - Banesley Lane Woodland Photomontage • Deadline 2 Submission - Applicant's Responses to ExA's First Written Questions - Appendix 1.5 D -Lamesley Road Photomontage • Deadline 2 Submission - Applicant's Responses to ExA's First Written Questions - Appendix 1.5 E - Angel of the North Photomontage • Deadline 2 Submission - Applicant's Responses to ExA's First Written Questions - Appendix 1.5 F - Chowdene Bank Photomontage • Deadline 2 Submission - Applicant's Responses to ExA's First Written Questions - Appendix 1.5 G - Kibblesworth Photomontage The replacement of the North Dene footbridge has been assessed within the assessment of landscape character and where relevant the views, outlined in Chapter 7: Landscape and visual [APP-028] and Appendix 7.1: Visual Effects Schedule [APP-121].
5.30	This scheme is largely an on-line widening of an existing major road, so the harm is in intensifying existing unattractive aspects of the highway corridor and in removing established mitigation measures, re-exposing the adverse impacts of the initial construction.	The Applicant agrees that the Scheme is an online widening, and as such the design and potential to mitigate is restricted and requires the removal of some existing and established mitigation in order to construct the Scheme. This would expose both existing

Para No.	Local Impact Report Statement	Applicant's Response
		and proposed features of highway infrastructure resulting in adverse impacts on landscape character and on visual receptors. Mitigation outlined in Figure 7.6: Landscape Mitigation Design [APP061] outlines the Applicant's proposed measures to limit the magnitude of impact on landscape character and on visual receptors, reinstating landscape features where feasible. As a result, adverse impacts identified within Chapter 7: Landscape and visual [APP-028] and summarised in Table 7-13 – Significant landscape character effects would be mitigated so as to avoid a significant effect for the Allerdene embankment option. Significant adverse effects are anticipated to remain as a result of the Allerdene viaduct option but at the lower end of the scale (moderate adverse). The assessment of visual effects has identified that significant effects would not arise as a result of the Allerdene embankment option but would occur as a result of the Allerdene viaduct option on a small number of receptors with near distance and direct views of the proposed viaduct.
5.31	The widening of carriageway within the existing highway corridor in the southern part of the scheme will result in the loss of mature vegetation which cannot be fully reinstated within the site boundary. The widened road and associated infrastructure will be more visible within the semi-rural, recreational greenbelt landscape. From the Low Eighton roundabout northwards, the mitigation planting will ultimately be more effective and may reduce adverse impacts to negligible by the design year of 15 years post-completion.	The Applicant assumes that the reference to the southern part of the Scheme refers to the corridor to the south of junction 66 (Eighton Lodge) and extends south to junction 65 (Birtley). The widening of the carriageway will require the removal of some of the existing roadside vegetation in order to undertake construction works. Where feasible existing vegetation will be retained, secured through reference to L3 in Table 3-1 REAC in the **Outline CEMP** [APP-174]. The corridor is currently bounded to the west and south by an existing belt of semi mature and mature shrubs and trees, that during the summer months provides a reasonable and effective screen of the A1's traffic and infrastructure to nearby property and footpaths. This vegetation is less effective during the winter months and in the absence of foliage and views are only filtered, with moving traffic readily perceptible beyond the planting. The Applicant has identified the requirement for a noise barrier for a significant length of the corridor, extending between chainages 13320 to 14030 on the northbound carriageway, indicated on Figure 7.6: Landscape Mitigation Design [APP-061], which in addition to the acoustic mitigation provides an effective and year round screen to ground floor views from nearby property and footpaths that run parallel with the corridor. Further planting of shrubs and trees are proposed on the outer (property) side of the noise barrier to soften the appearance of the new structure, such that for the majority of visual receptors outlined in Appendix 7.1: Visual effects schedule [APP-121] and in Deadline 2 Submission - Applicant's Responses to ExA's First Written Questions – Appendix 1.5 B - Gantry

Para No.	Local Impact Report Statement	Applicant's Response
		Assessment Schedule, the replacement of the existing planting with a noise barrier and planting would be perceived as a beneficial impact. East and north of the A1, between junctions 66 (Eighton Lodge) and 65 (Birtley), the removal of some of the roadside vegetation, comprising scrub and outgrown hedges would initially give rise to an increased perception of the A1 corridor on rising ground to the east, as described in Section 7.10.47 to 7.10.55 of Chapter 7: landscape and Visual of the ES [APP-028]. The removal of existing roadside signs and introduction of the static and unlit gantries would slightly increase the perception of the A1 within the very broad and expansive views experienced looking across the Team valley landscape. As identified in Appendix 7.1: Visual Effects Schedule [APP-121] and in Deadline 2 Submission - Applicant's Responses to ExA's First Written Questions – Appendix 1.5 B - Gantry Assessment Schedule, there is anticipated to be a slight worsening in the impacts associated with receptors to the east of the A1 with the presence of the proposed gantries, however as a result of the presence of the widened corridor and gantries, and in taking in account the proposed mitigation measures, the anticipated effect is not considered to be significant. The existing A1 is an established feature within the landscape character to the north east of the A1 corridor and on rising ground. The widened road and associated infrastructure would be more visible within the rising ground to the north and east of the A1 as the landform rises towards Eighton Bank, which is designated as green belt. As identified above, an assessment of the landscape character and visual receptors associated with the location has identified there would be a slight worsening of the impacts as a result of the Scheme, including the gantries but that the overall conclusions of the assessment, taking into account the proposed mitigation measures on Figure 7.6: Landscape and visual [APP-061] would be unchanged and a significant effect is not anticipated to arise. The restoration of the boundary to the east of the A1, reinforcing the vegetation where appropriate. The Applicant acknowledges and agrees with the Council's observations that the mitigation planting north of the Low Eighton roundabout (junction 66) will ultimately be more effective and may reduce adverse impacts to negligible by the design year of 15 years post-completion.
5.32	The main adverse landscape impacts are medium term, resulting from the loss of roadside vegetation and will be mitigated to varying extents by the maturing of the landscape scheme from year 15 onwards.	The mitigation measures outlined in Section 7.9 of Chapter 7 of the ES [APP-028] and identified on Figure 7.6: Landscape Mitigation Design

Para No.	Local Impact Report Statement	Applicant's Response
		[APP-061] have been designed to achieve their desired function by the design year 15, aligning with the Council's observation that the landscape impacts are medium term. These measures are secured through reference [L3 – L15] within Table 3-1 REAC in the Outline CEMP [APP-174]. As identified in Chapter 7: Landscape and visual of the ES [APP-028] and summarised in Table 7-13 – significant landscape character effects would be mitigated so as to avoid a significant effect for the Allerdene embankment option. Significant adverse effects are anticipated to remain as a result of the Allerdene viaduct option but at the lower end of the scale (moderate adverse). The assessment of visual effects has identified that significant effects would not arise as a result of the Allerdene embankment option but would occur as a result of the Allerdene viaduct option on a small number of receptors with near distance and direct views of the proposed viaduct.
5.33	The main adverse visual impacts are on users of the A1 viewing the Angel, due to the obstruction of views by new overhead structures, and views from the Angel, and this is a permanent change. Consideration of the extent of the impacts and mitigation is ongoing	The number, placement, type, sign face design and structural form have been determined in accordance with Highways England's guidance at the time. The main driver for the guidance in respect of gantry locations is the safe operation of the highway. The Applicant acknowledges that visual impacts would occur on the users of the A1, with those travelers with a view northward of the Angel of the North, between junction 65 (Birtley) and 66 (Eighton Lodge) having a perceptible worsening of the view. To demonstrate the potential impacts of the gantries the Applicant has prepared a Landscape Technical Report that provides a narrative on the views experienced by the users of the A1, and the East Coast Main Line (ECML). This can be found in the Applicant's Deadline 2 Submission - Applicant's Responses to ExA's First Written Questions – Appendix 1.5 A - Angel of the North Narrative. As requested by Gateshead Council an additional photomontage from the A1 south of the Angel of the North has been prepared from a location on the North Dene Footbridge as discussed and agreed following the meeting on the 19/2/20, and is appended to this response (at **Appendix 5.2**) .Our Approach to Photography and Photomontages on is also appended (at **Appendix 5.3**). Further to this, the Applicant has undertaken assessment of the gantries against viewpoints and associated receptors previously agreed with Gateshead Council (refer to emails dates 26/02/2018 and 16/03/2018 in Table 2.1 - Record of Engagement in the Deadline 2 Submission - 7.5A Statement of

Para No.	Local Impact Report Statement	Applicant's Response
		Common Ground with Gateshead Council). This is described in "Applicant's Responses to ExA's First Written Questions – Appendix 1.5B – Gantry Assessment Schedule". As referenced in the Applicant's Deadline 2 Submission - Applicant's Responses to ExA's first Written Question. For the purpose of the assessment of the gantries, the locations identified on Figure 7.6: Landscape Mitigation Design [APP-061]. To support the understanding of the impacts of the gantries on agreed viewpoints, revised photomontages for those viewpoints with an appreciation of gantries has been undertaken and are provided in: • Deadline 2 Submission - Applicant's Responses to ExA's First Written Questions - Appendix 1.5 C - Banesley Lane Woodland Photomontage • Deadline 2 Submission - Applicant's Responses to ExA's First Written Questions - Appendix 1.5 D -Lamesley Road Photomontage • Deadline 2 Submission - Applicant's Responses to ExA's First Written Questions - Appendix 1.5 E - Angel of the North Photomontage • Deadline 2 Submission - Applicant's Responses to ExA's First Written Questions - Appendix 1.5 F - Chowdene Bank Photomontage • Deadline 2 Submission - Applicant's Responses to ExA's First Written Questions - Appendix 1.5 G - Kibblesworth Photomontage Appendix 7.1: Visual Effects Schedule [APP-121] and in Deadline 2 Submission - Applicant's Responses to ExA's First Written Questions – Appendix 1.5 B - Gantry Assessment Schedule. The assessment identified that for the majority of receptors the assessment in Appendix 7.1: Visual Effects Schedule [APP-121] would not be changed, with the exception that for eleven receptor groups there would be a worsening of the effect, from neutral or slight beneficial to slight adverse which is not considered significant.
5.34	There would be short-term adverse impact during construction from the works and compounds. This is expected to be of several years duration but would ultimately be temporary.	The works and associated compounds are expected to be present within the landscape and within views thirty six months, and the Applicant is content that Gateshead Council considers these to be temporary. The Applicant can confirm that the assessment of likely significant effects outlined in Section 7.10 of Chapter 7: Landscape and visual [APP-028] sets out the likely temporary effects from the works, including site compounds. The assessment identified that with the exception of Landscape Character Area 1 Team Valley

Para No.	Local Impact Report Statement	Applicant's Response
		the remaining character areas would not be subject to a significant effect. Landscape Character Area 1 – Team Valley would be subject to a significant effect (moderate adverse), but that for the Allerdene embankment option this is anticipated to reduce in the winter of the opening year to slight adverse (not significant), whilst for the Allerdene viaduct option the effect would remain significant (moderate adverse).
5.35	In landscape and visual terms the embankment option with sufficiently shallow side-slopes for woodland planting is preferable at Allerdene Bridge. It will ultimately screen much of the road from the receptors and visually link the woodlands at Longacre and Ravensworth estate across the valley.	The observations on the preference of the Allerdene embankment option are noted. As identified within Chapter 7: Landscape and Visual [APP-028] section 10, the embankment option would not give rise to a significant effect in the design year. The Allerdene viaduct option would give rise to significant landscape effects on LCA 1 – Team Valley (refer to Table 7-13 – Significant landscape character effects in Chapter 7: Landscape and visual [APP-028], and a significant effect (moderate adverse) on three visual receptor groups (refer to Table 7-16 - Significant visual effects during summer of design year in Chapter 7: Landscape and visual [APP-028]) where near distance and direct views are anticipated to arise. Where construction methods permit slopes identified for planting would be profiled so as to be suitable for planting, this is secured in the response to the Examiner's Question 1.6.3 at Deadline 2, and is secured in the CEMP (refer to Outline CEMP of the ES [APP-174]), Table 3-1 Register of Environmental Actions and Commitments (REAC), Ref [L7]. The assessment of landscape effects identifies that in the Summer Design Year the effect of the Allerdene embankment option on Landscape Character Area 1 – Team Valley would be slight adverse (not significant) whilst the Allerdene viaduct option would be moderate adverse (significant). The remaining character areas not anticipated to be subject to a significant effect (neutral or slight adverse). In visual terms the effects in the Summer Design Year are broadly comparable for the Allerdene embankment and viaduct option. For those visual receptors with a view of the crossing of the ECML there would be some discernible differences, for R7 and R8 and P3 the effect for the Allerdene viaduct option would be moderate adverse (significant), refer to Chapter 7: Landscape and visual, Table 7-16 Significant visual effects during summer of design year [APP-028]. The effects in the Summer Design Year for the Allerdene embankment option are anticipated to be no greater than slight adverse (not significant).
5.36	The location of any off-site compensation planting has not been identified. No off-site mitigation planting has	The Scheme is currently achieving an area for area replacement, and

Para No.	Local Impact Report Statement	Applicant's Response
	been provided.	the mitigation strategy has been designed based on an understanding of the areas of habitat loss and gain. In addition, the strategy seeks to improve habitat quality and provide additional connectivity. Therefore, the Applicant does not consider that further off-site compensation planting is required. Subject to further discussions to be had with Gateshead Council on the planting associated with the Angel of the North it may be that some compensatory planting may be appropriate and in the first instance this would be considered within the context of the current landscape strategy outlined in Figure 7.6: Landscape and visual [APP-061] and the DCO application boundary. If suitable areas for planting are not identified, the Applicant is willing to discuss potential locations identified by Gateshead for compensatory woodland to replace planting that would otherwise be included within the current landscape design, on an area for area basis.
Flood Risk, Water Quality and Drainage		
	Flood Risk, Water quality & Drainage – Neutral/Negative Impact	Effects of the Scheme on Road Drainage and the Water Environment, as detailed in Chapter 13 of the ES [APP-034] section 13.10 Assessment of Likely Significant Effects, range from slight beneficial to slight adverse and these are summarised below. **<u>During Construction</u>** Water Quality: River Team and Allerdene Burn – slight adverse Water Quality: other watercourses, Flood risk: fluvial floodplain, Flood risk: pluvial floodplain, Human safety and Groundwater – neutral **<u>During Operation</u>** Water quality – River Team and Allerdene Burn – slight beneficial Water Quality: ordinary watercourse at Longacre Dene - neutral Water Quality: other watercourses – slight beneficial Fluvial flooding: River Team and Allerdene Burn, Flood risk: pluvial floodplain, Human safety and Groundwater – neutral
5.37	The impact upon flood risk and water quality of the proposed drainage scheme would be neutral if the currently proposed scheme is amended to more naturalised design of watercourse realignments; inlet and outlet features; and the drainage basin. Naturalistic design is essential to mitigate against the increased size of the concrete abutments to the Coalhouse Viaduct which are against the principles of the WFD which looks to minimise engineered elements	As the Scheme has developed, we have consulted with the LLFA function of Gateshead Council, who have not always taken the opportunity to attend the Scheme meetings. They did, however, provide comments via email on the 18 June 2019 (**Appendix 5.4**) stating that they had no further comments on the Scheme, despite having had the opportunity to review the FRA (including the drainage

Para No.	Local Impact Report Statement	Applicant's Response
		strategy) [APP-163] and the Road Drainage and Water Environment ES Chapter [APP-034]. A response from the Applicant is provided in their response to Gateshead's written representation [REP1-005] Each of the aspects of the question are addressed in turn: **Naturalised Design of the Channel** The design of the realigned Allerdene Burn channel has been constrained by needing to ensure that we do not impact third parties by adversely impacting the flood risk to land which is not being permanently acquired by the Applicant. The channel is already highly modified and has a number of flow constraints along its length, these combined with the current banks and channel profile etc. means that it is difficult to vary the characteristics without adversely impacting the flood risk to adjacent third party land. The mitigation measures to be implemented as part of the realigned channel are secured through the Outline CEMP [APP-174] within W10. The landscape design around the channel reflects the requirement to ensure that a mosaic of habitats including woodland, hedgerows and scattered trees, along with substantial areas of species rich grassland, appropriate to the location and nature of the ground conditions is provided and this would include variation of the seeding specification and ongoing management to ensure delivery of diverse habitats. The detailed design of the channel profile, and outline and profile of the SUDS basin would be refined during the detailed design period within the agreed parameters laid out in the Surface Water Drainage Strategy which forms Appendix C of Appendix 13.1: Flood Risk Assessment of the ES [APP-163]. The watercourse is predominately controlled by the need to avoid adverse impacts on third parties in the longer term. The highly engineered baseline scenario, controls where waters spill and when which has been a challenge to replicate in the new design, which has established that small changes to the banks and channel have wider adverse implications that cannot be addressed without changing the flood regime. • The improvements planned for the channel currently include naturalised design features, inclusion of species rich grassland on the banks and deculverting of sections. Replacement of running water habitat for any loss is secured within [B1] of the Outline CEMP [APP-174]. Other measures for improvement of Allerdene culvert will be progressed at detailed

Para No.	Local Impact Report Statement	Applicant's Response
		design stage as detailed in [W10] of the Outline CEMP [APP-174] the following measures will be considered at detailed design: • Improving the channel design and providing enhancement to the river environment and morphology by, for example, inclusion of pools and riffles (or similar features to increase biodiversity) constructing a two-stage channel, adopting bioengineering techniques, such as rock rolls and mattresses, to maintain the channel profile and by re-vegetating the banks of the proposed channel realignment. • Where new culvert inlets are required, naturalised design features will be utilised, if design allows. Measures such as avoiding planting at the openings to the culvert to increase natural light entering the internal space, and an inclusion of a layer of soil and debris within the culvert to create a natural bed to encourage use will be considered. The design would be submitted to the SoS for approval after Gateshead Council has been consulted. **Inlet / outlet features** The design approach is for the existing outfalls to be utilised, some of which are beyond the Order limits. The Order limits are set as close as possible to the existing highway landownership so as to avoid impacts on third party land as well as that on existing biodiversity. The approach to prevent adverse WFD impacts and incorporate naturalistic design of the inlets/outlets is provided in the Outline CEMP [App 174][W10]. Appendix 13.2: Water Framework Directive (WFD) assessment of the ES [APP-164] outlines that where existing surface water outfalls fall within the Extent of Works, detailed design will consider modifications to the outlet structure to ensure that they are set back from the watercourse, to reduce the impacts to flow. This is detailed in the Outline CEMP [APP 174] within [W10]. **Drainage basin** The Sustainable Urban Drainage System (SUDS) basin has been designed to be first and foremost a balancing pond to accommodate the volume required without adverse impacts on the landscape and biodiversity, a greater area would require more land and have more extensive adverse impacts on the existing landscape. **Abutments**

Para No.	Local Impact Report Statement	Applicant's Response
		The increase in size of the concrete abutments / piers is necessary to support the Kingsway Viaduct. The increase is relatively minor compared to the existing structures, whilst they are on the top of bank they are not located within the channel, and thus will not impact the normal flows for the current day scenario. They will only have an impact the water environment for the climate change scenario, as detailed within the FRA (paragraphs 4.2.6 and 4.2.12) [APP-163]. Therefore, they have no impact in WFD terms and do not require mitigation. The approach to prevent adverse WFD impacts and naturalistic design of the abutments is provided in the Outline CEMP [App 174] [(W9] and [W21]). **Likely Impacts / Significant Effects** We do not agree with Gateshead's assessment of impact of the Scheme on the Flood Risk, Water Quality and Drainage, our assessment of this is detailed in Chapter 13 'Road Drainage and the Water Environment' of the ES [APP-034]. In the preparation of this chapter we have engaged with the Environment Agency and agreed the water quality / WFD related effect. The chapter concludes that the likely significant effect on the water environment for the operation phase is: *Flood Risk* – neutral – runoff rates have been appropriately restricted, and flood plain compensation has been provided, these together ensure that there is no adverse impact as a result of the Scheme. Water quality – neutral or slight beneficial – this has been agreed with the Environment Agency as the measures are on the path to betterment with regards to the WFD (**Appendix 5.5**). In summary Table 13-9 of Chapter 13 of the ES, the Road Drianage and Water Environment, concludes that the operational phases of the Scheme would have a likely significant effect of Slight Beneficial / Neutral.
5.38	In addition to supporting WFD objectives, a more naturalistic design of the drainage features would comply with the objectives of the River Team Catchment Partnership and the emerging Gateshead Local Plan policies MSGP Policy 30:1a and b which require not culverting or building over watercourses wherever practicable; and encouraging catchment management through the removal of existing culverts and hard engineering	The Scheme is the enhancement of infrastructure which is already in place, therefore, the watercourses which are impacted are already culverted or built over and it is not practical or cost effective to remove these structures. Hard engineering features would be removed / enhanced where feasible. An example of this is provided in Appendix 13.2: Water Framework Directive (WFD) assessment of the ES [APP-164] which outlines that where existing surface water outfalls fall within the Extent of Works, detailed design would consider modifications to the outlet structure to

Para No.	Local Impact Report Statement	Applicant's Response
		ensure that they are set back from the watercourse, to reduce the impacts to flow. This is detailed in the Outline CEMP [APP 174] within [W10].
5.39	If the engineered approach to drainage design is followed, as illustrated in the drawings submitted to date, then the impact would be slight adverse.	It is not always appropriate for naturalistic design features to be selected. This is discussed in the response to paragraph 5.37 above, which outlines that the *Likely Significant Effects* within Chapter 13 'Road Drainage and the Water Environment' of the ES [APP-034] concludes that the likely significant effect on the water environment for the operation phase is: *Flood Risk* – neutral – runoff rates have been appropriately restricted, and flood plain compensation has been provided, these together ensure that there is no adverse impact as a result of the scheme. Water quality – neutral or slight beneficial – this has been agreed with the Environment Agency as the measures are on the path to betterment with regards to the WFD (**Appendix 5.5**).
5.40	As the detail design of the drainage system has not been submitted, I am unable to comments on other aspects of the scheme such as flood risk to the River Team, and impact upon water quality in the Team. If best practice is followed, and an appropriate drainage construction management plan followed, then the impacts during the construction stage and the operational stage should be neutral.	It is premature to consider that detailed design would be undertaken at this stage. This question and associated scoring is discussed in the response to paragraph 5.37. Noting that the **Outline CEMP** [APP 174] provides details on the committed mitigation for the construction phase.
Ground Conditions		
	Ground conditions – neutral impact	Likely Significant Effects within Chapter 9 'Geology and Soils' of the ES [APP-030] concludes that during the operational phase the likely significant effect on agricultural soils are minor to negligible, on human heath are negligible, on pollution of controlled waters are minor to negligible, on sensitive infrastructure susceptible to gas ingress are negligible and ground instability are minor to negligible, and during the operational phase on agricultural land are negligible, on infrastructure susceptible to gas accumulation are negligible and on ground instability are negligible.
5.41	The site development area has been assessed and inspected as part of the Council's Contaminated Land strategy, as part of the Local Authorities' obligations under Part IIA of the Environmental Protection Act of 1990 and has not been determined as "Contaminated Land". However, it is situated on potentially contaminated land based on previous historic uses, i.e. mainly from previous mining use and areas containing previously demolished buildings.	Potential sources of contamination based on the previous site use are listed within Paragraph 9.7.36 of the ES [APP-030] and are illustrated on Figure 9.3 of the ES [APP-076]. Potential sources of contamination based on the previous site use are listed within Paragraph 9.7.36 of the ES [APP-030] and set out below: • One recorded historical landfill within the Scheme Footprint described as Ravensworth Ann Pit Heap, located south of Smithy

Para No.	Local Impact Report Statement	Applicant's Response
		Lane and to the east of the ECML in the north of the Scheme Footprint. • One historical landfill (Northside Eighton Banks) located within the Study Area approximately 250m to the north of the carriageway between junction 65 (Birtley) and junction 66 (Eighton Lodge). • Contamination arising from fuel/oil spillages/spray from vehicles using the existing carriageway. • Relict paving potentially containing coal tar within macadam, associated with the former alignment of A69 to the north of Eighton Lodge by Longacre Wood. • Potential for hazardous mine gases (methane, carbon dioxide, hydrogen sulphide carbon monoxide) associated with underground workings (site wide). • Areas of Made Ground primarily located in the north of the Scheme associated with colliery spoil deposits. They are illustrated on Figure 9.3 of the ES [APP-076].
5.42	However, overall the potential level of contamination possibly being a hazard to site operatives and future site users is considered to be LOW, and that significant contamination of soils and made ground beneath these areas is not anticipated.	Paragraph 9.7.42 of the ES [APP-030] states that there is negligible risk to human receptors. Potential sources of contamination identified considered to pose low risks to human receptors given the likelihood and duration of potential exposure and negligible once mitigation measures (appropriate PPE, cover layer) implemented. Paragraph 9.10.10 of the ES [APP-030] states that there is negligible risk to human receptors.
5.43	The development area contains sections that are situated within or very near to a Coal Authority defined "Development High Risk Area" (formerly known as Coal Mining Development Referral Areas). These are areas, based upon Coal Authority records, where the potential land instability and other safety risks associated with former coal mining activities are likely to be greatest. This is because of the existence of possible or previous shallow coal mine workings within the site boundaries and mine shafts near to development area.	Paragraphs 9.7.17 to 9.7.24 (including Tables 9-9 and 9-10) of the ES [APP-030] provide details of former mine workings located within the study area. Paragraph 9.7.25 and Table 9-11 of the ES [APP-030] provide a summary of the Coal Mining Risk Assessment undertaken for the Scheme. Paragraphs 9.7.17 to 9.7.24 (including Tables 9-9 and 9-10) of the ES [APP-030] provide details of former mine workings located within the study area. Paragraph 9.7.25 and Table 9-11 of the ES [APP-030] provide a summary of the Coal Mining Risk Assessment undertaken for the Scheme. Potential impacts identified associated with the potential generation of ground gas and surface stability, are both mitigated to neutral with the implementation of the mitigation measures, which include undertaking further shallow coal working delineation ground investigation.

Para No.	Local Impact Report Statement	Applicant's Response
5.44	During the construction phase, the scheme will have a potential impact on ground conditions with possible risk from potential land contamination, land gas and coal mining issues. However, the Council is content with the mitigation measures proposed and the assessment of potential impacts. Once the scheme is operational, there could be slight impacts relating to contamination left from fill material. However, the defined measures in the Environmental Statement (ES) would mitigate any concerns. The Environmental Statement (ES) document refers to the Ground Condition assessments that have undertaken which have been carried out satisfactorily.	Measures, as set out in Section 9.9 of the ES [APP-030], are considered to appropriately mitigate potential impacts associated with possible land contamination, hazardous ground gas and coal mining issues. Mitigation measures related to potential impacts on land condition, land gas and coal mining issued are secured through GS1, GS4, GS5 and GS6 of Table 3.1: Register of Environmental actions and Commitments in the Outline CEMP [APP-174]). Noted
5.45	Where development is proposed on land which there is reason to believe that there is either unstable or potentially unstable land, and at potential risk from mitigating contamination, a remediation strategy will be required. During the construction phase, the scheme will have an impact on ground conditions and potential effect from mining issues will require the applicant to carry out additional investigations to determine the nature of the ground conditions and allow development subject to preventative, remedial or precautionary measures within the control of the applicant. As a result, there is a potential risk from potential land contaminants and coal mining. However, the mitigation measures recommended and the assessment of potential impacts to date within the ES is acceptable	Impacts relating to either unstable or potentially unstable ground derive from shallow coal working, which also have the potential to generate hazardous ground gas, which is only considered an issue when it accumulates within enclosed spaces. Mitigation measures related to potential impacts on ground gas and coal mining issued are secured through GS1, GS4, and GS6 of Table 3.1: Register of Environmental actions and Commitments in the Outline CEMP [APP-174]).
5.46	Site works must be completed in accordance with a CL:AIRE compliant Materials Management Plan (MMP) to ensure re-used material does not present a risk to human health or the Environment. This would ensure any contaminated material is re-used suitably as part of the cut and fill earthworks associated with the Scheme. In addition, contract works should be undertaken in accordance with a suitable Remedial Strategy, to be agreed with Gateshead Council ahead of site works starting	These measures are included within Chapter 9 Geology and Soils of the ES [APP-030]. Paragraph 9.9.8 (b) states that earthworks must be in accordance with a CL:AIRE compliant MMP and (g) states that a remedial strategy should be created and approved by the regulators where unexpected contamination is encountered. These measures are included within Chapter 9 Geology and Soils of the ES [APP-030] and secured through GS4 of Table 3.1: Register of Environmental actions and Commitments in the Outline CEMP [APP-174]). Paragraph 9.9.8 (b) states that earthworks must be in accordance with a CL:AIRE compliant MMP and (g) states that a remedial strategy should be created and approved by the regulators where unexpected contamination is encountered.
Transport and traffic – Positive Impact		
5.47	The value of the proposed improvement to the transport network in Gateshead is recognised in Policy CS13 of the Core Strategy for Gateshead and Newcastle upon Tyne, which states: 'The enhancement and delivery of an integrated transport network to support sustainable development and economic growth will be achieved by:	The support for the scheme in Policy CS13, related to realising the planned sustainable development and economic growth in Gateshead is welcomed.
5.47.2	2. Improving the operation of the transport network and its wider connections by:	*Noted*
5.47. iv	iv. The creation of additional capacity on the Strategic Road Network, including…. between the southern extent of the Lobley Hill Major Scheme improvements at Coalhouse and the A1/A194(M) bifurcation at Birtley.'	Policy CS13 provides express support for the creation of additional capacity on the strategic road network between Birtley and Coalhouse which is what will be delivered by the Scheme.
5.48	The improvements are particularly important because: • They will see the replacement of the existing bridge over the East Coast Main Line at Allerdene. This has had major maintenance difficulties for a number of years. The risks to the local transport network from any failure to replace this are:	*Noted* The positive contribution that the scheme makes on network resilience, and associated knock-on impacts in the wider area is noted. The recognition of the positive impacts of the scheme on road safety and congestion are welcomed.

Para No.	Local Impact Report Statement	Applicant's Response
	• Increased need for diversion of traffic onto local roads and resulting congestion. Reduced capacity on the A1 due to major repairs to the bridge in 2009 saw traffic on some local roads more than double; • Diversion of abnormal loads onto local routes. This is already in place, meaning that such loads have to travel through the main urban area of Gateshead, close to residential property; • Potential disruption to passenger and freight traffic on the East Coast Main Line; • They will improve road safety. Chapter 5 of the Transport Assessment (TR010031-000595-7.3) explains how the improvement will draw traffic from local roads with relatively high accident rates to the A1 (which has a lower one) leading to a net reduction of accidents. Table 5.1 of the Transport Assessment quantifies these benefits; • The scheme will improve traffic flow and reduce congestion. The benefits of this are estimated in Chapter 4 of the Transport Assessment. The major role of the A1 as a travel corridor both to and through central Tyneside emphasises the importance of ensuring its effectiveness for traffic movement is sustained. It serves key residential and business locations in Gateshead including Team Valley Trading Estate and the Metro Centre/Metro Green, as well as providing the main road link from the south (via the A184) to central Tyneside. While it is not, in itself, a sustainable transport link it is nevertheless seen as central to promoting development in urban locations where the opportunity to maximise accessibility to disadvantaged people and by non-car modes can be maximised.	
Walking and Cycling		
5.49	The Council is keen to promote the use of sustainable transport wherever possible. The existing A1 represents a significant barrier to pedestrian and cycle movement and the scheme represents an opportunity to overcome these wherever possible.	The purpose of the A1 Birtley to Coal House (the "Scheme") by Highway England is to provide improvements to the A1 NGWB which currently suffers congestion. It is expected that traffic will grow as a result of new housing and employment developments planned for the area. The impact of the proposed Scheme on Sustainable transport users have been considered in the form of Walking, Cycling and Horse-Riding Assessment and Review (WCHAR). Multi-modal surveys were undertaken and level of use by each mode were recorded. WCHAR is provided in Appendix D of TAR [APP-173]. As part of this study impact of "Severance "has been reviewed, however it should be appreciated that quantitative assessment of severance is not possible. As part of the WCHAR, potential impact of the proposed highway scheme on sustainable transport users in the area and on existing facilities have been reviewed and new opportunities for improvement for users that may require to offset the impact of the proposed highway scheme were identified in Transport Assessment [APP-173] Table 6-1 "Preliminary Design Stage Improvements for WCHs"
5.50	The Transport Assessment Report (APP-173) includes as Appendix D a 'walking, cycling and horse-riding assessment review.' A number of proposals for improving facilities are outlined in section 5 of the review and in general these are welcomed. However, it is not clear to what extent the proposals identified for implementation by Highways England have, or are being, included in the detailed design of the scheme. Additionally, in some cases alternative delivery paths have been identified, and it is not always clear why this	The extent the proposals identified for implementation by Highways England have been referred in Transport Assessment (TR010031/APP/7.3) Table 6-1 "Preliminary Design Stage Improvements for WCHs" have been identified which will be delivered as part of the scheme. These are as follows;

Para No.	Local Impact Report Statement	Applicant's Response
	is the case. From a Council perspective the issue of overriding importance is not the delivery mechanism, but in ensuring the improvements proposed are implemented.	• Installation of a fence to restrict access to the northbound carriageway for pedestrians and animals. • Provision of a 3.5m (unsegregated) pedestrian/cycle path over the bridge deck (with a 1.4m high parapet fence). • Provision of a 1 in 12 (minimum) gradient ramp to provide improved access for WCHs. • Installation of corduroy tactile paving to aid the movement of partially sighted WCHs. • Installation of a fence to restrict access to the northbound carriageway for pedestrians and animals. • The eastern headwall of the Longbank Bridleway Underpass to be located between a brick-built parapet wall and 2.0m high wooden close-board fence treatment, with the available width varying between approximately 1.5m (substandard) and 3.0m. • Provide a higher wooden close-board fence treatment to ensure that horses are not exposed to oncoming traffic and ensure a standard 3.0m wide passage is available across the entire width of the headwall. • Installation of a fence to restrict access to the northbound carriageway for pedestrians and animals. For clarity, the improvements proposed and discussed above are to offset the impact of proposed Scheme. The level of usage at the time of WCHAR study recorded were extremely modest and accordingly improvements to offset the impact of the proposed scheme were identified. It should be noted that as per DMRB guidance related to WCHAR, comprehensive assessment of routes within 5-mile radius around proposed scheme have been reviewed and general opportunities for improvements have been identified. However due to uncertainty over impact of proposed development at the time of authoring WCHAR report, improvements were recommended to be considered as part of the Designated Fund Application, however it has been established that improvements work recommended as part of Designated Fund Study are not required to offset the impact of proposed scheme.
5.51	In relation to promoting the use of sustainable transport the Council has raised the following specific concerns concerning the transport and traffic impact of the proposals:	Highways England have undertaken a review of provision for pedestrian, cyclists and horse riders as part of the scheme. The impact of the proposed Scheme on WCHs has been considered in the form of

Para No.	Local Impact Report Statement	Applicant's Response

	• Making additional efforts to reduce the severance impact of the A1 on pedestrians and cyclists, particularly at Coal House junction;
	• The need to develop complementary programmes of measures aimed at reducing the risk of:
	  • Scheme benefits being eroded by increased traffic generation;
	  • Increased car dependence. This is important in reducing the risk of the scheme coming into conflict with climate change and health objectives.
		a Walking, Cycling and Horse-Riding Assessment and Review (WCHAR). As part of this study impact of "Severance "has been reviewed, however it should be appreciated that quantitative assessment of severance is not possible
		As part of the WCHAR, potential impact of the proposed highway scheme on sustainable transport users in the area and on existing facilities have been reviewed and new opportunities for improvement for users that may arise from the development of the highway scheme were identified. The scope and justification for improvements to access and facilities for pedestrians and cyclists at the Coal House roundabout (Junction 67) are provided in Table 16 and Table 22 (Opportunities at the Coalhouse Interchange) of Transport Assessment Report [APP-173].
		
		The preliminary design stage improvements for WCHs" which will be provided as part of the scheme have been provided in in Transport Assessment (TR010031/APP/7.3) Table 6-1 "Preliminary Design Stage Improvements for WCHs"
		For clarity, the improvements proposed and discussed above are to offset the impact of proposed Scheme. The level of usage at the time of WCHAR study recorded were extremely modest and accordingly improvements to offset the impact of the proposed scheme were identified.
		
		Due to uncertainty over impact of proposed development at the time of authoring WCHAR report, improvements were recommended to be considered as part of the Designated Fund Application on a precautionary basis. However, it has been established that improvements work recommended as part of Designated Fund Study are not required to offset the impact of proposed scheme.
		
		The Applicant will continue to work with Gateshead council and support their initiatives around sustainable transport. Subject to availability and meeting the criteria, there may be opportunities to make use of Designated Funds available within Highways England to help support walking, cycling and horse-riding issues and the Applicant is happy to work with Gateshead Council to identify possible projects that may be able to benefit from this finding. However, the Designated Funding can only be used for capital expenditure and is not available to support operational initiatives or changing travel behaviour. There may also be other funding opportunities that Gateshead Council can explore such as through the Department for Transport Transforming Cities Fund.

5.52	The above concerns are set out in more detail in separate submissions to the Examination, notably in the response to Examination Questions 1.9.5 and 1.9.11. While important they represent matters of detail in the	Highways England has responded to these questions in the Deadline 2 (Applicant's Response to ExA First Written Questions) submission and

Para No.	Local Impact Report Statement	Applicant's Response
	proposal and do not undermine the overall benefit in transport terms.	has also responded to Gateshead's remarks at Deadline 3. For clarity, the preliminary design stage improvements for WCHs" which will be provided as part of the scheme have been provided in in Transport Assessment (TR010031/APP/7.3) Table 6-1 "Preliminary Design Stage Improvements for WCHs" improvements proposed. It is hoped that this provides clarity on what is proposed as part of the scheme.
Climate Emergency		
5.53	The declaration of a Climate Emergency inevitably raises questions over any proposals to increase road capacity. While such concerns are acknowledged it is considered they do not outweigh the need for this improvement.	Noted It is noted that the UK has committed to Net Zero by 2050 however the Government's declaration of a Climate Emergency is not a moratorium on the development of new roads or the improvement of existing roads.
5.54	Decarbonisation of the transport network will require investment across a range of measures, including better walking, cycling and zero carbon public transport as well as investment in zero emission vehicles. However, the economic and social needs of the Tyneside area will still require a major traffic route through western Gateshead, which the A1 provides. While some reduction in traffic levels overall can be expected it is likely that these will be focused on the local road network as the shorter journeys found on this are more readily substitutable by other modes. In addition, it is on local roads that there will be most need to reallocate existing road space to other modes, potentially leading to a shift in general traffic towards the A1. Work on the Tyneside Air Quality project (see response to Examination question 1.1.2) already suggests this is likely to be the case.	Noted The scheme is capable of being used by all vehicle technologies (including electric vehicles as well as those run on conventional fuel sources). Chapter 14: Climate [APP-035] of the ES acknowledges that there will be an increase of GHG emissions. As GHG emissions result in the same global climate change effects wherever and whenever they occur, the sensitivity of different human and natural receptors is not considered by the GHG assessment. The outcome of the assessment of GHG emissions associated with the Scheme is considered not significant.
6	**Conclusion**	
6.1	This report has been produced to consider the Local Impacts of the A1 Birtley to Coal House improvement scheme located in Gateshead.	Noted
6.2	This report has been prepared in accordance with the advice and requirements as set out in the Planning Act 2008, the Localism Act 2011 and Advice Note One: Local Impact Reports (Version 2, April 2012, The Planning Inspectorate).	Noted
6.3	The delivery of improvement works at this location has been an ambition for a number of years.	Noted
6.4	There is congestion at this key part of the A1 Western Bypass and this development will provide a means to relieve congestion by providing additional traffic capacity and improve the free flow of traffic on the A1.	Agreed
6.5	The construction of highway improvement works inevitably has impact on the local landscape, key landmarks, ecology and amenities in terms of noise and air quality. Construction works can also have a	Response covered in specific sections above.

Para No.	Local Impact Report Statement	Applicant's Response
	temporary adverse impact on traffic movement.	

Appendix 5.1 – North Dene Footbridge Strategic Option Report

A1

Birtley to Coal House Improvement Scheme

Structure Option Report 7

North Dene Footbridge

Structure no. A1//440.30

STKEY 8886

Registered office Bridge House, 1 Walnut Tree Close, Guildford, GU1 4LZ
Highways England Company Limited registered in England and Wales number 09346363

March 2018

A1 BIRTLEY TO COAL HOUSE IMPROVEMENT SCHEME

STRUCTURE OPTION REPORT 7

NORTH DENE FOOTBRIDGE

Highways England

Date: March 2018

Project No: HE PIN 551462
WSP Ref: 70015226

Prepared for:

Highways England
Lateral
8 City Walk
Leeds
West Yorkshire
LS11 9AT

Three White Rose Office Park
Millshaw Park Lane
Leeds
LS11 0DL

Tel: +44 (0) 113 395 6200
Fax: +44 (0) 113 395 6201
www.wsp.com

QUALITY MANAGEMENT

ISSUE/REVISION SUITABILITY	FIRST ISSUE P01 S1	REVISION 1	REVISION 2	REVISION 3
Remarks	Issue for comments	Final Issue – End of Stage 3 – Preliminary Design		
Date	January 2018	March 2018		
Prepared by	Shehed Al-Shalechy	Giovanna Brunetti Barchetta		
Signature	SAL	GBB		
Checked by	Hitan Mistry	Hitan Mistry		
Signature	HM	HM		
Authorised by	Nigel Rawcliffe	Nigel Rawcliffe		
Signature	NR	NR		
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PRODUCTION TEAM

CLIENT (HIGHWAYS ENGLAND)

Major Projects Senior Responsible Owner	Patrick Moran
Major Projects Programme Manager	Patrick Moran
Major Projects Project Manager	Nicola Wilkes
RIS Area 14 Coordinator	Graeme Watt
Senior User Representative	Simon Brown

WSP

RIS Area 14 Programme Director	Darren Powell
RIS Area 14 Programme Manager	TBA
Project Director	Darren Powell
Project Manager	Nigel Rawcliffe

TABLE OF CONTENTS

APPENDICES

EXECUTIVE SUMMARY

WSP have been commissioned under the CDF contract to progress the Stage 3 Preliminary Design works to increase the capacity of the route between A1 Junction 65 (Birtley) to Junction 67 (Coal House). The scheme involves upgrading from the existing Dual 2-Lane All-Purpose provision to a Dual 3-Lane All-Purpose Provision for this section of the road.

The existing North Dene Footbridge, located south of the A1 Junction 66 Eighton Lodge, is one of the many existing structures affected by the proposed improvements to the A1 alignment. This Structures Options Report has been prepared to assess the constraints/challenges associated with the structural works at North Dene Footbridge.

The study has shown that the existing North Dene footbridge (including ramps) would need to be replaced in its entirety. The new structure shall comprise a single clear span over the mainline with a 3.5m clear width throughout and a new 1 in 12 ramp provision to the west side.

The preferred structural form for the replacement bridge would comprise a structural steel bow truss footbridge structure with a simple steel beam ramp supported on steel trestles/columns on the west (northbound carriageway) side. A bow truss footbridge would provide a structure with enhanced aesthetic value whilst remaining a simple cost effective structural form for construction.

On the east (southbound carriageway) side the end of the main bridge will be supported on either a reinforced concrete trough or a reinforced concrete bankseat on reinforced earth embankment.

The estimated construction cost for the replacement structure is provided below.

- Steel Bow Truss Main Span support via a RC trough on the east side – Estimated Construction Cost £1.5-2.0 million (this includes for the demolition of the existing structure and construction of the new steel ramp to the west side).

- Steel Bow Truss Main Span supported via RC bankseat on Reinforced Earth embankments on the east side – Estimated Cost £1.2-1.5 million (this includes for the demolition of the existing structure and construction of the new steel ramp to the west side).

It is recommended that North Dene Footbridge be replaced with the following structure:

- Structural steel bow truss footbridge with a simple steel beam ramp structure supported on steel trestles/columns on the west (northbound carriageway) side. On the east (southbound carriageway) side, the end of the main bridge will be supported on a reinforced concrete bankseat supported on a reinforced earth embankment.

The following should be undertaken to verify the findings of this report and provide clarity on the works to be developed at detailed design.

- Liaison with key stakeholders to confirm acceptance of the proposed new bridge structural form and ramp provision.
- Review of the proposed sub structure/foundation options upon receipt of site investigation information.

1. INTRODUCTION

1.1 PROJECT BACKGROUND

1.1.1 WSP has been commissioned by Highways England to develop a scheme proposal for the A1 Birtley to Coal House Improvement Scheme.

1.1.2 The scheme development forms part of the Newcastle/Gateshead Western Bypass (NGWB) and is located on the A1 between Junction 65 (Birtley) to Junction 80 (Seaton Burn). The scheme is part of Highway England's Strategic Road Network serving the metropolitan area of Tyne and Wear.

1.1.3 The project is located between Junction 65 and Junction 67 on the NGWB and is 4.2km in length. The existing carriageway layout is:

- Southbound: Two lanes between Junction 67 (Coal House) and Junction 66 (Eighton Lodge) with an additional approaching lane between North Side Overbridge and Junction 66. Three Lanes between Junction 66 (Eighton Lodge) and Junction 65 (Birtley). The existing speed limit is 50mph between Junction 67 (Coal House) and North Side Overbridge and 70 mph thereafter.
- Northbound: Two lanes with a lane gain/drop between Junction 65 (Birtley) and Junction 66 (Eighton Lodge) and two lanes between Junction 66 (Eighton Lodge) and Junction 67 (Coal House). The existing speed limit is 50mph throughout.

1.1.4 The A1 NGWB is one of the most congested highway links in the North- East region with more than 110,000 vehicles using the route every day on the busiest section. Therefore, the junction has been identified as requiring the improvement to its existing layout in order to achieve the scheme objective.

1.1.5 At present, the junction has a significant adverse impact on; journey time reliability at peak time, route resilience, safety and environmental impacts.

1.1.6 The scheme objectives for the Junction improvement are structured around the Government's main objectives for transport, being

- To increase the capacity of the A1 between Junction 65 (Birtley) and Junction 67 (Coal House) from existing two lanes to three full standard lanes – to improve the safety for all road users and contribute to the Government's current safety strategy targets.
- Lane gain/drop between the Junctions
- Replacement of Allerdene Bridge achieving optimum whole life costs whilst taking into account future maintenance and operation, and disruption to users.
- New Junction layout at Coal House

1.1.7 The existing Allerdene Railway Bridge has a number of inherent design/construction deficiencies which cannot be easily resolved due to the complex structural form (half joints) and site constraints. The intention is for the existing Allerdene Bridge to be replaced as part of the A1 Birtley to Coal House Improvement Scheme.

1.1.8 Two alignment options were assessed for the replacement of Allerdene Bridge. These are:

- Option 1A - Replacement of Allerdene Railway Bridge as close as possible to the existing structure to enable the retention of Coal House interchange.
- Option 1B - Widening/Replacement of Allerdene Railway Bridge with a wider structure in its existing location and retention of Coal House Interchange and the existing alignment as far as is possible.

1.1.9 Works undertaken during PCF Stage 2 – Route Selection, confirmed Option 1A was the preferred option to be progressed onto the next stage and beyond. Refer to Appendix A for schematic plans of the preferred route.

1.1.10 The scheme is currently progressing within PCF Stage 3: Preliminary Design. The existing North Dene Footbridge, located south of Junction 66 Eighton Lodge of the A1, is one of the many existing structures affected by the proposed improvements to the A1 alignment.

1.1.11 Studies to date show that North Dene Footbridge would need to be modified to accommodate the new A1 highway alignment.

1.2 REPORT OBJECTIVES

1.2.1 This Structures Options Report has been prepared to assess the constraints/challenges associated with the structural works at North Dene Footbridge.

1.2.2 The report shall confirm the structural works to be further developed at PCF Stage 5 (Detailed Design).

1.2.3 Upon completion and sign off, this report shall provide Highways England with sufficient information/justification for seeking approval/funding to progress the scheme within the next stage of development.

2. EXISTING STRUCTURE

2.1 GENERAL DESCRIPTION

2.1.1 North Dene Footbridge (commissioned in the 1970s) is defined in SMIS with the following discrete structure number and structure key:

- /A1//440.30//
- STKEY 8886

2.1.2 The footbridge is located at OS Grid Reference 427538E, 557089N.

2.2 ORIGINAL STRUCTURE

2.2.1 The original North Dene Footbridge carried a footpath over the A1. The structure was built in 1972 and comprised three main spans consisting of concrete deck and steel beam composite construction. Each span was simply supported on piers which comprise steel tubular columns mounted on reinforced concrete plinths with spread footing foundations.

2.2.2 Two of the three main spans cross the northbound and southbound carriageway of the A1. The third span crossed the east verge/embankment and was supported on a reinforced concrete bank seat. Two additional spans, of similar construction, form stepped access ramps at the west end of the structure and are supported on reinforced concrete piers clad with artificial stonework.

2.2.3 Refer to Appendix B-1 for records drawings of the original structure.

2.3 STRUCTURE MODIFICATIONS IN 2017

2.3.1 In 2017, works were completed to replace the three main spans (spans 1-3) over the carriageway and east verge of the A1 with minimal alterations to the existing piers and bank seat. The reason for this was due to the major safety implications associated with excessive spalling concrete from the existing deck soffit falling onto the carriageway below. The upper access ramp (span 4), which is connected to span 3 was also replaced to avoid the requirement for temporary propping during the works.

2.3.2 All the new spans are simply supported and comprise twin stringer construction with 2No. main RHS members, laterally braced with a steel deck plate. The new replacement upper access ramp is of similar construction to the main spans but with a stepped ramp surface as per existing.

2.3.3 The clear width of the deck/ramps is 2.0m and the ramp approaches to the west end have a 1 in 6 gradient which is considered to be non-complaint in accordance with the ramp requirements as specified in BD29/17 Design Criteria for Footbridges.

2.3.4 Refer to Appendix B-2 for records drawings of the works undertaken in 2017.

2.3.5 Refer to Appendix B-3 for site photographs (taken September 2017) of the current North Dene footbridge provision. Based on the recently completed works to the main deck spans, the superstructure elements spanning the A1 are in good condition, however the existing ramps show signs of deterioration which would be expected of 50 year old structural elements.

2.4 STATUTORY UNDERTAKERS INFORMATION

2.4.1 Details of existing services within the scheme boundary are shown on the following service information plans provided in Appendix C:

- HE551462-WSP-VUT-BCH-DR-D-00001
- HE551462-WSP-VUT-BCH-DR-D-00002
- HE551462-WSP-VUT-BCH-DR-D-00003

2.4.2 The above information indicates the following services are located within the vicinity of North Dene footbridge and may potentially be affected by the works;

- British Telecom (BT108) – Located approximately 20m north of the existing footbridge. This route may potentially be diverted across the bridge as part of the scheme works.
- Northern Power Grid Services (NP109) – Crosses the carriageway just south of the existing footbridge location. Current proposals include the diversion of the existing LV underground mains cable to facilitate earthworks along the new A1 alignment.

2.4.3 At this stage it is assumed that all services which are found to affect the proposed bridge works shall be diverted/ protected accordingly to progress the works on site.

3. DESIGN CONSTRAINTS/PARAMETERS

3.1 PROPOSED NEW HIGHWAY ALIGNMENT

3.1.1 Preliminary design of the alignment to date indicates the highway cross section (comprising verge/mainline carriageway/central reserve/hard shoulder) would increase from 28m to circa 39m. The design of the new highway also requires a translation in the alignment towards the east side.

3.1.2 The increase in the highway cross section is attributed to the following key features;

- Increase in mainline capacity 4 lanes in both directions
- Provision of a developing hard shoulder on the east verge side
- Provision of raised verges, relative to the mainline carriageway, on both sides

3.1.3 The new highway design geometry cannot be accommodated by the existing arrangement of piers at North Dene footbridge leading to a requirement to replace the footbridge. However, the condition of the recently installed new mainline superstructure is good and it is anticipated that the three new spans could be carefully removed and set aside for re-use elsewhere on the network subject to geometric compatibility.

3.2 CLEAR SPAN MAINLINE STRUCTURE

3.2.1 It has been proposed that the new main line structure spanning the A1 should comprise a single clear span structure located on the same alignment as the original structure.

3.2.2 This would future proof the structure for potential alignment modifications. In addition a clear span structure would avoid obstructing the A1 and eliminate long term access and maintenance issues associated with intermediate supports.

3.2.3 The proposal for a clear span structure has been discussed with the Highways England's Safety Engineering and Standards (SES) who have confirmed this provision would be acceptable for further development.

3.3 CLEARANCE AND RAMP REQUIREMENTS

3.3.1 The requirements for the footbridge clearance and ramp provision have been subject to on-going discussion with key stakeholders and the NMU survey results which are summarised below.

3.3.2 The 24hr NMU surveys conducted in November 2017,demonstrated that on:

- Thursday 9th November 2017 the 24 hour two-way flow over the bridge was 59 movements (consisting of 38 pedestrians and 21 cyclists). Within that period, the peak hour (08:00-09:00) two-way flow over the bridge consisted of 7 movements (5 pedestrians and 2 cyclists)

- Saturday 11th November 2017 the 24 hour two-way flow over the bridge was 52 movements (consisting of 49 pedestrians and 3 cyclists). Within that period, the peak hour (11:00-12:00) two-way flow over the bridge consisted of 10 movements (10 pedestrians and 0 cyclists)

3.3.3 A review of the Local Authority development aspirations for the area, was set out within 'Planning for the future – Core Strategy and Urban Core Plan for Gateshead and Newcastle upon Tyne 2010-2030'. This showed parcels of land immediately to the north of the A1 (adjacent to North Dene footbridge) currently form part of the existing green-belt and have not been identified for development purposes prior to 2030.

3.3.4 Conversations between WSP and representatives of the Spatial Planning and Environment team at Gateshead Council have confirmed that,

"as housing need no longer provides exceptional circumstances for greenfield Green Belt land to be allocated for residential use in Gateshead, our emerging Land Allocations and DM policies document (MSGP) is not considering the development potential of such sites".

3.3.5 Therefore, it is not envisaged that NMU movements over North Dene footbridge will materially increase from existing usage levels recorded during the survey period.

3.3.6 With regards the required width of the North Dene footbridge, the survey results highlighted that the existing bridge is used by a combination of pedestrians and cyclists (although the maximum flow equated to 1 trip every 6 minutes on average during the peak period of usage between 08:00-09:00 on a weekday).

3.3.7 Reference has been made to the guidelines associated with the requirements for combined use by pedestrians and cyclists and Clause 12 of BD29/17 Design Criteria for Footbridge states the following:

The minimum widths for a footpath (or footway) and a cycle track on a bridge and ramps shall be:

	Pedestrian Path	Cycle Path	Total Width
When segregated by kerb not less than 50mm high	2.0m	2.7m	4.7m
When segregated by railings not less than 900mm high	2.0m	3.0m	5.0m
When segregated by a white line, colour contrast or surface texture	1.5m	2.5m	4.0m
Unsegregated	–	–	3.5m

3.3.8 In order to meet these requirements, an unsegregated bridge deck with a width of 3.5m should be provided. The increased width would provide adequate room for a pedestrian and cyclist or two cyclists to pass each other comfortably. This is also consistent with advice contained within TA 90/05, The Geometric Design of Pedestrian, Cycle and Equestrian Routes, which advises that the acceptable minimum width for a shared pedestrian/cycle route is 3.0m + at least 0.25m on either side (if bounded on both sides by a barrier or kerb).

3.3.9 The Highways England Project Management Team and the SES have both confirmed that a new 3.5m width footbridge provision would be acceptable for further development.

3.3.10 With regards to the required gradient of the access ramp on the west side, Clause 6.6 of BD 29/17 Design Criteria for Footbridges states that:

Ramps for pedestrians, cyclists and equestrians shall not be steeper than 1 in 20.
Where compliance with this would create difficulties in keeping the access on the desired line, avoiding long diversions, minimising environmental impact, or making best use of available space, a relaxation in ramp steepness may be considered to 1 in 15.
In cases of extreme difficulty the gradient may be increase up to 1 in 12. However, no ramp shall be steeper than 1 in 12. Where a ramp steeper than 1 in 20 is adopted then the reason for accepting this must be clearly documented and recorded, together with evidence of acceptance by the Overseeing Organisation.

3.3.11 The current gradient of the shallow-stepped ramp is 1 in 6 which is substandard even considering the possible relaxations noted above. Based on the information available to date it is considered that the existing ramp should be replaced with a 1 in 12 provision that is 3.5m wide to ensure compatibility with the new bridge structure over the mainline. The 1 in 12 ramp provision is preferred in comparison with a 1 in 20 ramp based on the following key benefits;

- Avoids extended diversions associated with navigation/climbing of long ramp sections
- Minimises the environmental impact associated with the removal and replacement of surrounding trees.
- Minimises the visual impact on neighbouring housing
- Provision of a more accessible ramp (including landings) for both cyclist and disabled users in comparison to the current 1 in 6 ramp provision.
- The cost of the new 1 in 12 ramp based on the site levels and a length of approximately 97m would be £272k* whereas the cost of a 1 in 20 ramp of approximately 150m would be £420k*.

*cost estimates for the ramps is based on previous similar type works

3.3.12 The Highways England Project Management Team and the SES have both confirmed that based on the anticipated benefits above and considering the limited usage of the structure, the replacement of the existing ramp with a new 3.5m width and 1 in 12 gradient would provide a cost effective improvement to the existing substandard ramp.

3.3.13 It is important to note that whilst the 1 in 12 ramp has been endorsed by the Highways England SES, a Departure from Standard will be required to be submitted for the relaxation from the fully compliant 1 in 20 gradient. The Highways England SES has agreed in principle to support this departure submission based on the benefits documented above.

3.4 OUTSTANDING ASSUMPTIONS

3.4.1 The report has provided justification for the proposed replacement of the existing North Dene Footbridge (including ramps) in its entirety. The new structure shall comprise a clear span structure over the mainline with a 3.5m clear width and a new 1 in 12 ramp provision to the west side.

3.4.2 In addition, the following assumptions have also been considered during development of the structural form for the new replacement structure;

- The grade separated crossing over the A1 will provide a cost effective functional solution that also has some aesthetic value. It is assumed the bridge crossing will have a simple, un-obstructive lightweight structural form to enhance the visual appearance whilst avoiding complex buildability issues on site.
- The proposed footbridge structure over the main line shall satisfy the 5.7m + S (allowance for sag curve) headroom requirements as stipulated in TD27/05 Cross Section and Headroom. This minimum headroom requirement shall also extend beyond the mainline carriageway over the verges within the designated structure free zone. This would avoid designing the bridge superstructure to sustain impact loading which would be particularly onerous on a light footbridge structure.
- The footprint of the structure, particularly on the west side, shall be such that additional land take for construction and maintenance is minimised as much as reasonably practical. In addition visual intrusion to neighbouring properties due to the extended ramps, should also be minimised.

- In accordance with BD29/17, the following requirements shall also be incorporated in the preliminary design/development of any new replacement footbridge (including ramps) structure.
    - Whilst the ramps shall not be steeper than 1 in 12. Horizontal landings shall be provided at intervals producing a rise of no more than 650mm between landings. The length of landings shall also not be less than 2m
    - The new footbridge/ramp with combined pedestrian and cycle facilities, shall incorporate parapets with a minimum height of 1.4m
    - All supports to the bridge and the ramp shall be located at least 4.5m from the edge of the carriageway thereby minimising the risk associated with vehicle impact

4. DEVELOPMENT OF THE NEW BRIDGE STRUCTURAL FORM

4.1 GENERAL

4.1.1 Taking into consideration the requirements/constraints highlighted in Section 3, it is expected that that main bridge/ramp superstructure shall comprise structural steelwork as opposed to reinforced concrete construction.

4.1.2 The reasons/advantages for developing a replacement structure that primarily constitutes steel elements are set out below;

- High Strength to Weight Ratio – The light weight nature of steel construction combined with its strength is particularly advantageous in moderate to long span bridges (greater than 30m) where dead load is crucial. The reduced weight of the bridge spans minimises the substructure size and foundation costs. The reduced dead load of spans will also improve buildability due to less onerous lifting requirements.
- Reduced Construction Depth – The high strength of steel allows construction depths to be reduced, which assists in overcoming the headroom constraints (5.7m minimum clearance). The reduced construction depth also minimises the length and height of the approach ramps. This would reduce the structural footprint of the new structure whilst also reducing associated material/construction costs.
- Speed of Erection – Construction time on site is minimised due to pre-fabrication of major structural elements resulting in economic and safety benefits. The lightweight nature of steel permits the speedy erection of large components. This would assist in minimising disruption to traffic where special closures are required. It is expected that the fabrication and trial erection of the bridge/ramp spans could be undertaken in factory conditions away from adverse weather and restricted site conditions. The structural elements could then be delivered assembled and erected. Time associated with waiting for in-situ concrete elements to cure and achieve a certain level of strength prior to the next phase of works is avoided.
- Versatility – slender profiles with either constant or varying depth can be incorporated into the bridge design. Modern fabrication methods remove many restrictions on curvature, and creating the curved bends at the footbridge/ramp junction is entirely feasible. The high surface quality of steel creates sharp lines, uniform colouring of surfaces and avoids blemishes which improve aesthetics. The painting of steelwork introduces colour and contrast, whilst repainting can change or refresh the appearance of the bridge.
- Durability – Unlike concrete, the use of steel introduces a need to carry out maintenance painting to protect steel elements from corrosion, however modern paint systems today provide a reliable extended corrosion protection system in excess of 30 years to minimise life cycle costs. From a maintenance perspective, one of the main advantages of steel over concrete is the structural elements and associated defects are more readily visible. Therefore signs of deterioration can be readily recorded without extensive investigations and can be easily addressed by repainting/localised repairs.

4.1.3 In summary structural steel is preferred over concrete on the basis that a clean, functional, lightweight bridge can be constructed that is cost effective and easy to construct due to the pre-fabrication of major elements. The use of steel as the primary structural material will also promote the development of a new bridge design with enhanced aesthetics.

4.2 STRUCTURAL FORM FOR THE RAMPS/MAIN BRIDGE SPAN

4.2.1 The proposed configuration of the ramp with regular supports at intermediate landing positions results in the span of discrete ramp sections being limited to less than 10m. This inclines towards the ramp structure comprising simple steel beam construction with twin stringers (2No. main RHS members) laterally braced with a steel deck plate. This would provide a clean, cost effective solution that can be readily lifted into position.

4.2.2 The main bridge span over the A1 is anticipated to be up to 45m clear span. The large span requirements with no intermediate supports means a similar structural form to the ramps sections (simple steel beam structure) would not be feasible.

4.2.3 Other structural forms considered and ultimately discounted include:

- Composite Steel Beam and Concrete Deck – This option is discounted on the basis that it produces a much heavier structure than an all steel footbridge with the dead load accounting for more than half the total load. Buildability would be made more difficult due to the weight. The associated cost/construction programme would also significantly increase in comparison to predominantly steel based footbridges.
- Steel Box Girder Footbridge - This form of construction would comprise a pair of structural steel girders (fabricated or rolled) braced together for stability and acting as beams in bending. The floor would be formed by steel plates (8-10mm thick) suitably stiffened to carry loads. Parapets would be fixed on top of the steel plates. This option is discounted due to the large construction depth (expected to be in excess of 1m) resulting in the requirement for higher and longer ramps further increasing the overall cost and extending the construction programme. In addition this form of structure would fail to provide the appearance of a light weight/open structure.

4.2.4 It is considered that a truss (warren type) structure would provide the optimum solution for the main bridge span. Generally truss type footbridges, circa 45m in span, comprise a main top and bottom chord with a series of diagonal members formed using hollow type sections where the deck is at the level of bottom chord in a through type construction for enhanced stability.

4.2.5 The truss type footbridge would provide a light, economical form of construction, due to the reduced steelwork required, in comparison to a box girder type structure.

4.2.6 The deck construction depth is significantly reduced in comparison with other conventional beam type structures and would be limited to the footway surface to the underside of the bottom chord (not more than the depth of the chord member). This would contribute to the light appearance whilst also enabling the clearance over the mainline A1 to be readily achieved. This would also reduce the height and lengths of ramps required resulting is further cost and programme savings.

4.2.7 The appearance of the truss type structure could be enhanced significantly with minimal cost and construction complication via the introduction of an arch profile to the top chord thereby forming a bow truss type structure. A bow truss provides an elegant appearance due to the arch formation and could provide visual landmark for the scheme without a significant impact on cost and construction (structural elements can still be prefabricated and readily transported/assembled and lifted in place as with a conventional truss). Refer to Figure 4.1 for a typical bow truss footbridge.

Figure 4.1: Typical Bow Truss Type Footbridge

4.3 SUBSTRUCTURE/FOUNDATION REQUIREMENTS

4.3.1 Irrespective of the structural form, the main bridge/ramp structure on the east side will be supported on steel columns/trestles which are assumed would be founded on concrete pad foundations (refer to Section 5 for further details relating to foundations). The position of the ramps/supports is such that they would be at least 4.5m from the edge of the carriageway thereby minimising risk associated with impact load due to errant vehicles.

4.3.2 At the west end of the structure, two alternative sub structure options have been considered:

- Substructure Option 1: Reinforced concrete trough
- Substructure Option 2: Reinforced concrete bankseat supported on a reinforced earth embankment

4.3.3 For both substructure options, the position is such that the 4.5m lateral clearance to the edge of the carriageway is provided. However the setback of the substructure is restricted such that the overall clear span of the main bridge structure is limited to circa 45m, thereby keeping the span and associated cost of the superstructure to a minimum.

4.3.4 Substructure Option 2 is expected to provide a more cost effective/simplified solution, reasons for this are provided below.

- Insitu reinforced concrete works is limited to the construction of a small bank seat. In comparison the reinforced concrete operations are significantly greater for the Substructure Option 1 thereby having adverse effects on site risks, cost and programme.
- The reinforced earth embankments can be optimised to provide maximum cost effectiveness. The simple repetitive construction techniques simplify control and management which helps to minimise wastage. Most importantly the rapid, fast track construction techniques would result in a reduced construction programme in comparison with Substructure Option 1.

4.4 PREFERRED STRUCTURAL FORM

4.4.1 The study to date inclines towards the new replacement structure comprising the following:

- Structural steel bow truss footbridge structure with a simple steel beam ramp structure supported on steel trestles/columns on the west (northbound carriageway) side. On the east (southbound carriageway) side the end of the main bridge will be supported on either of the following substructure options:
    - o Substructure Option 1: Reinforced Concrete trough
    - o Substructure Option 2: Reinforced Concrete bankseat supported on a reinforced earth embankment

4.4.2 A bow truss form for the main footbridge would provide a structure with enhanced aesthetic value whilst providing a simple cost effective structural form for construction. The estimated construction cost for the replacement structure is provided below.

- Steel Bow Truss Main Span support via a RC trough on the east side – Estimated Construction Cost £1.5-2.0million (this includes for the demolition of the existing structure and construction of the new steel ramp to the west side). Refer to Appendix D-1 for an outline General Arrangement Drawing
- Steel Bow Truss Main Span supported via RC bankseat on reinforced earth embankments on the east side – Estimated Cost £1.2-1.5 million (this includes for the demolition of the existing structure and construction of the new steel ramp to the west side).

4.4.3 The indicative construction costs are based on previous similar type schemes and shall be verified, subject to detailed design. The Highways England cost estimating team has not been consulted for any construction costing information for this study.

4.4.4 Subject to the Highways England Project Management team aspirations, there is a potential opportunity to provide an alternative tied arch type footbridge over the A1, comprising vertical hangers within the arches as opposed to diagonal truss members. This would provide a structure with an iconic visual appearance that complements the tied arch structures currently spanning the River Tyne in the centre of Newcastle. See Figure 4.2 below.

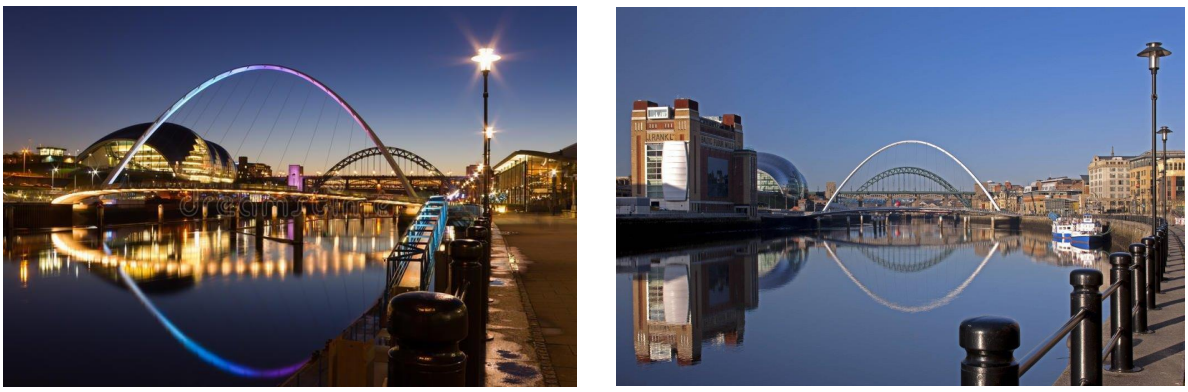


Figure 4.2: Night and day photographs of the tied arch type structures spanning the River Tyne

4.4.5 Refer to Appendix D-2 for the outline General Arrangement Drawing of a Tied Arch Structure. Whilst not reviewed in detail, the cost associated with the construction of a tied arch footbridge is expected to be circa £1.5-2.0million (this includes for the ramps and trestle/column support to the west side and RC bankseat and RE walls to the east side). However, the maintenance liabilities for a tied arch are expected to be greater than the Bow Truss option due to complexities associated with access and maintenance of the hangers/connections.

5. GROUND INVESTIGATION

5.1 EXISTING GROUND CONDITIONS

5.1.1 A Geotechnical Design Report is not yet available for the project and will be prepared to define suitable parameters for the design of acceptable foundations following completion of a ground investigation at the site. The preliminary choice of foundation solution has been considered appropriate based on the records and findings at the site location taken from the Preliminary Sources Study Report (PSSR) for the wider Birtley to Coalhouse Scheme (HA544664-WSP-HGT-S01-RP-GE-0600-P-01).

5.1.2 Historical ground investigation data from the British Geological Survey (BGS) and Highways Agency Geotechnical Data Management System (HA GDMS) is available within the vicinity of North Dene Footbridge. The following ground conditions are anticipated at the footbridge location:

- Topsoil over Glacial Till (not present in all locations): up to 3.2 m thick and consisting stiff to very stiff orange brown mottled grey brown sandy slightly gravelly clay, gravel is sandstone and coal; over,
- Weathered Pennine Middle Coal Measures: encountered from between 0.25 m and 3.2 m below ground level and recorded between 0. m and 4.25 m thick and consisting of orange brown clayey sand and gravel with occasional cobbles of sandstone and ironstone and red brown clayey sand; over,
- Pennine Middle Coal Measures bedrock: rock encountered at depths of between 2.1 m and 5.9 m below ground level.

5.1.3 Made ground may be present beneath the foundation locations, likely associated with previous site uses and the construction of the A1.

5.1.4 Coal seams have been encountered beneath the footbridge location, which are recorded as having been worked. The shallowest coal seams are the High Main (approximately 65 m AOD, 21 m BGL), Metal seam (approximately 60 m AOD, 26 m BGL), Five Quarter (approximately 50 m AOD, 36 m BGL) and Main seam (approximately 25 m AOD, 61 m BGL), all of which are recorded to have been worked.

5.1.5 No groundwater strikes were recorded on the available historical borehole records in the vicinity of the North Dene Footbridge and no historical groundwater monitoring results have been obtained. Groundwater monitoring is to be undertaken a part of the proposed ground investigation.

5.1.6 Groundwater bodies should be anticipated in the following strata. Following completion of the additional ground investigation, structure-specific groundwater information will be available:

- At shallow depths within the glacial till; and,
- At a greater depth within the Pennine Middle Coal Measures.

5.2 RISK ASSOCIATED WITH FOUNDATION WORK

5.2.1 The geotechnical risks for the wider site are presented within the PSSR. These risks have been reviewed and further assessed in the 'Live' Project Risk Registers. Pertinent geotechnical risks in relation to the proposed footbridge foundations are summarised in Table 5-1.

Table 5-1 Geotechnical risks of proposed Longbank Underpass foundations

RISK CAUSE	RISK EVENT	PRIMARY RISK IMPACT	RISK RATING
Engineering Properties of the Ground	There is a risk that the ground model, and the behaviour of the ground, is different (worse) from that assumed at this stage.	**Construction** delays and remedial design requirements, and potential cost and programme implications.	**Medium**
Instability of Existing Underpass	There is a risk that the proposed works may undermine/destabilise the existing underpass structure.		**Medium**
Instability of Existing Earthworks	There is a risk that the existing earthworks at the site are not as stable as assumed at this stage.		**Medium**
Instability caused by shallow mine workings	There is a risk that the structure will be adversely impacted by collapse of shallow coal mine workings, which may require grouting during construction		**Medium**
Groundwater	There is a risk that the groundwater is different (worse) from the groundwater model assumed at this stage.		**Medium**
Contaminated Soils	There is a risk that the assessment of contaminated soils undertaken at this stage is not accurate.		**Medium**
Unexploded Ordnance (UXO)	The site is located within an area of low bomb risk; there is a risk that UXO might be encountered beneath the site.	**Construction** delays and requirement for safe deactivation / disposal.	**Low**
Buried Services	There is a risk that buried services might be encountered during excavation of proposed foundations.	**Construction** delays and potential cost and programme implications.	**Medium**

5.3 DETAILS OF ADDITIONAL GROUND INVESTIGATION REQUIRED TO INFORM THE DETAILED DESIGN PROCESS

5.3.1 Additional ground investigation has been scoped and is currently being undertaken. Drawings HE551462-WSP-HGT-BCH-DR-GE-00023 to HE551462-WSP-HGT-BCH-DR-GE-00033 shows the exploratory hole locations of the proposed ground investigation required to inform the detailed design. The proposed ground investigation includes the following:

- Cable percussion boreholes to rock head to identity ground conditions within the superficial deposits and confirm rockhead levels;
- Rotary cored boreholes to determine rock quality and strength to 9 m below rock head;
- Rotary open hole boreholes, for an additional 8 m to investigate the presence of coal seams and historical mining; and,
- Groundwater monitoring to be undertaken.

5.3.2 Each of the above ground investigation methodologies may be undertaken at the same location / exploratory hole through follow-on methods, i.e. cable percussion to rockhead; follow-on with rotary core from rock head; and follow-on with open hole to proposed borehole depth. The current proposed ground investigation at the location of the North Dene Footbridge includes 2 (two) cable percussive and rotary cored exploratory holes.

5.3.3 The results of the ground investigation shall be reported in a Ground Investigation Report (in line with HD 22/08) once completed.

5.4 REVIEW OF FOUNDATION REQUIREMENTS FOR THE EXTENSION WORK

5.4.1 The final footbridge foundation solution shall be determined through assessment of the bearing capacity of the founding materials (influenced by the ultimate limit state), settlement analysis of the foundations (influenced by serviceability limit state) and interaction with the existing earthworks/structures. Space constraints around the foundation locations shall also be taken into account when determining the most appropriate foundation solution.

5.4.2 The current proposed development is for a replacement of the existing footbridge, with a single span footbridge, including the lengthening of the ramp on the west (northbound carriageway) side of the bridge (to create a shallower gradient ramp) and retaining wall supporting the footpath on the east (southbound carriageway) side of the bridge. To allow for the construction of the proposed footbridge, the existing footbridge is to be dismantled and removed.

5.4.3 The proposed ramp structure is anticipated to be founded on spread foundations founded on either a thin layer of glacial till, or directly onto shallow bedrock similar to the existing footbridge. Should the ground investigation indicate that suitable founding strata is at a greater than anticipated depth, a piled foundation solution may be required. The final foundation solution shall be assessed following the proposed ground investigation.

5.4.4 There are currently two options being considered for the support of the main bridge span at the east end (southbound carriageway) side of the bridge. Option 1 is the installation of reinforced concrete “U” shaped retaining wall, filled with 6N material. The use of the reinforced concrete would enable to faces of the retaining wall to be vertical and minimise the structure footprint for the new bridge.

5.4.5 Option 2 utilises a reinforced concrete bankseat on reinforced earth embankments. In order to accommodate the anticipated length of the polymer geo-straps the structure wing walls are required to be splayed. However the structure footprint although greater then with Option 1 is still within the red line boundary for the scheme.

5.4.6 There are two methods of construction which could be used for the reinforced earth support:

- Near vertical embankment sides - the use of polymer geo-straps/geogrids and 6I / 6J material with concrete panels or block facing. The use of this method would enable the faces of the retaining wall to be vertical or near vertical and minimise the space required for the footpath.

- Sloping embankment sides - the use of polymer geo-straps/geogrids and 6I / 6J material with a soft facing/seeded mat facing to create green/vegetated slopes. However, given the northwest facing aspect and the lack of sun light to the reinforced earth embankment, it may be difficult to suitably vegetate the slopes.

5.4.7 Given the potential for shallow coal mine workings beneath the site, it is considered that grouting of these workings may be required during construction. No records have been obtained to suggest that the workings were treated as part of the original construction of the footbridge. The extent of such workings (and possibly previous grouting works) will be assessed as part of the proposed ground investigation.

6. CONCLUSION & RECOMMENDATIONS

6.1 CONCLUSION

6.1.1 The existing North Dene Footbridge, located south of Junction 66 Eighton Lodge of the A1, is one of the many existing structures affected by the proposed improvements to the A1 alignment.

6.1.2 The study has shown that the existing North Dene footbridge (including ramps) would need to be replaced in its entirety. The new structure shall comprise a clear span structure over the mainline with a 3.5m clear width throughout and a new 1 in 12 ramp provision to the west side.

6.1.3 Structural steel is preferred over concrete on the basis that a clean, functional, lightweight bridge can be constructed that is cost effective and easy to construct due to the pre-fabrication of major elements. The use of steel as the primary structural material will also promote the development of a new bridge design with enhanced aesthetics.

6.1.4 The preferred structural form for the new replacement bridge would comprise a structural steel bow truss footbridge structure with a simple steel beam ramp structure supported on steel trestles/columns on the west (northbound carriageway) side. A bow truss main footbridge would provide a structure with enhanced aesthetic value whilst providing a simple cost effective structural form for construction.

6.1.5 On the east (southbound carriageway) side the end of the main bridge will be supported on either Reinforced Concrete trough or a Reinforced Concrete bankseat on Reinforced Earth embankment.

6.1.6 The estimated construction cost for the replacement structure is provided below.

- Steel Bow Truss Main Span support via a RC trough on the east side – Estimated Construction Cost £2.0 million (this includes for the demolition of the existing structure and construction of the new steel ramp to the west side).

- Steel Bow Truss Main Span supported via RC bankseat on Reinforced Earth embankments on the east side – Estimated Cost £1.5 million (this includes for the demolition of the existing structure and construction of the new steel ramp to the west side).

6.1.7 Subject to the Highways England Project Management team aspirations, there is a potential opportunity to provide an alternative more complex tied arch type footbridge over the mainline. This would provide a structure with an iconic visual appearance that complements the tied arch structures currently spanning the River Tyne in the centre of Newcastle. The cost associated with the construction of a tied arch footbridge is expected to be circa £2.0million (this includes for the ramps and trestle/column support to the west side and RC bankseat and RE walls to the east side). However, the maintenance liabilities for a tied arch are expected to be greater than the Bow Truss option due to complexities associated with access and maintenance of the hangers/connections.

6.2 RECOMMENDATION

6.2.1 Based on the study to date, it is recommended that North Dene Footbridge be replaced with the following structure:

- Structural steel bow truss footbridge structure with a simple steel beam ramp structure supported on steel trestles/columns on the west (northbound carriageway) side. On the east (southbound carriageway) side, the end of the main bridge will be supported on a reinforced concrete bankseat supported on a reinforced earth embankment.

6.2.2 The following should be undertaken to verify the finding of this report and provide clarity on the works to be developed at detailed design.

- Liaison with key stakeholders to confirm acceptance of the proposed new bridge structural form and ramp provision.

- Review of the proposed sub structure/foundation options upon receipt of site investigation information.

Appendix A

INDICATIVE SCHEMATIC PLANS OF THE PREFERRED ROUTE

APPENDIX A-1

INDICATIVE SCHEMATIC PLANS OF THE PREFERRED ROUTE

DO NOT SCALE

Millimetres 100 0 10

A1

Showing indicatively Gantries SG001&SG002 at chainages -1460 & -480 respectively
AIP - Tubular Steel Cantilever Gantries
STKEY TBC
Ref SOR09

Gantry SG003
AIP - Tubular Steel Cantilever Gantry
STKEY TBC
Ref SOR09

Retaining wall 1
AIP - Reinforced Concrete Wall
STKEY TBC
Ref SOR10

Gantry SG004
AIP - Long Span Truss Type Cantilever Gantry
STKEY TBC
Ref SOR09

Gantry SG005
AIP - Super Span Truss Portal Gantry
STKEY TBC
Ref SOR09

Kingsway Viaduct Underbridge
OS Grid Ref: 424900E, 558550N
STKEY 16271
Structure No. A1/433.30
AIP - Kingsway Viaduct
Ref SOR01

JUNCTION 67 - COALHOUSE
(424955,558553)

Retaining wall 5
AIP - Continuous Bored Piles Retaining Wall
STKEY TBC
Ref SOR10

Gantry SG006
AIP - Long Span Truss Type Cantilever Gantry
STKEY TBC
Ref SOR09

Retaining wall 2
AIP - Sheet Piles Retaining Wall
STKEY TBC
Ref SOR10

CR Retaining wall 1
STKEY TBC
Ref SOR10

Retaining wall 3
AIP - Reinforced Earth Retaining Wall
STKEY TBC
Ref SOR10

Retaining wall 4
AIP - Reinforced Earth Retaining Wall
STKEY TBC
Ref SOR10

Allerdene Culvert
OS Grid Ref: 425370E, 558520N
STKEY 8879
Structure No. A1/443.30
AIP - Allerdene Culvert
Ref SOR02

Allerdene Railway Underbridge
OS Grid Ref: 425480E, 558489N
STKEY 8880
Structure No. A1/443.00/Q
AIP - Allerdene Railway Bridge
Ref SOR03

Smithy Lane Overbridge
OS Grid Ref: 425760E, 558280N
STKEY 16439
Structure No. A1/442.50
AIP - Smithy Lane Overbridge
Ref SOR04

Gantry SG009
AIP - Long Span Truss Type Cantilever Gantry
STKEY TBC
Ref SOR09

Gantry SG007
AIP - Super Span Truss Portal Gantry
STKEY TBC
Ref SOR09

Gantry SG008
AIP - Long Span Truss Type Cantilever Gantry
STKEY TBC
Ref SOR09

ALLERDENE CULVERT EXTENSION AND DRAINAGE DITCH TO BE REALIGNED.

PROPOSED ALLERDENE UNDERBRIDGE TO BE CONSTRUCTED OFFLINE.

Gantry SG010
AIP - Long Span Truss Type Cantilever Gantry
STKEY TBC
Ref SOR09

KEY

- EXISTING STRUCTURE
- PROPOSED STRUCTURE
- PROPOSED RETAINING WALL
- PROPOSED HIGHWAYS FENCE LINE
- RETAINED EXISTING HIGHWAYS FENCE LINE
- REMOVED EXISTING HIGHWAYS FENCE LINE
- NEW CARRIAGEWAY CONSTRUCTION
- EXISTING CARRIAGEWAY TO BE RETAINED
- PROPOSED DRAINAGE DITCH
- NETWORK RAIL LAND BOUNDARY

Rev.	Date	Description	By	Chk'd	App'd
P01	05/09/16	FOR INFORMATION	JAC		
P02	07/09/16	MINOR AMENDMENTS TO EBKS & STRUCTURES, CHAINAGE ADDED	JWL	CP	NGR
P03	07/09/16	ISSUED FOR PUBLIC CONSULTATION	JWL	SG	NGR
P04	10/02/17	DESIGN DEVELOPMENT POST PUBLIC CONSULTATION	JWL	SG	NGR

WSP PARSONS BRINCKERHOFF
Three White Rose Office Park, Millshaw Park Lane, Leeds, LS11 0DL
Tel: +44 (0)113 395 6200
© WSP UK Ltd
www.wsp-pb.com

Client: Working on behalf of highways england

Project Title: A1 BIRTLEY TO COALHOUSE

Drawing Title: OPTION 1A - OFFLINE REPLACEMENT OF ALLERDENE RAILWAY BRIDGE WITH RETENTION OF COAL HOUSE JCT GENERAL ARRANGEMENT SHEET 1 OF 3

Scale	Drawn	Checked	Approved	Authorised
1:1250	J.Longmore	S.Ghosh	N.Rawcliffe	---
Original Size	Date	Date	Date	Date
A1	10/02/17	10/02/17	10/02/17	---

Drawing Status: INITIAL STATUS OR WIP — Suitability: S0

Drawing Number: Project HE551462 | Originator WSP | Volume HGN | Location BCH | Type DR | Role D | Number 10004 | Project Ref. No. | Revision P04

Millimetres 100 0 10

DO NOT SCALE

A1

CR Retaining wall 2
STKEY TBC
Ref SOR10

Gantry SG011
AIP - Long Span Truss Type Cantilever Gantry
STKEY TBC
Ref SOR09

Gantry SG013
AIP - Super Span Truss Portal Gantry
STKEY TBC
Ref SOR09

Gantry SG012
AIP - Long Span Truss Type Cantilever Gantry
STKEY TBC
Ref SOR09

CR Retaining wall 3
STKEY TBC
Ref SOR10

Eighton Lodge Slip Road Underbridge
OS Grid Ref: 426527E, 557592N
STKEY 16441
Structure No. A1/440.90//6
AIP - Widening of Eighton Lodge North & Slip Road Underbridges
Ref SOR05

ANGEL OF THE NORTH

A167 DURHAM ROAD

EXTENT OF WORKS

CUTTING B

CUTTING C

CUTTING D

A1 SB

A1 NB

KEY

- EXISTING STRUCTURE
- PROPOSED STRUCTURE
- PROPOSED HIGHWAYS FENCE LINE
- EXISTING HIGHWAYS FENCE LINE
- REMOVED EXISTING HIGHWAYS FENCE LINE
- NEW CARRIAGEWAY CONSTRUCTION
- EXISTING CARRIAGEWAY TO BE RETAINED
- PROPOSED FOOTPATH DIVERSION
- EXISTING FOOTPATH
- PROPOSED SIGNAL
- EXISTING SIGNAL

Gantry SG014
AIP - Super Span Truss Portal Gantry
STKEY TBC
Ref SOR09

Eighton Lodge North Underbridge
OS Grid Ref: 426682E, 557517N
STKEY 16440
Structure No. A1/441.00
AIP - Widening of Eighton Lodge North & Slip Road Underbridges
Ref SOR05

JUNCTION 66 - EIGHTON LODGE
(426739,557494)

Eighton Lodge South Underbridge
OS Grid Ref: 426801E, 557466N
STKEY 8883
Structure No. A1/440.90
AIP - Widening of Eighton Lodge South Bridge
Ref SOR05

Longbank Bridleway Underbridge
OS Grid Ref: 427169E, 557294N
STKEY 26280
Structure No. A1/440.80
AIP - Longbank Underpass
Ref SOR06

Gantry SG016
AIP - Super Span Truss Portal Gantry
STKEY TBC
Ref SOR09

B1296 LONG BANK

A167 DURHAM ROAD

EXTENT OF WORKS

EXTENT OF WORKS

EXTENT OF WORKS

A1 SB

A1 NB

CUTTING C

CUTTING D

NORTH DENE

LONG BANK

A167 NEWCASTLE BANK

EIGHTON LODGE CULVERT; STRUCTURE KEY 15468. STRUCTURE IS APPROXIMATELY 18m BELOW GROUND LEVEL SO WILL BE UNAFFECTED.

Gantry SG015
AIP - Super Span Truss Portal Gantry
STKEY TBC
Ref SOR09

CR Retaining wall 4
STKEY TBC
Ref SOR10

Gantry SG017
AIP - Long Span Truss Type Cantilever Gantry
STKEY TBC
Ref SOR09

Rev.	Date	Description	By	Chk'd	App'd
P01	05/09/16	FOR INFORMATION	JAC		
P02	07/09/16	MINOR AMENDMENTS TO EMKS & STRUCTURES, CHAINAGE ADDED	JWL	CP	NGR
P03	07/09/16	ISSUED FOR PUBLIC CONSULTATION	JWL	SG	NGR
P04	10/02/17	DESIGN DEVELOPMENT POST PUBLIC CONSULTATION	JWL	SG	NGR

WSP
PARSONS BRINCKERHOFF
Three White Rose Office Park,
Millshaw Park Lane,
Leeds,
LS11 0DL
Tel: +44 (0)113 395 6200
www.wsp-pb.com

Client
Working on behalf of
highways england

Project Title
A1 BIRTLEY TO COALHOUSE

Drawing Title
OPTION 1A - OFFLINE REPLACEMENT OF ALLERDENE RAILWAY BRIDGE WITH RETENTION OF COAL HOUSE JCT GENERAL ARRANGEMENT SHEET 2 OF 3

Scale	Drawn	Checked	Approved	Authorised
1:1250	J.Longmore	S.Ghosh	N.Rawcliffe	---
Original Size	Date	Date	Date	Date
A1	10/02/17	10/02/17	10/02/17	---

Drawing Status: INITIAL STATUS OR WIP
Suitability: S0

Drawing Number
Project: HE551462
Originator: WSP
Volume: HGN
Location: BCH
Type: DR
Role: D
Number: 10005
Project Ref. No.
Revision: P04

DO NOT SCALE

Millimetres 100 0 10

A1

North Dene Footbridge
OS Grid Ref: 427538E, 557089N
STKEY 8886
Structure No. A1/440.30
AIP - North Dene Footbridge
Ref SOR07

Gantry SG018
AIP - Long Span Truss Type Cantilever Gantry
STKEY TBC
Ref SOR09

Retaining wall 6
AIP- King Post Retaining Wall
STKEY TBC
Ref SOR10

Gantry SG020
AIP - Super Span Truss Portal Gantry
STKEY TBC
Ref SOR09

Gantry SG019
AIP - Super Span Truss Portal Gantry
STKEY TBC
Ref SOR09

NEW BUILDING DEVELOPEMENT

CRATHIE

A1 SB
A1 NB
CUTLINE E
CUTLINE E
EXTENT OF WORKS

North Side Overbridge
OS Grid Ref: 428090E, 556770N
STKEY 8887
Structure No. A1/439.70
AIP - North Side Bridge
Ref SOR08

JUNCTION 65 - BIRTLEY
(428150,556714)

A1231 SB
A1231 NB
A1(M) SB
A1(M) NB
A194(M) NB

KEY

- EXISTING STRUCTURE
- PROPOSED RETAINING WALL
- PROPOSED HIGHWAYS FENCE LINE
- EXISTING HIGHWAYS FENCE LINE
- REMOVED EXISTING HIGHWAYS FENCE LINE
- NEW CARRIAGEWAY CONSTRUCTION
- EXISTING CARRIAGEWAY TO BE RETAINED
- PROPOSED FOOTPATH DIVERSION
- EXISTING FOOTPATH
- PROPOSED SIGNAL
- EXISTING SIGNAL

Rev.	Date	Description	By	Chk'd	App'd
P01	05/09/16	FOR INFORMATION	JAC		
P02	07/09/16	MINOR AMENDMENTS TO EWKS & STRUCTURES, CHAINAGE ADDED	JWL	CP	NGR
P03	07/09/16	ISSUED FOR PUBLIC CONSULTATION	JWL	SG	NGR
P04	10/02/17	DESIGN DEVELOPMENT POST PUBLIC CONSULTATION	JWL	SG	NGR

WSP PARSONS BRINCKERHOFF
Three White Rose Office Park,
Millshaw Park Lane,
Leeds,
LS11 0DL
Tel: +44 (0)113 395 6200
www.wsp-pb.com

Client
Working on behalf of
highways england

Project Title
A1 BIRTLEY TO COALHOUSE

Drawing Title
OPTION 1A - OFFLINE REPLACEMENT OF ALLERDENE RAILWAY BRIDGE WITH RETENTION OF COAL HOUSE JCT GENERAL ARRANGEMENT SHEET 3 OF 3

Scale	Drawn	Checked	Approved	Authorised
1:1250	J.Longmore	S.Ghosh	N.Rawcliffe	---
Original Size	Date	Date	Date	Date
A1	10/02/17	10/02/17	10/02/17	---

Drawing Status: INITIAL STATUS OR WIP
Suitability: S0

Drawing Number
Project: HE551462
Originator: WSP
Volume: HGN
Location: BCH
Type: DR
Role: D
Number: 10006
Project Ref. No.
Revision: P04

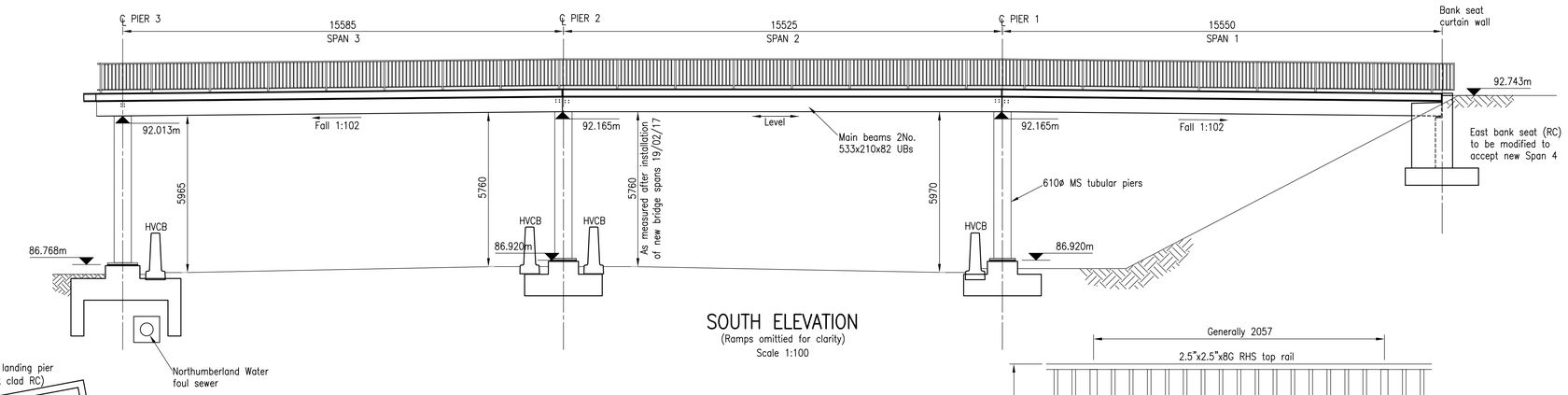
Appendix B

AS BUILT INFORMATION

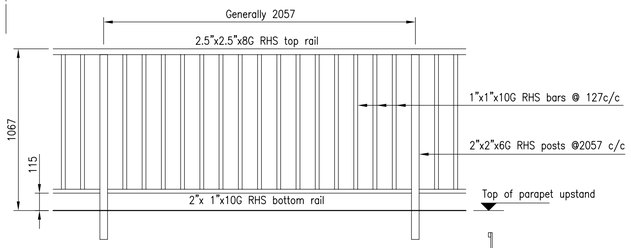
highways england

APPENDIX B-1

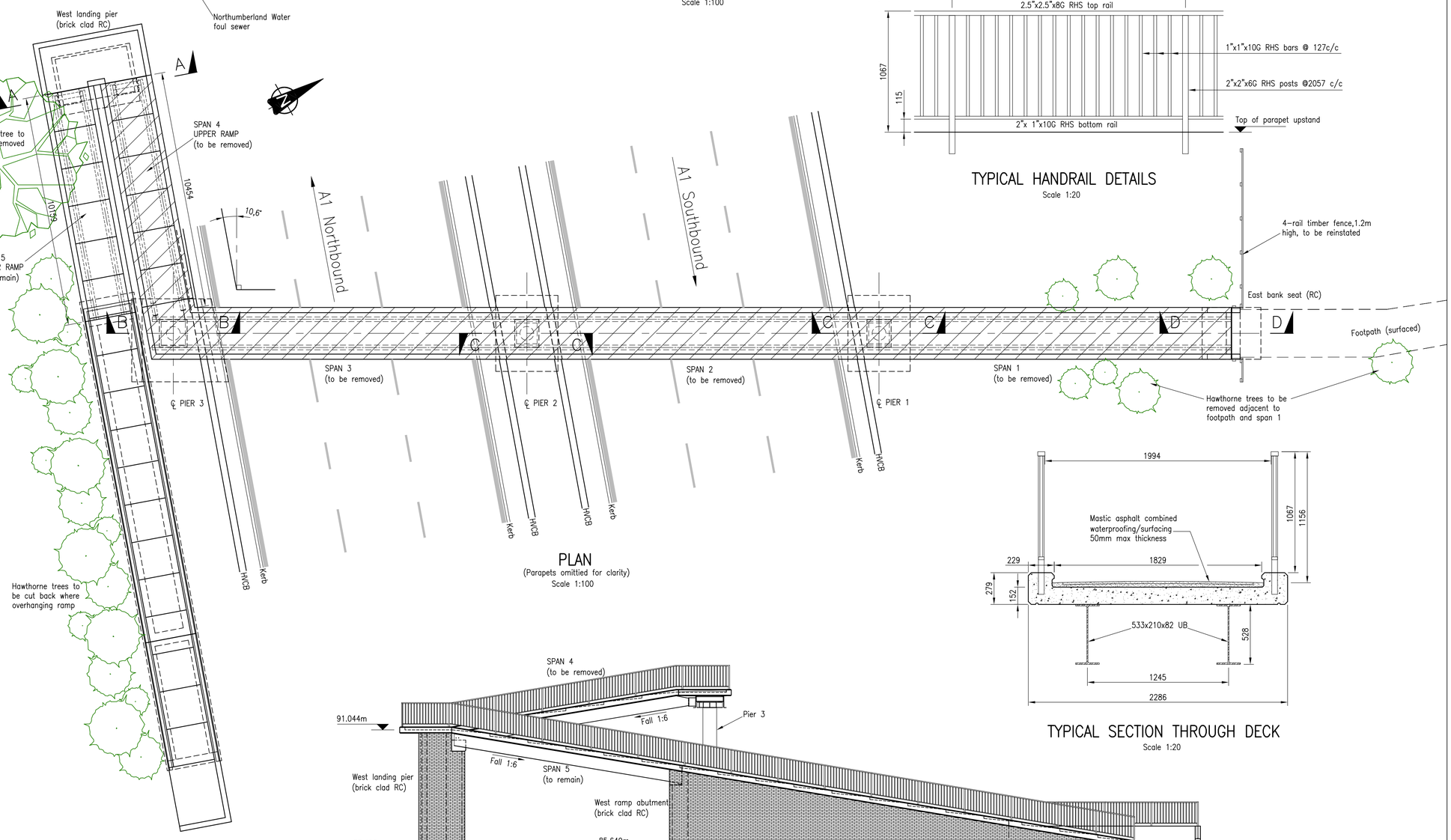
AS BUILT INFORMATION ORIGINAL CONSTRUCTION 1972



SOUTH ELEVATION
(Ramps omittied for clarity)
Scale 1:100

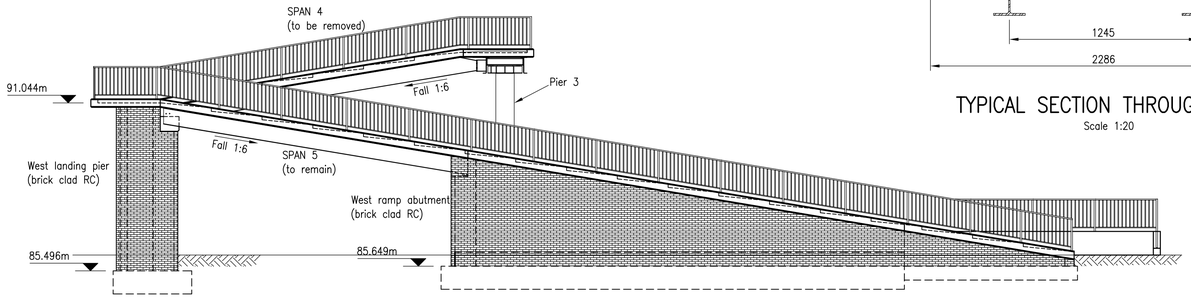


TYPICAL HANDRAIL DETAILS
Scale 1:20



PLAN
(Parapets omittied for clarity)
Scale 1:100

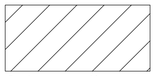
TYPICAL SECTION THROUGH DECK
Scale 1:20



WEST ELEVATION
Scale 1:100

Notes:

1. All dimensions are in millimetres (mm) unless stated otherwise.
2. All levels are in metres (m) AOD.
3. For Sections A, B, C and D refer to drawing number HE547323-AONE-SBR-8886-DE-C-002.
4. Span 3 is fixed at Pier 3 by 2No dowels located in the 2No holes in the top plate of the pier crosshead. All other bearing are free to move laterally in all directions.
5. All spans are supported on 140x140 square elastomeric bearings of varying thicknesses.
6. Mastic asphalt surfacing is continuous over Span 1, 2 and 3. Gaps between concrete faces of adjacent spans are sealed with polysulphide sealant.
7. The hatched area shows the extent of Spans 1, 2, 3 and 4, which are to be structurally dismantled in accordance with App 2/70 and removed to tips off site.Replacement Spans 1, 2, 3 and 4 to be fabricated, delivered and installed as App18/1.



8. Bicycle wheeling channels are to be fitted to upper and lower access ramps after new superstructure has been installed, as App 18/2 (See drawing HE547323-AONE-SBR-8886-DE-C-002 for location and fabrication drawings for details).
9. Approximate weights of existing spans are as follows:
   - Span 1: 22.0 Tonnes
   - Span 2: 22.0 Tonnes
   - Span 3: 23.5 Tonnes
   - Span 4: 15.0 Tonnes
10. Headroom clearance measured after installation of new bridge spans 19/02/17. New minimum clearance 5.760m over both northbound and southbound carriageways.
11. For details of replacement superstructure (Spans 1, 2, 3 & 4) see Nusteel Structures Ltd fabrication drawings F16026-001 to 050.

Rev	By	Chk	App	Date	Description
AB	DAS	DBS	DBS	09/03/17	As built.

AS BUILT

Client

highways england

A-one+
Valley House, Valley Street North,
Darlington, DL1 1 TJ
Tel +44 (0)1325 389 991 Fax +44 (0)1325 385 777
Email enquiries@aone.uk.com
Web www.aone.uk.com

A-one+ Integrated Highway Services
A CHIM / COLAS / COSTAIN COMPANY

Project

A1 NORTH DENE FOOTBRIDGE

Project Ref 220205

Drawing

EXISTING GENERAL ARRANGEMENT

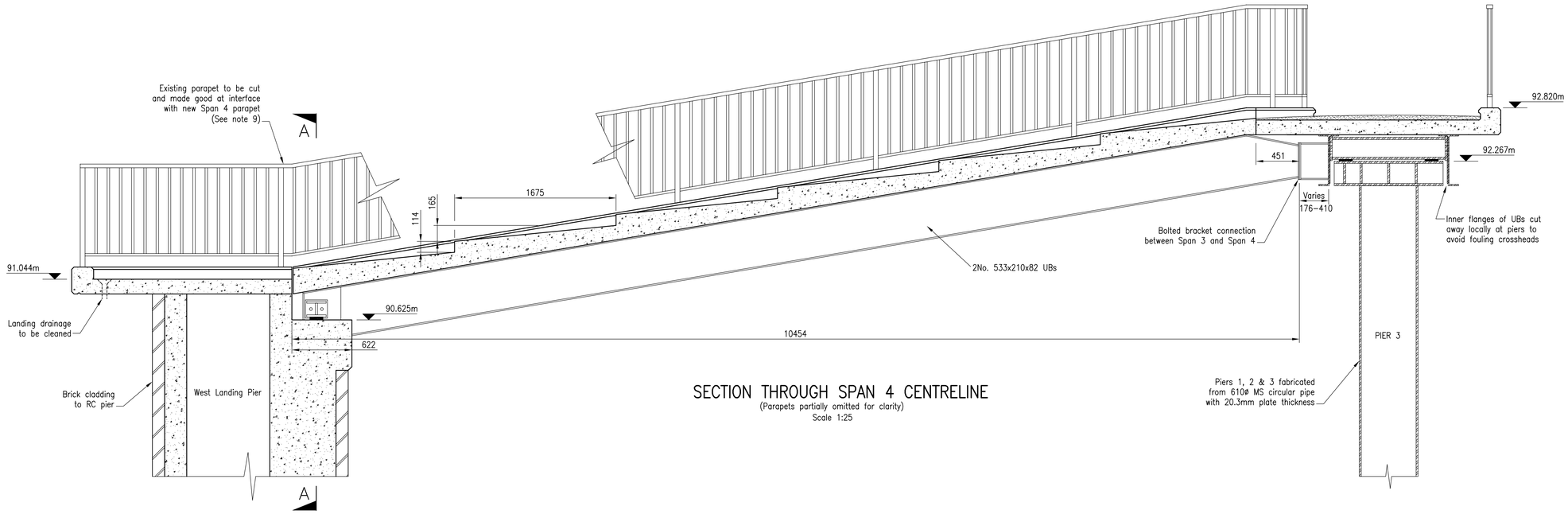
Drawn :	DAS	Date: 07/10/2016
Designed :	DAS	Date: 07/10/2016
Checked :	DBS	Date: 07/10/2016
Approved :	DBS	Date: 07/10/2016

Drawing No.

PIN	Originator	Volume		Revision
HE547323	- AONE	- SBR	-	AB
Location	Type Role	Number		
8886	- DE - C -	001		

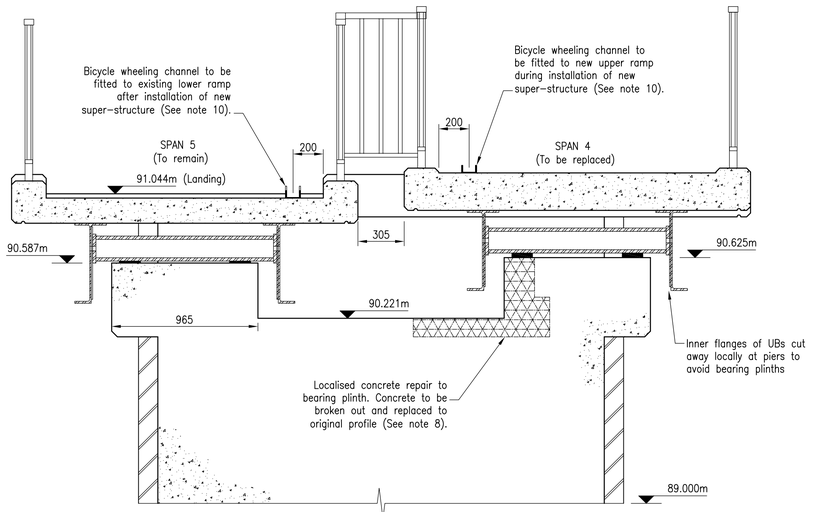
Drawing Scale: As shown — Original Sheet Size A1

DO NOT SCALE FROM DRAWING



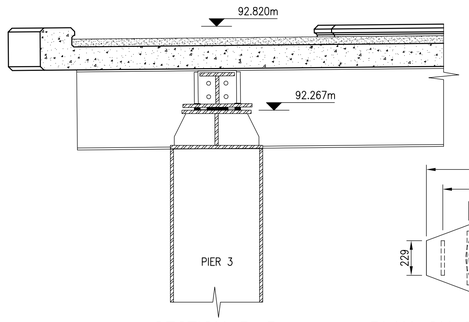
SECTION THROUGH SPAN 4 CENTRELINE

(Parapets partially omitted for clarity)
Scale 1:25



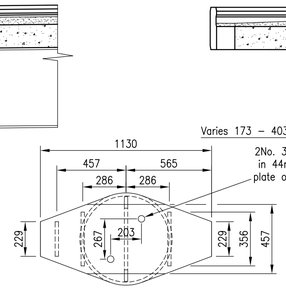
SECTION A–A THROUGH WEST PIER BEARINGS

Scale 1:20



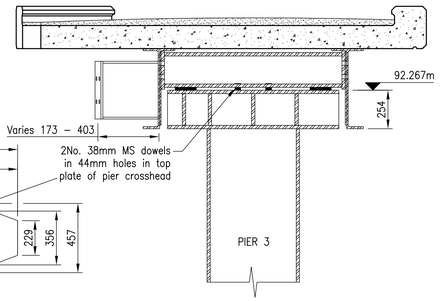
SECTION B–B

Scale 1:20



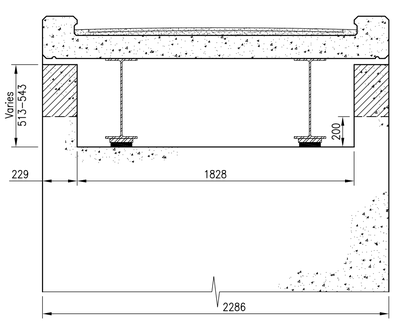
PLAN ON PIER 3 CROSSHEAD

Scale 1:20



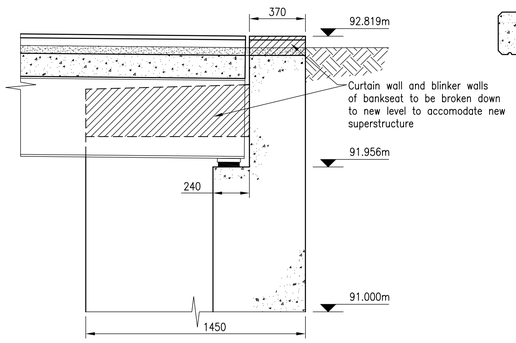
SECTION AT PIER 3

Scale 1:20



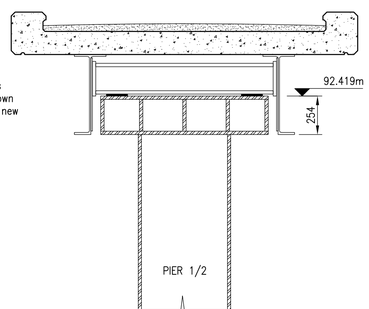
SECTION THROUGH BANKSEAT BEARINGS

Scale 1:20



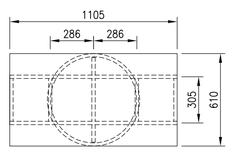
SECTION D–D

Scale 1:20



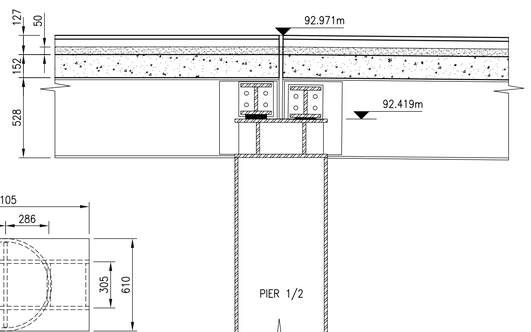
SECTION AT PIER 1/2

Scale 1:20



PLAN ON PIER 1/2 CROSSHEAD

Scale 1:20



SECTION C–C

Scale 1:20

Notes:

1. All dimensions are in millimetres (mm) unless stated otherwise.
2. All levels are in metres (m) AOD.
3. For position of sections refer to drawing number HE547323-AONE-SBR-8886-DE-C-001.
4. Span 3 is fixed at Pier 3 by 2No dowels located in the 2No holes in the top plate of the pier crosshead. All other bearing are free to move laterally in all directions.
5. All spans are supported on 140x140 square elastomeric bearings of varying thicknesses.
6. Mastic asphalt surfacing is continuous over Span 1, 2 and 3. Gaps between concrete faces of adjacent spans are sealed with polysulphide sealant.
7. Approximate weights of each span are as follows:
   Span 1: 22.0 Tonnes
   Span 2: 22.0 Tonnes
   Span 3: 23.5 Tonnes
   Span 4: 15.0 Tonnes
8. Localised concrete repairs are to be in accordance with the Specification, AR clauses 1770 to 1773.
9. Steelwork repairs to existing parapets to be in accordance with App18/1.
10. Bicycle wheeling channels consisting 100x50 steel channels are to be fitted to upper and lower access ramps after new superstructure has been installed, as App 18/1 and fabrication drawings.
11. For details of replacement superstructure (Spans 1, 2, 3 & 4) see Nusteel Structures Ltd fabrication drawings F16026-001 to 050.

Rev	By	Chk	App	Date	Description
AB	DAS	DBS	DBS	09/03/17	As built.

AS BUILT

Client

highways england

A-one+
Valley House, Valley Street North,
Darlington, DL1 1TJ
Tel +44 (0)1325 389 991 Fax +44 (0)1325 385 777
Email enquiries@aone.uk.com
Web www.aone.uk.com

A-one+ Integrated Highway Services
A CHIM / COLAS / COSTAIN COMPANY

Project

A1 NORTH DENE FOOTBRIDGE

Project Ref 220205

Drawing

EXISTING DETAILS

Drawn :	DAS	Date: 07/10/2016
Designed :	DAS	Date: 07/10/2016
Checked :	DBS	Date: 07/10/2016
Approved :	DBS	Date: 07/10/2016

Drawing No.
PIN HE547323 - Originator AONE - Volume SBR - Location 8886 - Type DE - Role C - Number 002
Revision AB

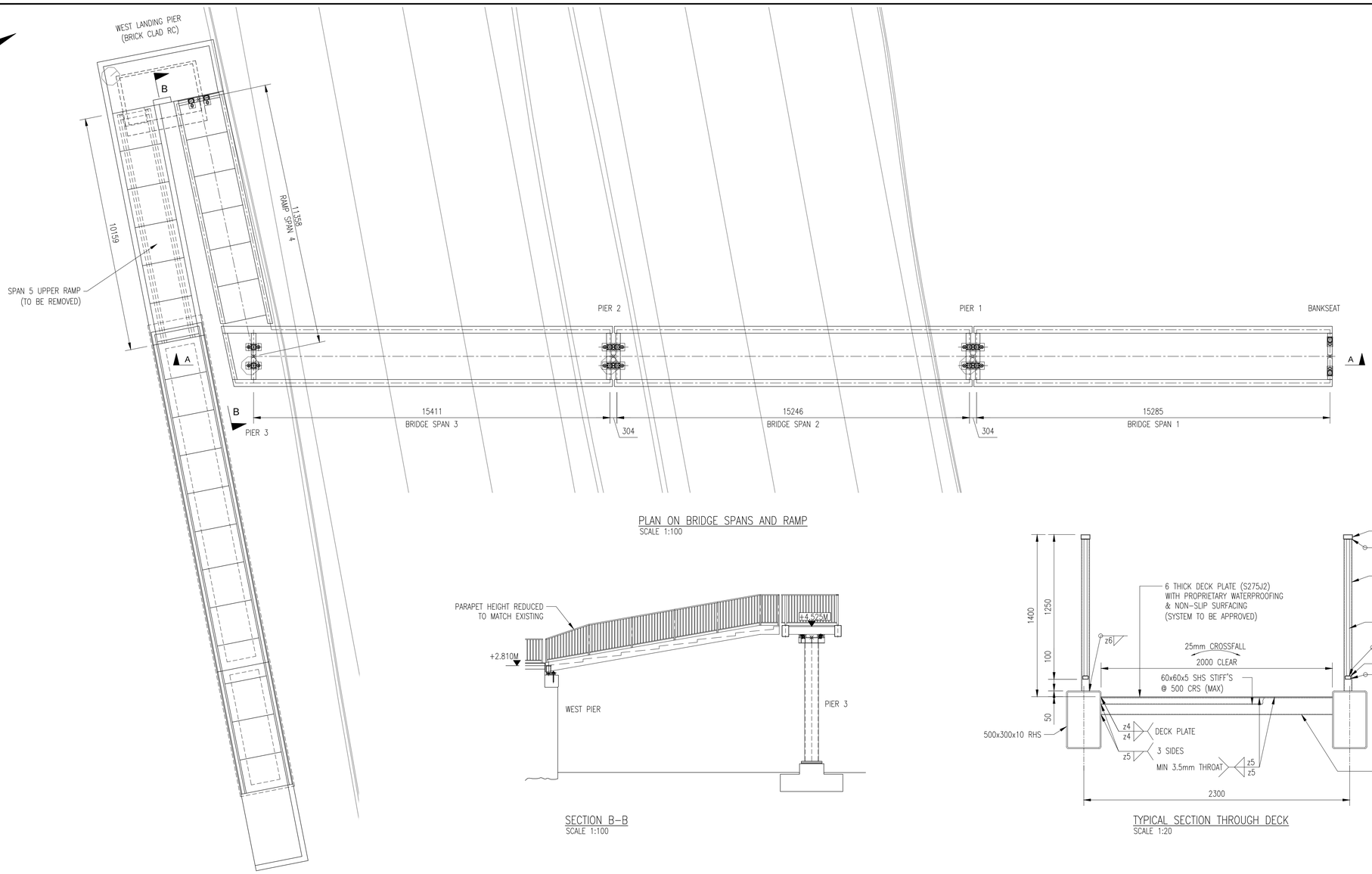
Drawing Scale: As shown
Original Sheet Size A1

DO NOT SCALE FROM DRAWING

highways england

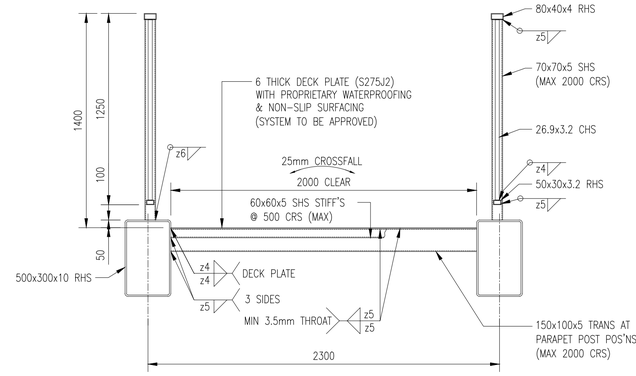
APPENDIX B-2

AS BUILT INFORMATION IMPROVEMENT WORKS

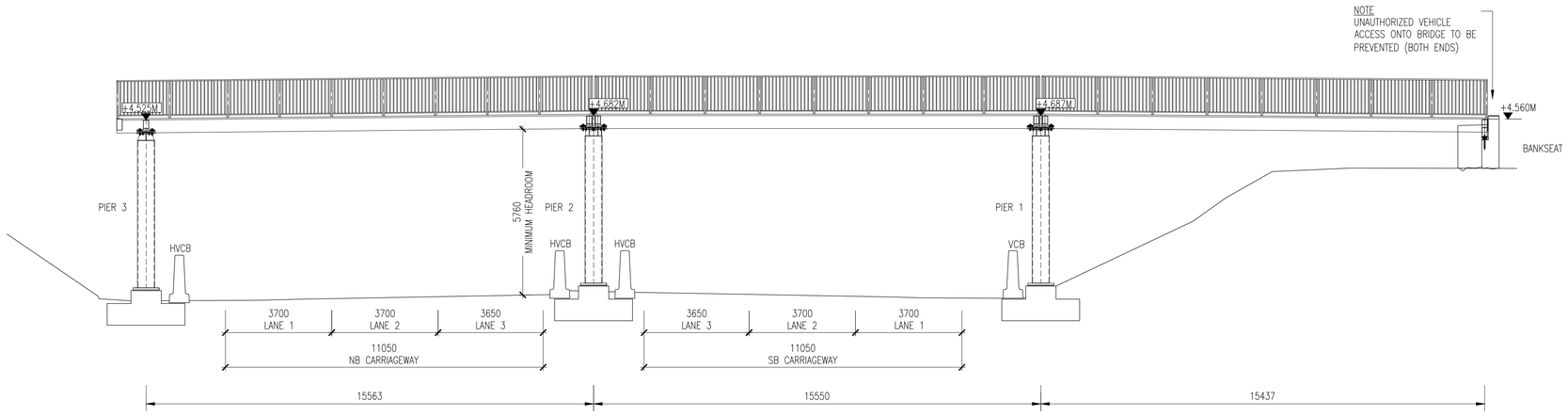


PLAN ON BRIDGE SPANS AND RAMP
SCALE 1:100

SECTION B–B
SCALE 1:100



TYPICAL SECTION THROUGH DECK
SCALE 1:20



SECTION A–A
SCALE 1:100

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS STATED OTHERWISE.
2. ALL LEVELS ARE IN METRE (m) AOD..
3. THIS GA HAS BEEN PREPARED BASED ON REFERENCE TO ARCHIVE DRAWINGS:

REV	DATE	BY	DESCRIPTION	CHK	APP

DRAWING STATUS:
PRELIMINARY

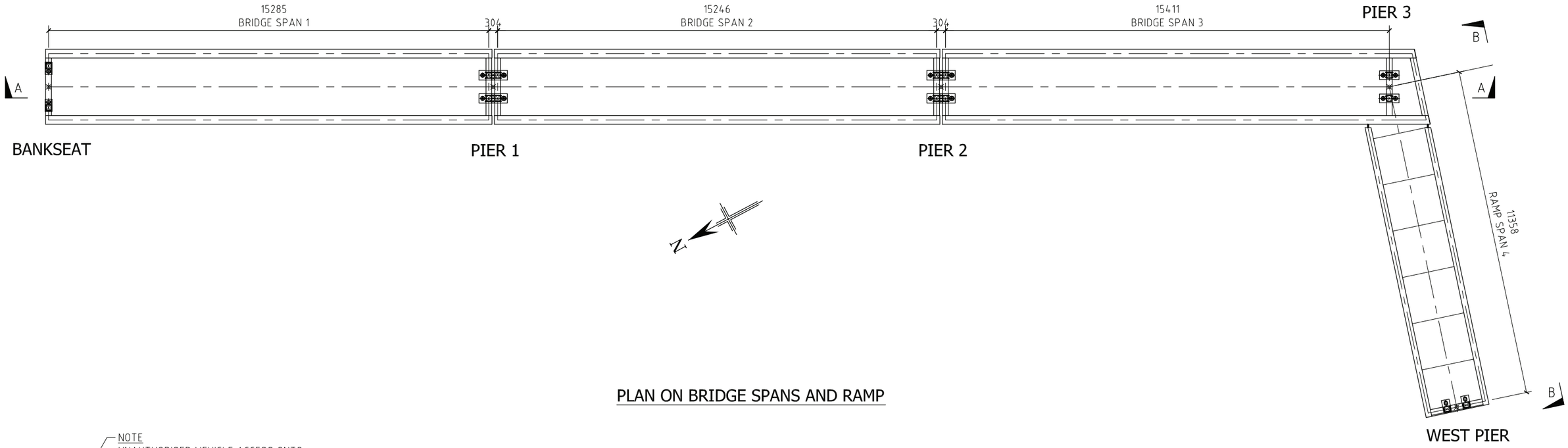
Three White Rose Office Park, Millshaw Park Lane, Leeds,
LS11 0DL
Tel: +44 (0)113 395 6200, Fax: +44 (0)113 395 6201
http://www.wspgroup.com

CLIENT:
Working on behalf of highways england

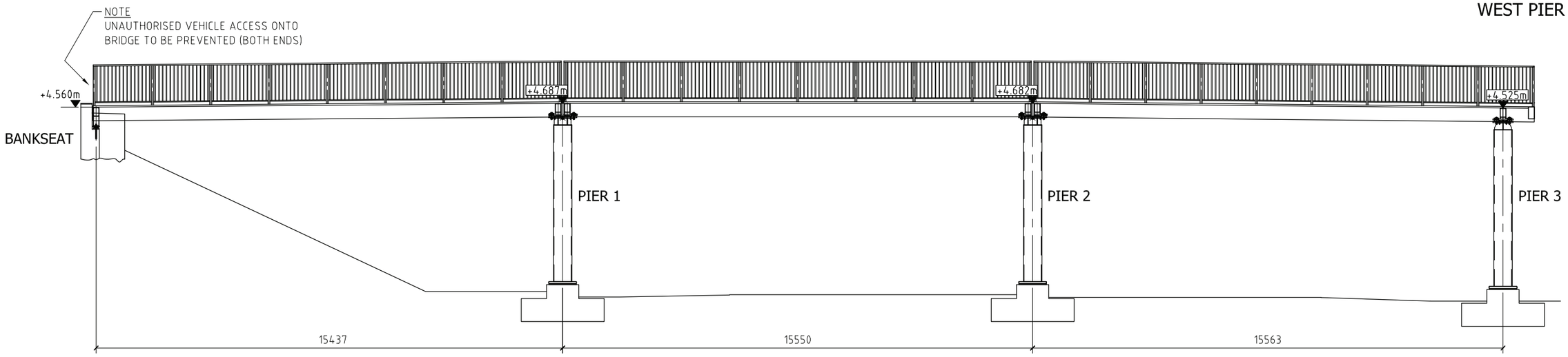
PROJECT:
A1 BIRTLEY TO COALHOUSE

TITLE:
NORTH DENE FOOTBRIDGE
EXISTING GENERAL ARRANGEMENT

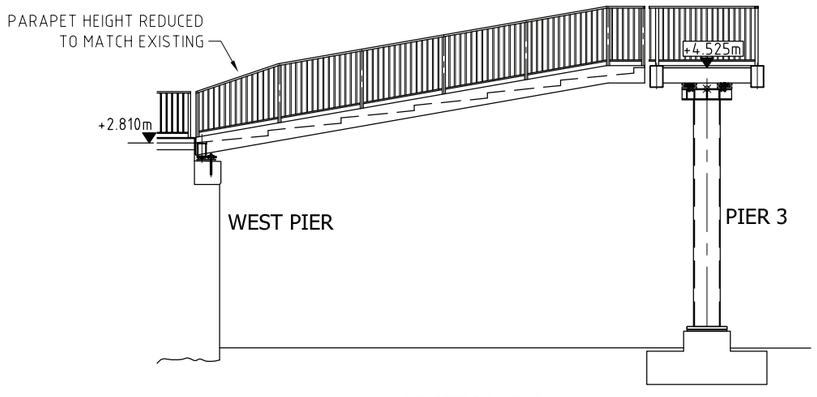
SCALE @ A1:	CHECKED:	APPROVED:
AS SHOWN	HM	HM
CAD FILE:	DESIGN-DRAWN:	DATE:
	RM- SJ	JANUARY 2018
PROJECT No:	DRAWING No:	REV:
70113262	HE551462-WSP-SBR-BR008-DR-S-00001	-



PLAN ON BRIDGE SPANS AND RAMP



SECTION A-A



SECTION B-B

NOTES

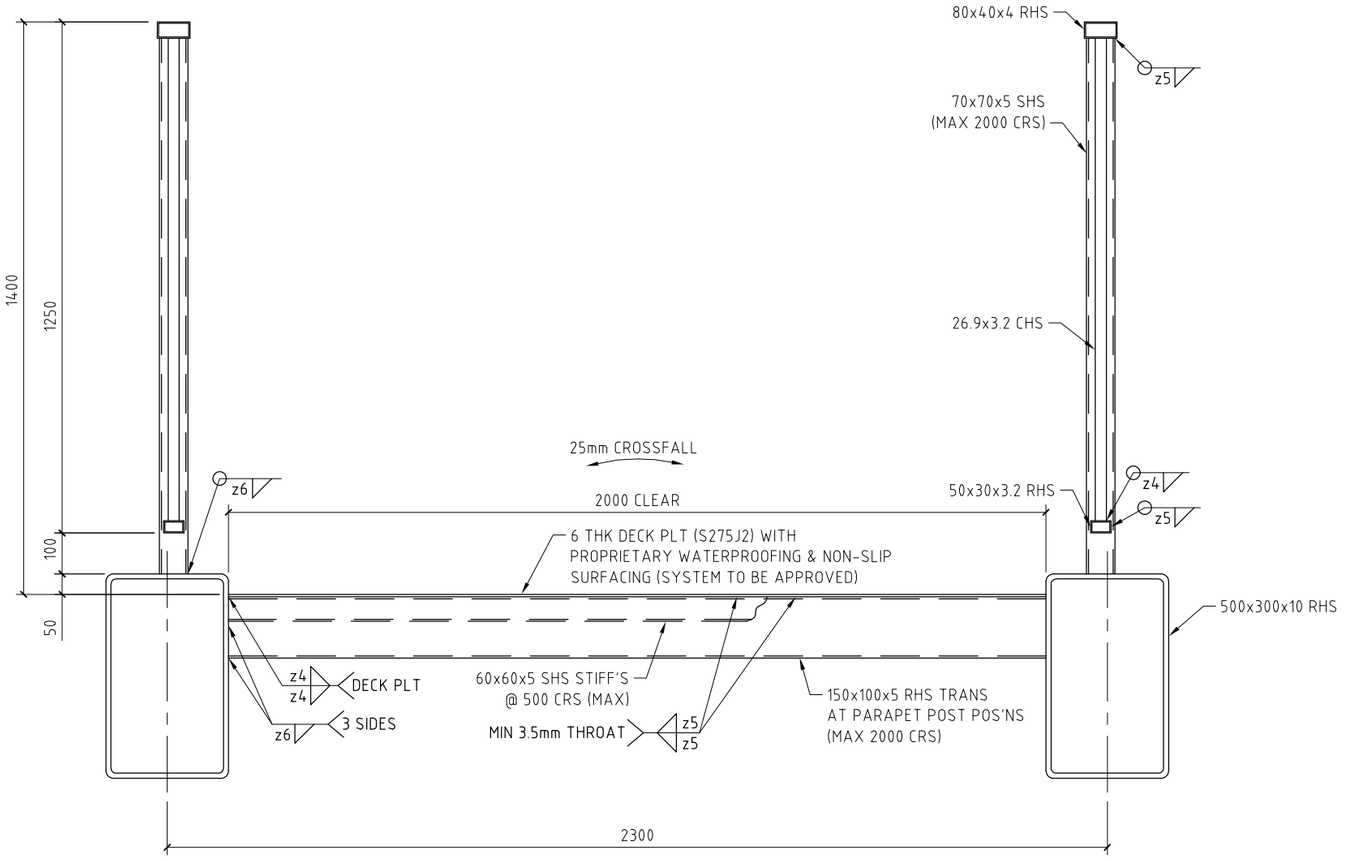
1. ALL RHS/SHS/CHS SECTIONS GRADE S355J2H TO BS EN 10210 (U.N.O.)
   ALL OTHER STRUCTURAL ROLLED SECTIONS GRADE S355J2 TO BS EN 10025 (U.N.O.)
   ALL PLATES GRADE S355J2 TO BS EN 10025 (U.N.O.)
   (NON-STRUCTURAL ITEMS GRADE S275)
2. ALL DIMENSIONS AND DETAILS ARE INTENDED TO SHOW DESIGN INTENT ONLY, AND ARE SUBJECT TO MINOR AMENDMENT DURING DETAILING
3. THE STRUCTURE IS EXECUTION CLASS EXC3 TO BS EN 1090-2

NUSTEEL
LYMPNE, HYTHE, KENT.
HYTHE STD 01303 268112 (6 LINES)
FAX :01303 266098

Scale	1:140
Designed	IB
Drawn	IB
Checked	
Date	OCT 16

NORTH DENE FOOTBRIDGE
DESIGN (J16148) – FULL STRUCTURE
GENERAL ARRANGEMENT

Contract No.	F16026
Drawing No.	DES/01
Rev.	



TYPICAL SECTION THROUGH BRIDGE SPANS 1 & 2

NOTES

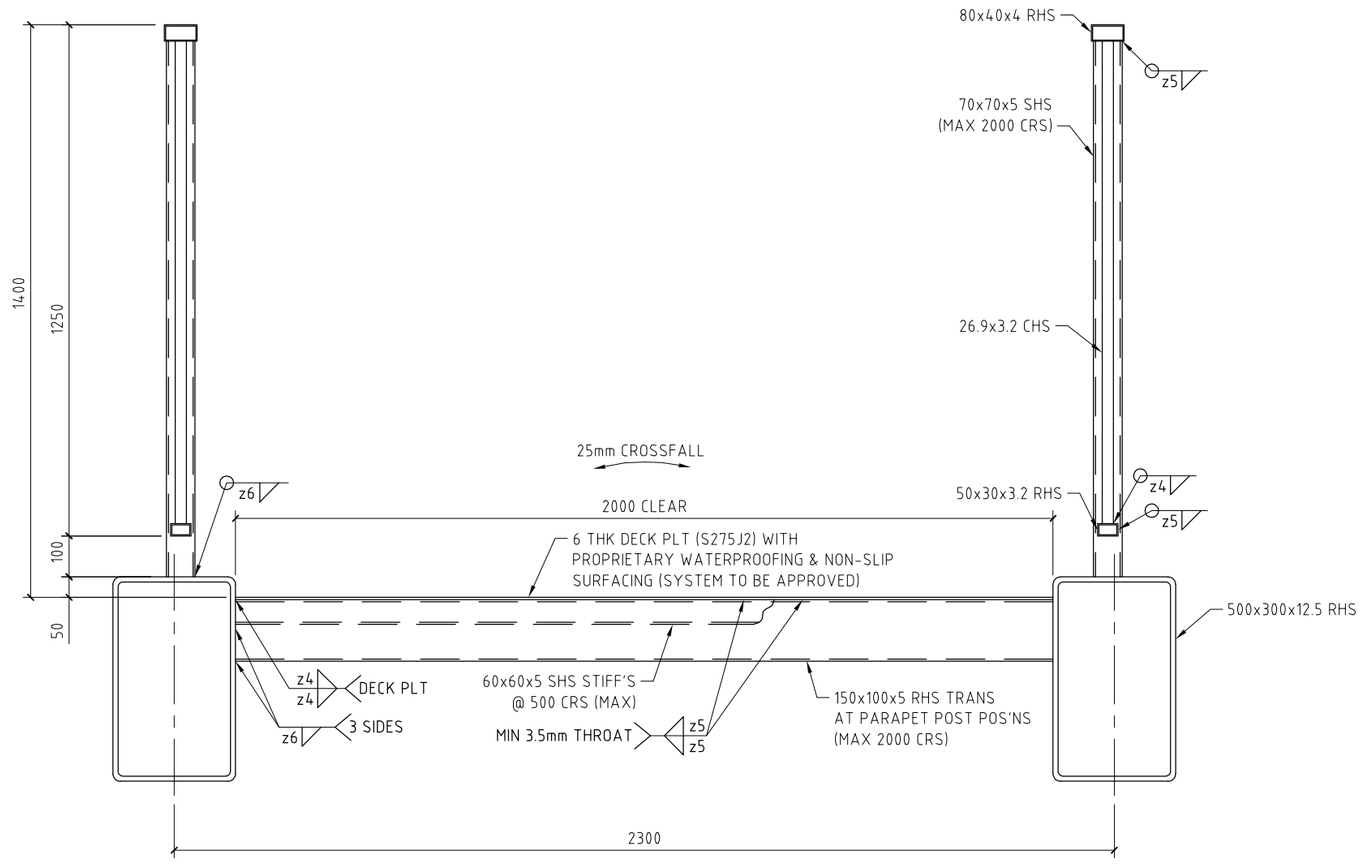
1. ALL RHS/SHS/CHS SECTIONS GRADE S355J2H TO BS EN 10210 (U.N.O.)
   ALL OTHER STRUCTURAL ROLLED SECTIONS GRADE S355J2 TO BS EN 10025 (U.N.O.)
   ALL PLATES GRADE S355J2 TO BS EN 10025 (U.N.O.)
   (NON-STRUCTURAL ITEMS GRADE S275)
2. ALL DIMENSIONS AND DETAILS ARE INTENDED TO SHOW DESIGN
   INTENT ONLY, AND ARE SUBJECT TO MINOR AMENDMENT DURING DETAILING
3. THE STRUCTURE IS EXECUTION CLASS EXC3 TO BS EN 1090-2

NUSTEEL
LYMPNE, HYTHE, KENT.
HYTHE STD 01303 268112 (6 LINES)
FAX :01303 266098

Scale	1:15
Designed	IB
Drawn	IB
Checked	
Date	OCT 16

NORTH DENE FOOTBRIDGE
DESIGN (J16148) – DETAILS

Contract No.	
F16026	
Drawing No.	Rev.
DES/02	A



TYPICAL SECTION THROUGH BRIDGE SPAN 3

NOTES

1. ALL RHS/SHS/CHS SECTIONS GRADE S355J2H TO BS EN 10210 (U.N.O.)
   ALL OTHER STRUCTURAL ROLLED SECTIONS GRADE S355J2 TO BS EN 10025 (U.N.O.)
   ALL PLATES GRADE S355J2 TO BS EN 10025 (U.N.O.)
   (NON-STRUCTURAL ITEMS GRADE S275)
2. ALL DIMENSIONS AND DETAILS ARE INTENDED TO SHOW DESIGN INTENT ONLY, AND ARE SUBJECT TO MINOR AMENDMENT DURING DETAILING
3. THE STRUCTURE IS EXECUTION CLASS EXC3 TO BS EN 1090-2

NUSTEEL
LYMPNE, HYTHE, KENT.
HYTHE STD 01303 268112 (6 LINES)
FAX :01303 266098

Scale	1:15
Designed	IB
Drawn	IB
Checked	
Date	OCT 16

NORTH DENE FOOTBRIDGE
DESIGN (J16148) – DETAILS

Contract No.	F16026
Drawing No.	DES/03
Rev.	A

APPENDIX B-3

EXISTING STRUCTURE PHOTOGRAPH RECORD, DATED SEPTEMBER 2017

Photograph 1
Typical corrosion to parapet elements across the ramp

Photograph 2
Staining due to water leakage

Photograph 3
Deterioration of bridge joint

Photograph 4
Overgrown vegetation

Photograph 5
View of surfacing on bridge deck

Photograph 6
Bridge Soffit- Connection details between pier and deck

Photograph 7
View of the ramp

Photograph 8
South elevation of the ramp

Photograph 9
South elevation of the footbridge

wsp
Three White Rose Office Park, Millshaw Park Lane, Leeds, LS11 0DL
Tel: +44 (0)113 395 6200. Fax: +44 (0)113 395 6201
http://www.wsp.com

Project:
A1 BIRTLEY TO COAL HOUSE IMPROVEMENT SCHEME

Title:
North Dene Footbridge

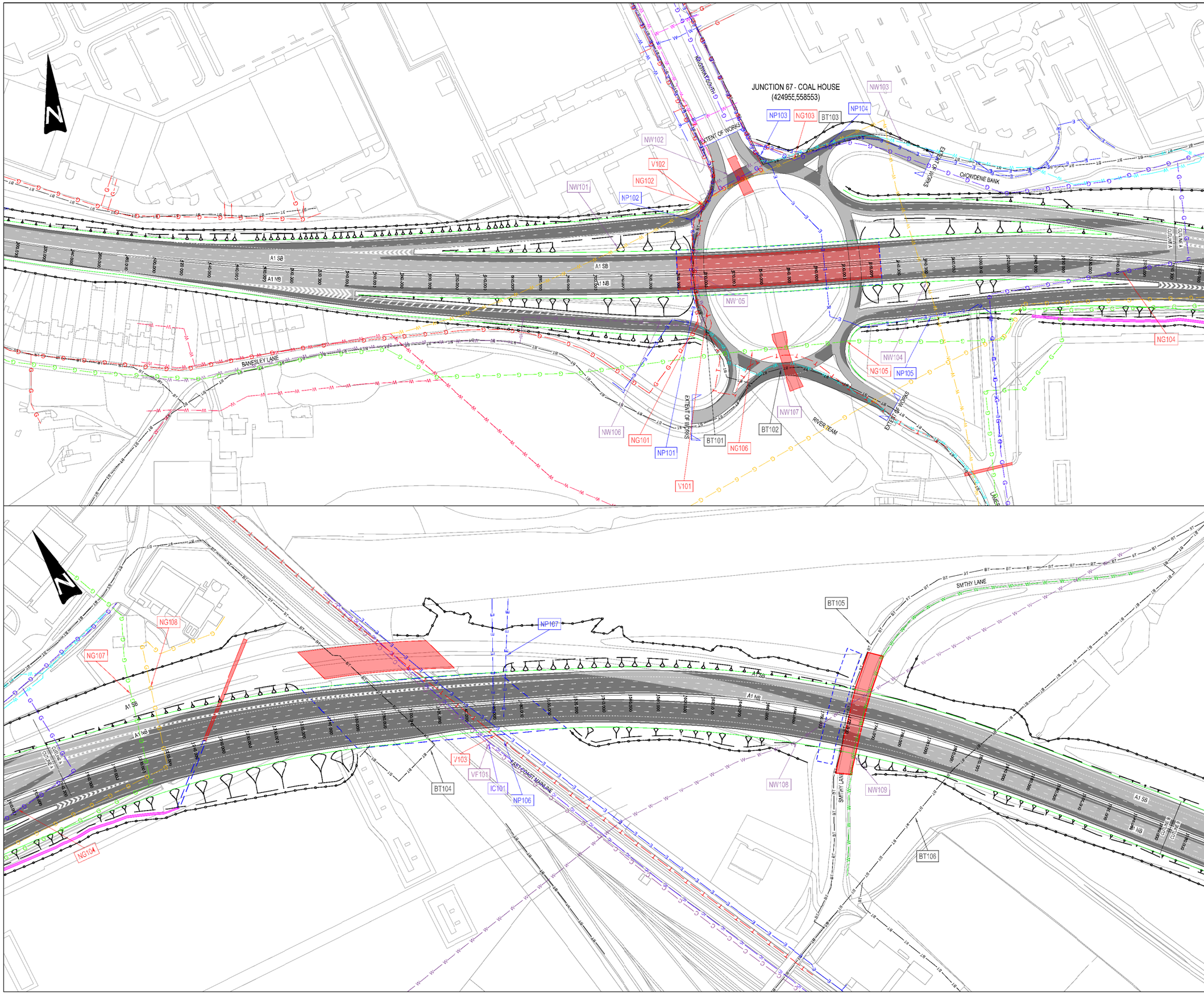
Appendix C

STATUTORY UNDERTAKER'S INFORMATION

APPENDIX C-1

STATUTORY UNDERTAKER'S DRAWINGS

Status S2 | Drawing Number HA551462 - WSP - VUT - BCH - DR - D - 2700_026 | Rev P1.0



NOTES

1. LOCATION OF SERVICE PLANT SHOWN ON THIS DRAWING HAS BEEN OBTAINED FROM C2 STATUTORY UNDERTAKERS RETURNS AND IS SHOWN INDICATIVELY. THE STATUTORY UNDERTAKERS ARE TO SATISFY THEMSELVES OF THE LOCATION AND EXTENTS OF SERVICE PLANT.
2. REFER TO SECTION 3.10 OF THE TECHNICAL APPRAISAL REPORT FOR DETAILS OF THE DIVERSION WORKS PROPOSED.

KEY

- BT DUCT
- IC INSTALCOM
- W NORTHUMBRIAN WATER COMBINED
- W NORTHUMBRIAN WATER FOUL
- W NORTHUMBRIAN WATER ABANDONED
- W NORTHUMBRAIN WATER SURFACE
- W NORTHUMBRIAN WATER TREATED
- W NORTHUMBRIAN WATER DISTRIBUTION
- W NON NORTHUMBRIAN WATER PRIVATE
- G NORTHERN GAS LOW PRESSURE
- G NORTHERN GAS MEDIUM PRESSURE
- G NORTHERN GAS INTERMEDIATE PRESSURE
- G NORTHERN GAS REGIONAL HIGH PRESSURE
- T VIRGIN MEDIA CABLE
- E NORTHERN POWER GRID CABLE
- C VODAFONE CABLE
- IC01 UTILITY REFERNCE
- EXISTING STRUCTURE
- PROPOSED STRUCTURE
- PROPOSED HIGHWAYS FENCE LINE
- NEW CARRIAGEWAY CONSTRUCTION
- EXISTING CARRIAGEWAY TO BE RETAINED
- PROPOSED DRAINAGE DITCH
- PROPOSED SIGNAL
- EXISTING SIGNAL

SAFETY, HEALTH AND ENVIRONMENTAL SYMBOL LEGEND

⚠ INDICATES A RESIDUAL RISK AS A WARNING

Suit	Rev	Date	Description	Des	Chk	App
S2	P1.0	08/01/2016	FOR INFORMATION	RA	COP	NGR

Designer
WSP PARSONS BRINCKERHOFF
Three White Rose Office Park, Millshaw Park Lane, Leeds, LS11 0DL
Tel: +44 (0)113 395 6200, Fax: +44 (0)113 395 6201
http://www.wspgroup.com

Client: highways england

Project Title: A1 BIRTLEY TO COAL HOUSE

Drawing Title: STATUTORY UNDERTAKERS OPTION 2 SHEET 1 OF 3

Scale	Drawn	Designed	Checked	Approved	QR CODE
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Size	Date	Date	Date	Date	
A1	06/01/2016	06/01/2016	06/01/2016	06/01/2016	

Status: FOR INFORMATION — Suitability: S2

Drawing Number: HA551462 - WSP - VUT - BCH - DR - D - 2700_026 — Revision: P1.0

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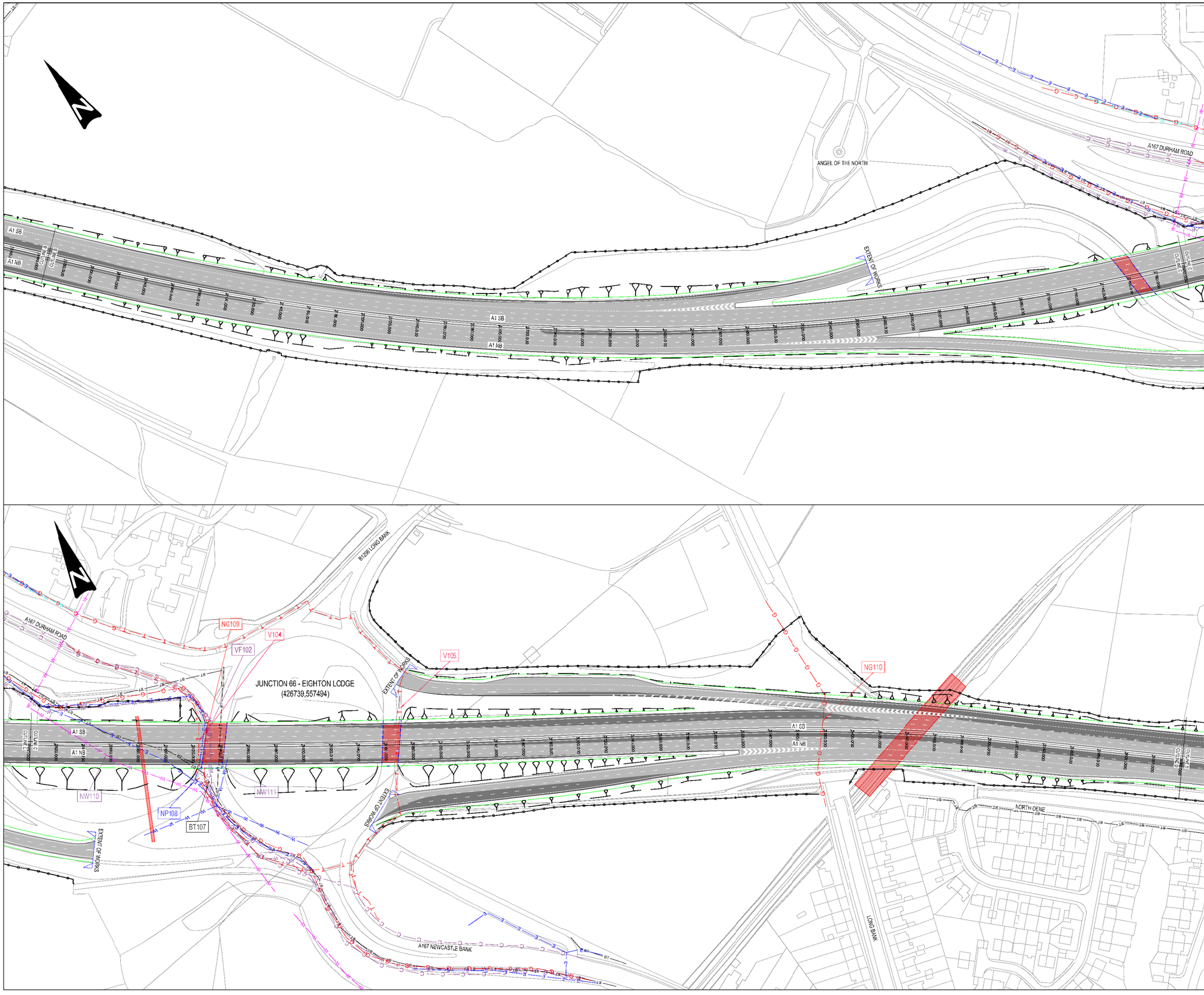
Status S2 | Drawing Number HA551462 - WSP - VUT - BCH - DR - D - 2700_027 | Rev P1.0



NOTES

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KEY

- BT — BT DUCT
- IC — INSTALCOM
- W — NORTHUMBRIAN WATER COMBINED
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- W — NORTHUMBRIAN WATER ABANDONED
- W — NORTHUMBRIAN WATER SURFACE
- W — NORTHUMBRIAN WATER TREATED
- W — NORTHUMBRIAN WATER DISTRIBUTION
- W — NON NORTHUMBRIAN WATER PRIVATE
- G — NORTHERN GAS LOW PRESSURE
- G — NORTHERN GAS MEDIUM PRESSURE
- G — NORTHERN GAS INTERMEDIATE PRESSURE
- G — NORTHERN GAS REGIONAL HIGH PRESSURE
- T — VIRGIN MEDIA CABLE
- E — NORTHERN POWER GRID CABLE
- C — VODAFONE CABLE
- IC01 — UTILITY REFERNCE
- EXISTING STRUCTURE
- PROPOSED STRUCTURE
- PROPOSED HIGHWAYS FENCE LINE
- NEW CARRIAGEWAY CONSTRUCTION
- EXISTING CARRIAGEWAY TO BE RETAINED
- PROPOSED DRAINAGE DITCH
- PROPOSED SIGNAL
- EXISTING SIGNAL

SAFETY, HEALTH AND ENVIRONMENTAL SYMBOL LEGEND

⚠ INDICATES A RESIDUAL RISK AS A WARNING

Suit	Rev	Date	Description	Des	Chk	App
S2	P1.0	08/01/2016	FOR INFORMATION	IAK	COP	NGR

Designer
WSP PARSONS BRINCKERHOFF
Three White Rose Office Park, Millshaw Park Lane, Leeds, LS11 0DL
Tel: +44 (0)113 395 6200, Fax: +44 (0)113 395 6201
http://www.wspgroup.com

Client: highways england

Project Title: A1 BIRTLEY TO COAL HOUSE

Drawing Title: STATUTORY UNDERTAKERS OPTION 2 SHEET 2 OF 3

Scale	Drawn	Designed	Checked	Approved	QR CODE
1:1250	LCB	IAK	COP	NGR	
Size	Date	Date	Date	Date	
A1	06/01/2016	08/01/2016	08/01/2016	08/01/2016	

Status: FOR INFORMATION — Suitability: S2

Drawing Number: HA551462 - WSP - VUT - BCH - DR - D - 2700_027 — Revision: P1.0

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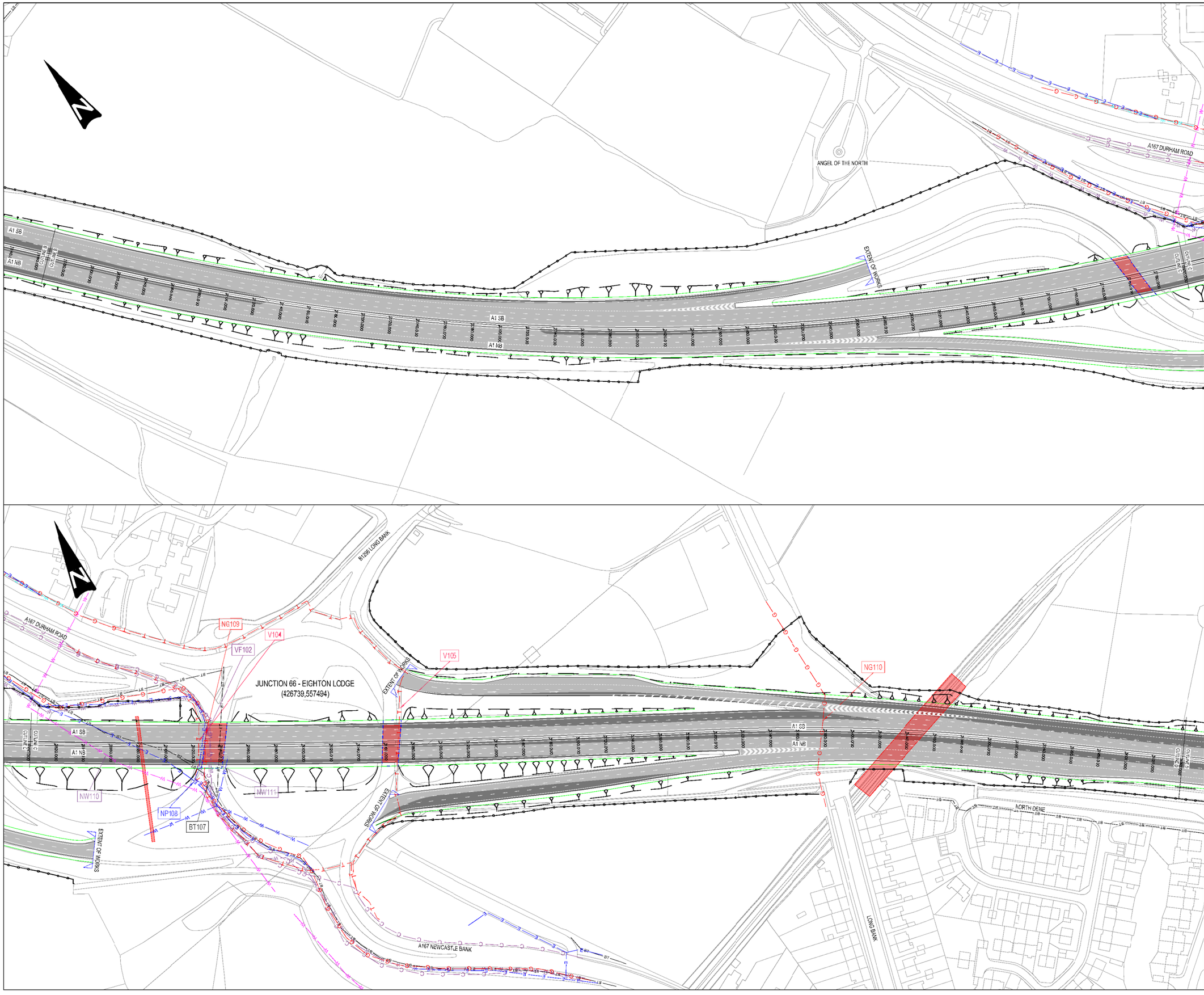
Status S2 | Drawing Number HA551462 - WSP - VUT - BCH - DR - D - 2700_027 | Rev P1.0



NOTES

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- E — NORTHERN POWER GRID CABLE
- C — VODAFONE CABLE
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- EXISTING STRUCTURE
- PROPOSED STRUCTURE
- PROPOSED HIGHWAYS FENCE LINE
- NEW CARRIAGEWAY CONSTRUCTION
- EXISTING CARRIAGEWAY TO BE RETAINED
- PROPOSED DRAINAGE DITCH
- PROPOSED SIGNAL
- EXISTING SIGNAL

SAFETY, HEALTH AND ENVIRONMENTAL SYMBOL LEGEND

⚠ INDICATES A RESIDUAL RISK AS A WARNING

Suit	Rev	Date	Description	Des	Chk	App
S2	P1.0	08/01/2016	FOR INFORMATION	IAK	COP	NGR

Designer
WSP PARSONS BRINCKERHOFF
Three White Rose Office Park, Millshaw Park Lane, Leeds, LS11 0DL
Tel: +44 (0)113 395 6200, Fax: +44 (0)113 395 6201
http://www.wspgroup.com

Client: highways england

Project Title: A1 BIRTLEY TO COAL HOUSE

Drawing Title: STATUTORY UNDERTAKERS OPTION 2 SHEET 2 OF 3

Scale	Drawn	Designed	Checked	Approved	QR CODE
1:1250	LCB	IAK	COP	NGR	
Size	Date	Date	Date	Date	
A1	06/01/2016	08/01/2016	08/01/2016	08/01/2016	

Status: FOR INFORMATION — Suitability: S2

Drawing Number: HA551462 - WSP - VUT - BCH - DR - D - 2700_027 — Revision: P1.0

A1 0 5m 10m DO NOT SCALE

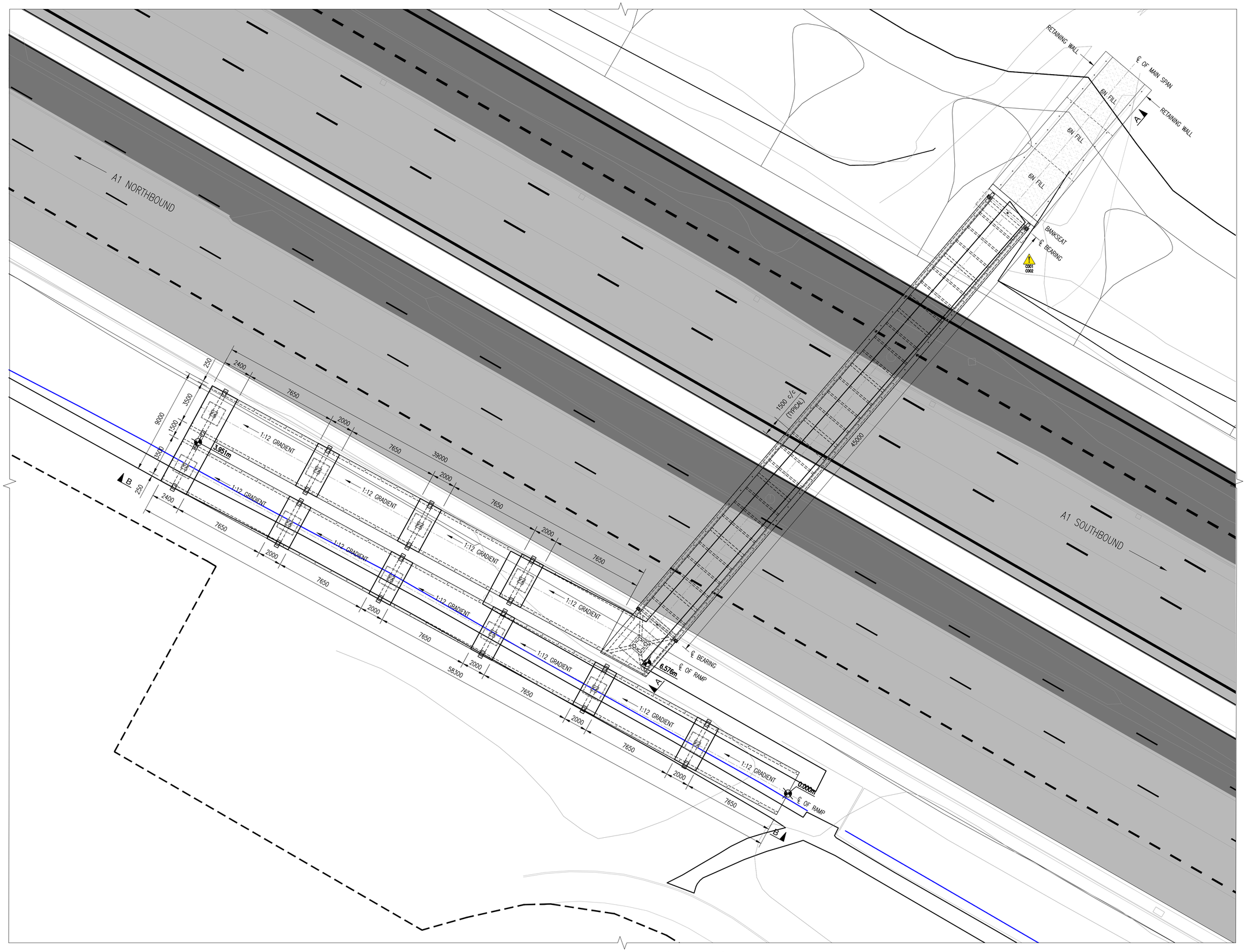
Appendix D

PROPOSED GENERAL ARRANGEMENT DRAWINGS

highways england

APPENDIX D-1

OUTLINE GENERAL ARRANGEMENT BOW TRUSS FOOTBRIDGE OPTION



PLAN ON NORTH DENE FOOTBRIDGE (GRADIENT 1:12)
SCALE 1:150

GENERAL NOTES

1) STRUCTURAL BRIDGE DETAILS PROVIDED ON THIS DRAWING IS INDICATIVE ONLY BASED ON LIMITED INFORMATION AVAILABLE TO DATE
2) THE SIZE OF STRUCTURAL ELEMENTS ARE BASED PRELIMINARY CALCULATION AND PREVIOUS SIMILAR TYPE WORKS. ALL INFORMATION IS SUBJECT TO DETAILED DESIGN PRIOR TO FINAL CONFIRMATION
3) DETAILS PROVIDED ARE FOR INFORMATION ONLY. INDICATIVE CONSTRUCTION COST ESTIMATES ARE BASED ON PREVIOUS SIMILAR TYPE WORKS
4) THE FOLLOWING CRITICAL INFORMATION IS REQUIRED TO VERIFY THE FEASIBILITY OF THE PROPOSED OPTION AND DEVELOPED THIS FURTHER AT DETAILED DESIGN (IF PREFERRED)
   - TOPOGRAPHICAL SURVEY - CONFIRM GEOMETRIC PARAMETERS AND SITE CONSTRAINTS
   - SITE INVESTIGATION INFORMATION - CONFIRM FOUNDATION PARAMETERS
   - LIAISON WITH HIGHWAY ENGLAND - CONFIRM STRUCTURAL REQUIREMENTS
   - LIAISON WITH STATUTORY UNDERTAKERS - CONFIRM EXISTING/NEW SERVICES IMPACTED BY THE WORKS
5) ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE
6) ALL LEVELS ARE IN METERS UNLESS NOTED OTHERWISE
7) DO NOT SCALE IN CASE OF ANY DOUBTS, OMISSIONS OR ERRORS SEEK CLARIFICATION FROM THE DESIGNER

SAFETY, HEALTH AND ENVIRONMENTAL SYMBOL LEGEND

⚠ INDICATES A RESIDUAL RISK AS A WARNING

IN ADDITION TO THE HAZARDS/RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING SIGNIFICANT RESIDUAL RISKS

CONSTRUCTION:

REF C001 – LIFTING OF HEAVY/LARGE BRIDGE COMPONENTS

REF C002 – TRANSPORT LARGE STEEL COMPONENTS

REV	DATE	BY	DESCRIPTION	CHK	APP

DRAWING STATUS: PRELIMINARY

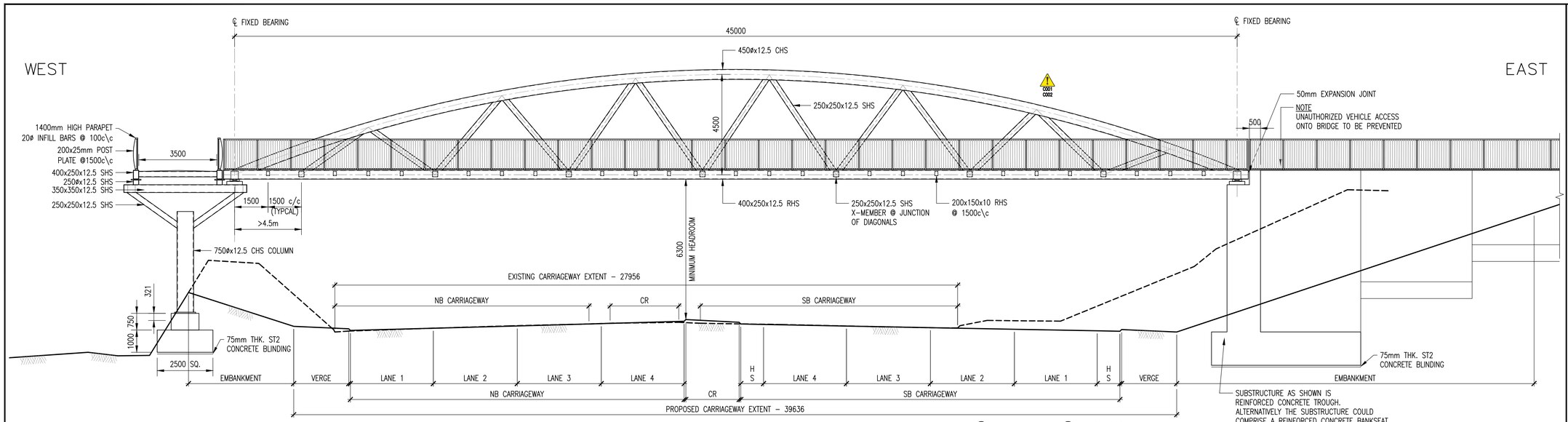
Three White Rose Office Park, Millshaw Park Lane, Leeds, LS11 0DL
Tel: +44 (0)113 395 6200, Fax: +44 (0)113 395 6201
http://www.wspgroup.com

CLIENT: Working on behalf of highways england

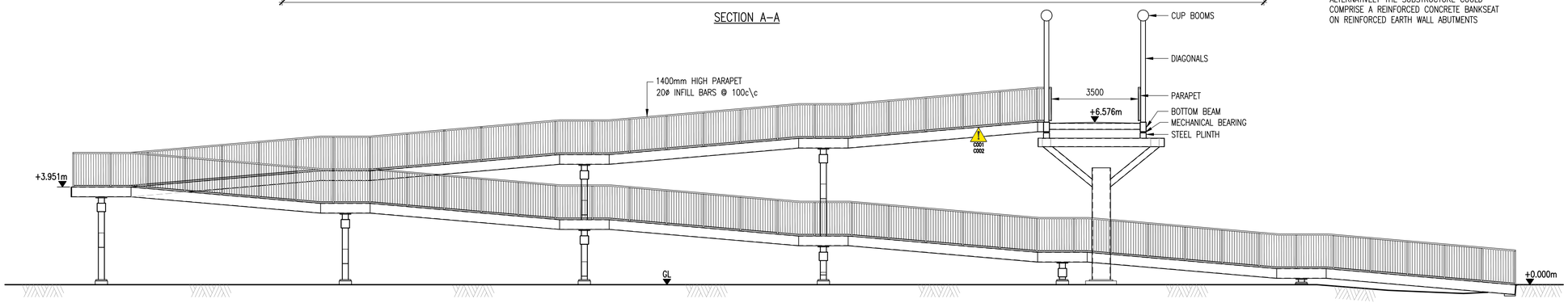
PROJECT: A1 BIRTLEY TO COALHOUSE

TITLE: NORTH DENE FOOTBRIDGE BOW TRUSS OPTION 1:12 RAMP PROVISION (SHEET 1 OF 2)

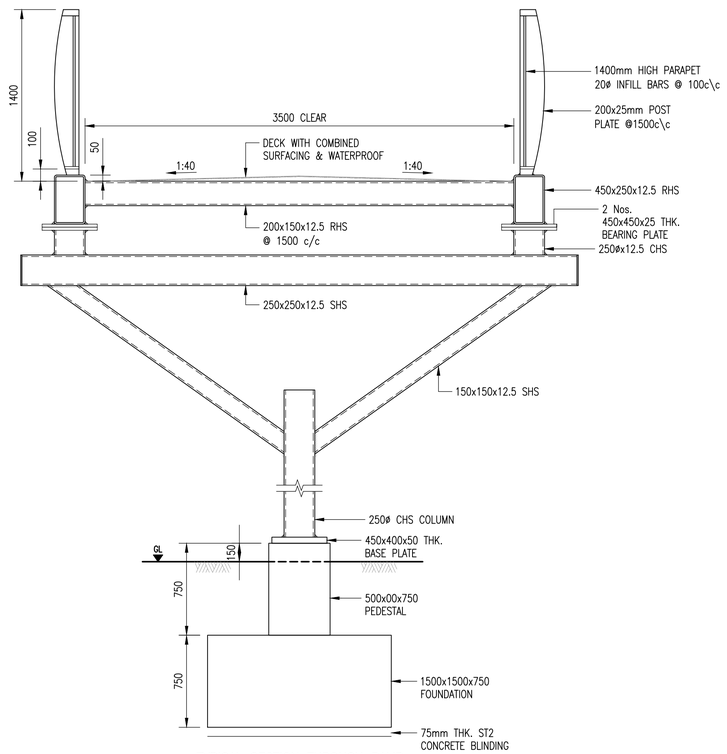
SCALE @ A1:	CHECKED:	APPROVED:
AS SHOWN	HM	HM
CAD FILE:	DESIGN-DRAWN:	DATE:
	RM- SJ	JANUARY 2018
PROJECT No:	DRAWING No:	REV:
70113262	HE551462-WSP-SBR-BR008-DR-S-00002	-



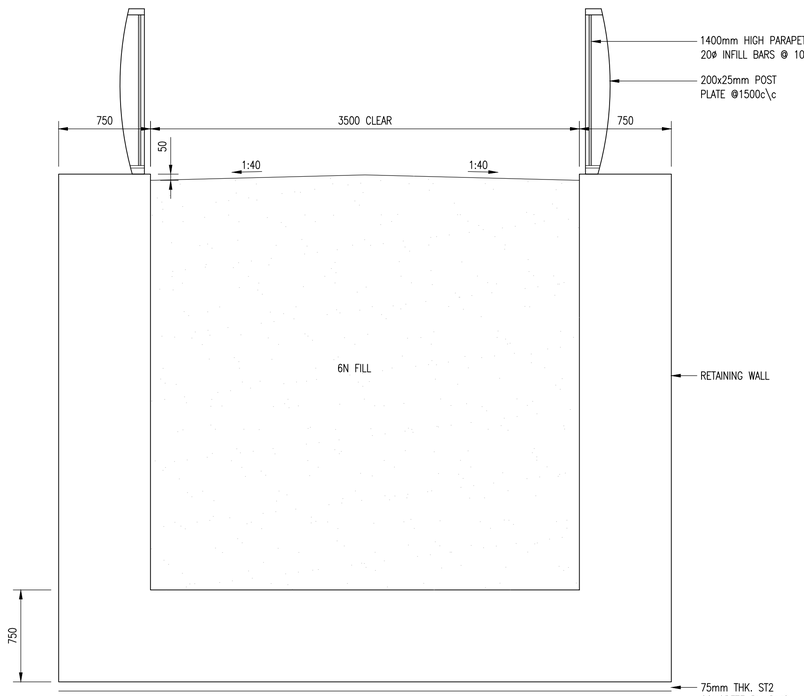
SECTION A–A



ELEVATION B–B
SCALE 1:100



TYPICAL SECTION THROUGH RAMP
SCALE 1:25



X–SECTION THROUGH RETAINING WALL
SCALE 1:25

NEW BRIDGE WITH RC TROUGH TO EAST SIDE

SR. NO.	MATERIAL	QUANTITY	UNITS
1.	STRUCTURAL STEEL S355	146	TONNES
2.	CONCRETE M40	479	m^3
3.	RE - BAR	96	TONNES
4.	BEARING	04	Nos

NEW BRIDGE WITH RC BANKSEAT AND RE WALLS TO EAST SIDE

SR. NO.	MATERIAL	QUANTITY	UNITS
1.	STRUCTURAL STEEL S355	146	TONNES
2.	CONCRETE M40	75	m^3
3.	RE - BAR	15	TONNES
4.	BEARING	04	Nos
5.	RE WALL	250	m^2

NOTES:

1) OPTION 1: COMPRISES THE DEMOLITION AND REMOVAL OF THE BRIDGE AND CONSTRUCTION OF NEW 3.5 M WIDE COMBINED CYCLEWAY/PEDESTRIAN FOOTBRIDGE AND RAMP
2) THE OPTION HAS BEEN DEVELOPED BASED ON THE FOLLOWING ASSUMPTIONS
   - DESIGN LOADING: LM4 AND SERVICE VEHICLE
   - HIGHWAY CROSS SECTION BASED ON PRELIMINARY ALIGNMENT DESIGN BY WSP HIGHWAYS
   - DESIGN LIFE FOR THE NEW ELEMENTS: 120 YEARS
   - ITS IS ACCEPTABLE FOR THE NEW BRIDGE WORKS TO BE CONSTRUCTED ON THE SAME ALIGNMENT/FOOTBRIDGE AS THE EXISTING.
   - FOR DETAILS OF THE EXISTING STRUCTURE REFER RECORD DRAWINGS
3) KEY MATERIALS (GRADE/STRENGTH)
   - ALL STRUCTURAL STEEL TO BE GRADE OF S355 TO BS 10025.
   - RETAINING WALL AND FOUNDATION CONCRETE TO BE MINIMUM STRENGTH CLASS C40/50 TO BE 8500 UNLESS NOTED OTHERWISE
   - ALL REINFORCEMENT TO BE GRADE B500B TO BS 4449:2005

INDICATIVE CONSTRUCTION SEQUENCE

- DISCUSS TRAFFIC MANAGEMENT REQUIREMENT AND GET APPROVAL FROM HIGHWAY ENGLAND FOR DEMOLITION
- ESTABLISH SITE COMPOUND
- REMOVE EXISTING BRIDGE
- CONSTRUCT FOUNDATION, SUBSTRUCTURE AND ABUTMENT
- INSTALL THE MECHANICAL BEARING OVER THE ABUTMENT AND MAIN COLUMN FOR TRUSS
- INSTALL THE PRE FABRICATED RAMP AND TRUSS
- INSTALL COMBINED WATERPROOFING SURFACING, DECK JOINT & PARAPET OVER RETAINING WALL ETC
- CLEAR THE SITE

SAFETY, HEALTH AND ENVIRONMENTAL SYMBOL LEGEND

⚠ INDICATES A RESIDUAL RISK AS A WARNING

IN ADDITION TO THE HAZARDS/RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING SIGNIFICANT RESIDUAL RISKS

CONSTRUCTION:

REF C001 – LIFTING OF HEAVY/LARGE BRIDGE COMPONENTS

REF C002 – TRANSPORT LARGE STEEL COMPONENTS

REV	DATE	BY	DESCRIPTION	CHK	APP

DRAWING STATUS: PRELIMINARY

Three White Rose Office Park, Millshaw Park Lane, Leeds, LS11 0DL
Tel: +44 (0)113 395 6200, Fax: +44 (0)113 395 6201
http://www.wspgroup.com

CLIENT: Working on behalf of highways england

PROJECT: A1 BIRTLEY TO COALHOUSE

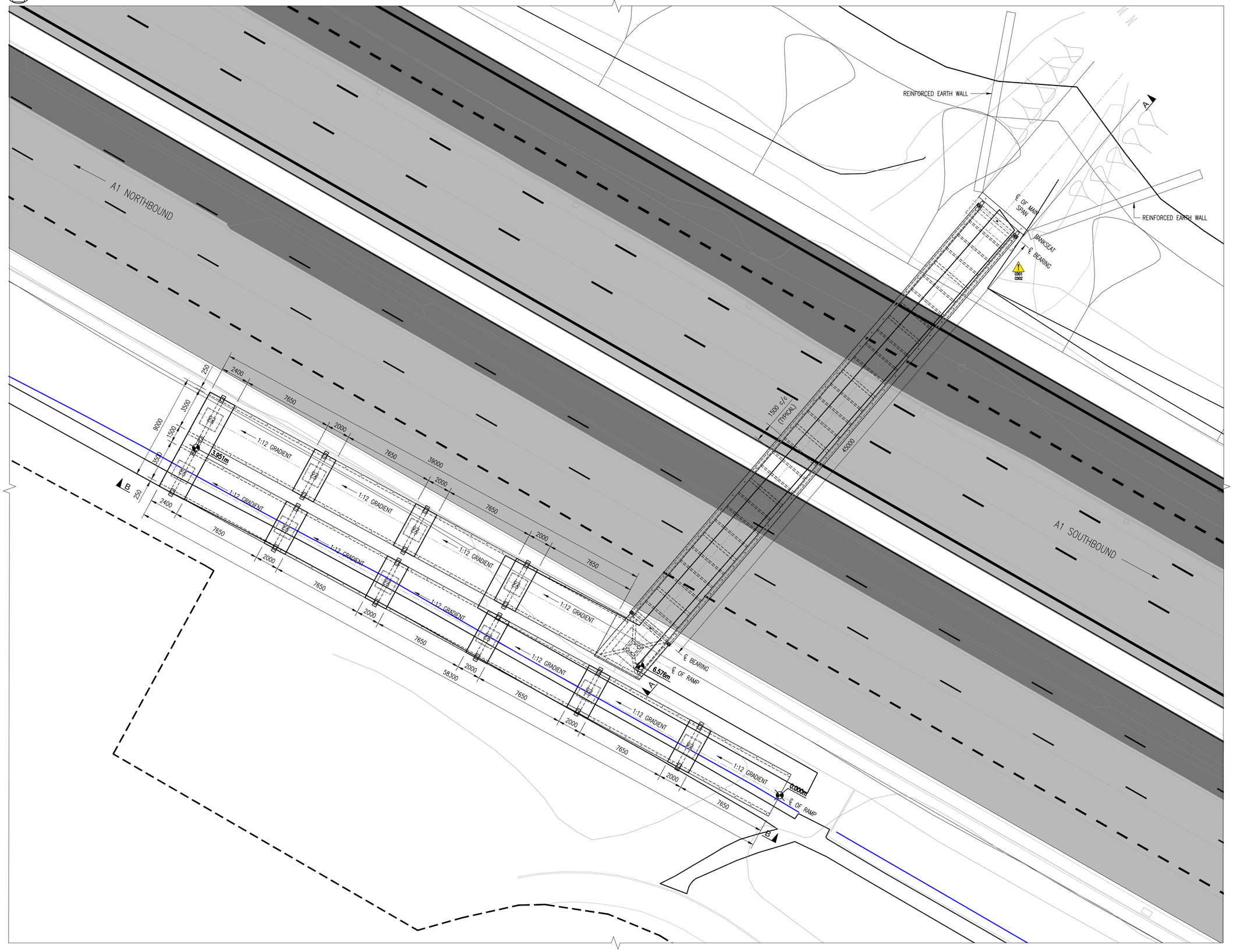
TITLE: NORTH DENE FOOTBRIDGE BOW TRUSS OPTION
1:12 RAMP PROVISION
(SHEET 2 OF 2)

SCALE @ A1:	CHECKED:	APPROVED:
AS SHOWN	HM	HM
CAD FILE:	DESIGN-DRAWN:	DATE:
	RM- SJ	JANUARY 2018
PROJECT No:	DRAWING No:	REV:
70113262	HE551462-WSP-SBR-BR008-DR-S-00003	-

highways england

APPENDIX D-2

OUTLINE GENERAL ARRANGEMENT TIED ARCH FOOTBRIDGE OPTION



PLAN ON NORTH DENE FOOTBRIDGE (GRADIENT 1:12)
SCALE 1:150

GENERAL NOTES

1) STRUCTURAL BRIDGE DETAILS PROVIDED ON THIS DRAWING IS INDICATIVE ONLY BASED ON LIMITED INFORMATION AVAILABLE TO DATE
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5) ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE
6) ALL LEVELS ARE IN METERS UNLESS NOTED OTHERWISE
7) DO NOT SCALE IN CASE OF ANY DOUBTS, OMISSIONS OR ERRORS SEEK CLARIFICATION FROM THE DESIGNER

SAFETY, HEALTH AND ENVIRONMENTAL SYMBOL LEGEND

⚠ INDICATES A RESIDUAL RISK AS A WARNING

IN ADDITION TO THE HAZARDS/RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING SIGNIFICANT RESIDUAL RISKS

CONSTRUCTION:

REF C001 – LIFTING OF HEAVY/LARGE BRIDGE COMPONENTS

REF C002 – TRANSPORT LARGE STEEL COMPONENTS

REV	DATE	BY	DESCRIPTION	CHK	APP

DRAWING STATUS: PRELIMINARY

Three White Rose Office Park, Millshaw Park Lane, Leeds, LS11 0DL
Tel: +44 (0)113 395 6200, Fax: +44 (0)113 395 6201
http://www.wspgroup.com

CLIENT: Working on behalf of highways england

PROJECT: A1 BIRTLEY TO COALHOUSE

TITLE: NORTH DENE FOOTBRIDGE TIED ARCH OPTION 1:12 RAMP PROVISION (SHEET 1 OF 2)

SCALE @ A1:	CHECKED:	APPROVED:
AS SHOWN	HM	HM
CAD FILE:	DESIGN-DRAWN:	DATE:
	RM- SJ	JANUARY 2018
PROJECT No:	DRAWING No:	REV:
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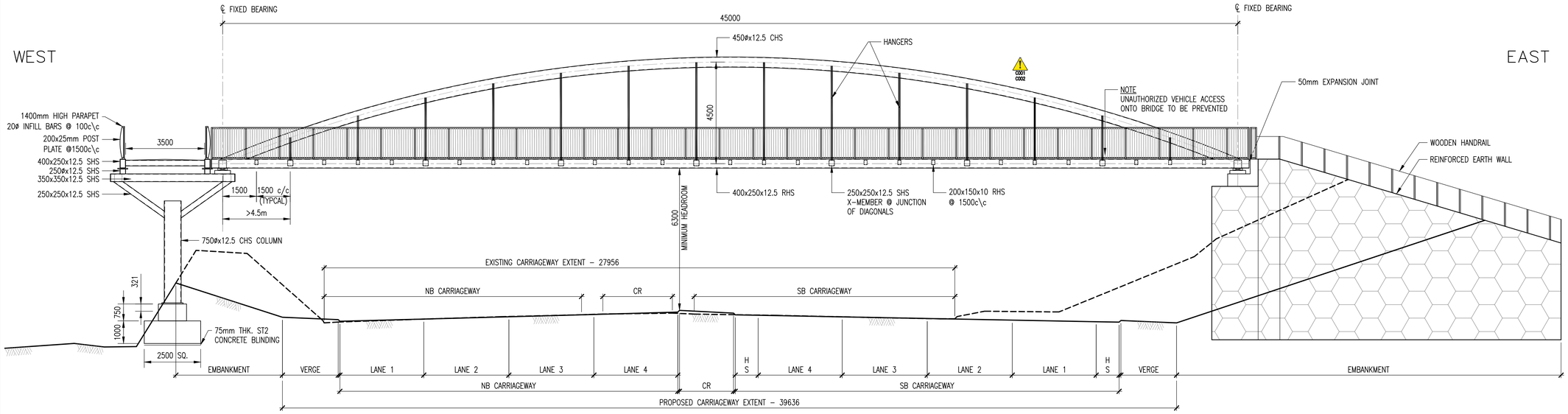
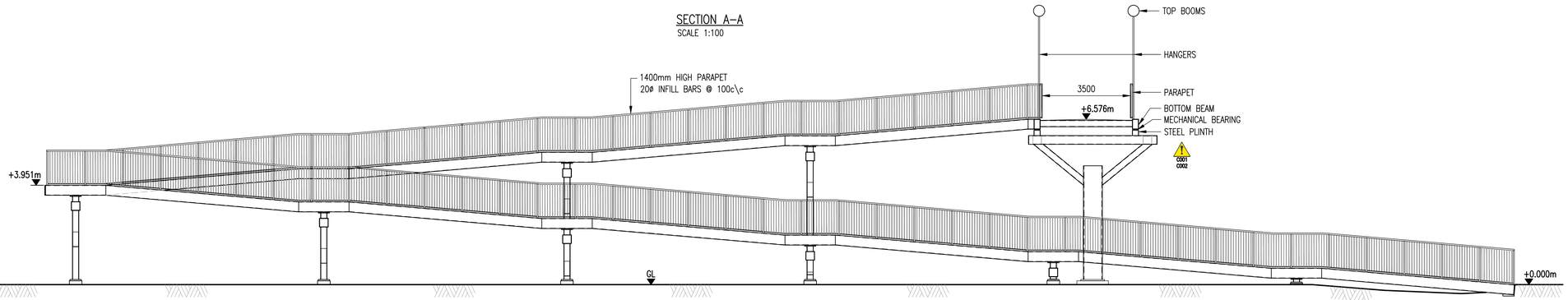


SECTION A-A
SCALE 1:100



ELEVATION B-B
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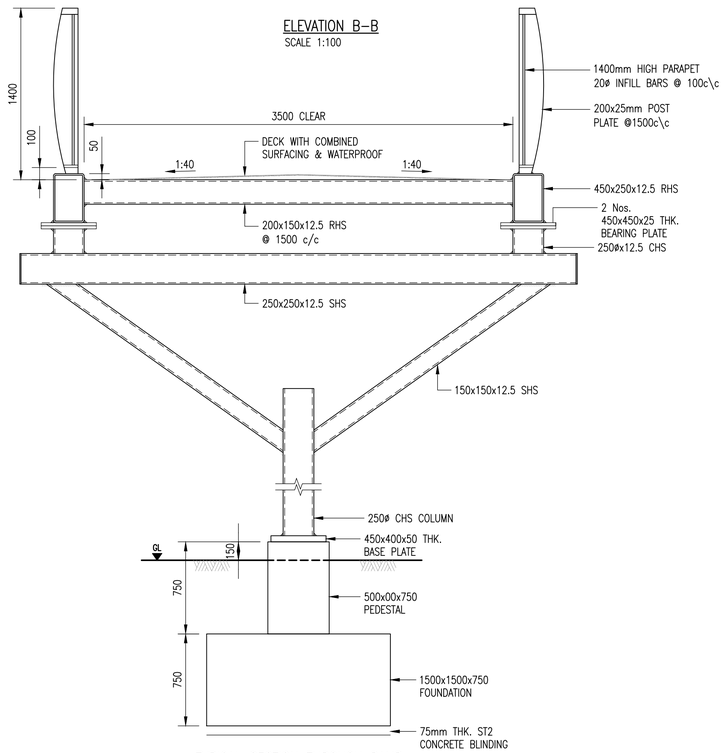

TYPICAL SECTION THROUGH RAMP
SCALE 1:25

NEW BRIDGE WITH RC BANKSEAT AND RE WALLS TO EAST SIDE

SR. NO.	MATERIAL	QUANTITY	UNITS
1.	STRUCTURAL STEEL S355	135	TONNES
2.	CONCRETE M40	75	m^3
3.	RE - BAR	15	TONNES
4.	BEARING	04	Nos
5.	HANGERS	40	m
6.	RE WALL	250	m^2

NOTES:

1) OPTION 1: COMPRISES THE DEMOLITION AND REMOVAL OF THE BRIDGE AND CONSTRUCTION OF NEW 3.5 M WIDE COMBINED CYCLEWAY/PEDESTRIAN FOOTBRIDGE AND RAMP
2) THE OPTION HAS BEEN DEVELOPED BASED ON THE FOLLOWING ASSUMPTIONS
   - DESIGN LOADING: LM4 AND SERVICE VEHICLE
   - HIGHWAY CROSS SECTION BASED ON PRELIMINARY ALIGNMENT DESIGN BY WSP HIGHWAYS
   - DESIGN LIFE FOR THE NEW ELEMENTS: 120 YEARS
   - ITS IS ACCEPTABLE FOR THE NEW BRIDGE WORKS TO BE CONSTRUCTED ON THE SAME ALIGNMENT/FOOTBRIDGE AS THE EXISTING.
   - FOR DETAILS OF THE EXISTING STRUCTURE REFER RECORD DRAWINGS
3) KEY MATERIALS (GRADE/STRENGTH)
   - ALL STRUCTURAL STEEL TO BE GRADE OF S355 TO BS 10025.
   - RETAINING WALL AND FOUNDATION CONCRETE TO BE MINIMUM STRENGTH CLASS C40/50 TO BE 8500 UNLESS NOTED OTHERWISE
   - ALL REINFORCEMENT TO BE GRADE B500B TO BS 4449:2005

INDICATIVE CONSTRUCTION SEQUENCE

- DISCUSS TRAFFIC MANAGEMENT REQUIREMENT AND GET APPROVAL FROM HIGHWAY ENGLAND FOR DEMOLITION
- ESTABLISH SITE COMPOUND
- REMOVE EXISTING BRIDGE
- CONSTRUCT FOUNDATION, SUBSTRUCTURE, ABUTMENT AND REINFORCED EARTH WALL
- INSTALL THE MECHANICAL BEARING OVER THE ABUTMENT AND MAIN COLUMN FOR TRUSS
- INSTALL THE PRE FABRICATED RAMP AND TRUSS
- INSTALL COMBINED WATERPROOFING SURFACING, DECK JOINT & PARAPET OVER RETAINING WALL ETC
- CLEAR THE SITE

SAFETY, HEALTH AND ENVIRONMENTAL SYMBOL LEGEND

INDICATES A RESIDUAL RISK AS A WARNING

IN ADDITION TO THE HAZARDS/RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING SIGNIFICANT RESIDUAL RISKS

CONSTRUCTION:

REF C001 – LIFTING OF HEAVY/LARGE BRIDGE COMPONENTS

REF C002 – TRANSPORT LARGE STEEL COMPONENTS

REV	DATE	BY	DESCRIPTION	CHK	APP

DRAWING STATUS: PRELIMINARY

Three White Rose Office Park, Millshaw Park Lane, Leeds,
LS11 0DL
Tel: +44 (0)113 395 6200, Fax: +44 (0)113 395 6201
http://www.wspgroup.com

CLIENT: Working on behalf of highways england

PROJECT: A1 BIRTLEY TO COALHOUSE

TITLE: NORTH DENE FOOTBRIDGE TIED ARCH OPTION
1:12 RAMP PROVISION
(SHEET 2 OF 2)

SCALE @ A1:	CHECKED:	APPROVED:
AS SHOWN	HM	HM
CAD FILE:	DESIGN-DRAWN:	DATE:
	RM- SJ	JANUARY 2018
PROJECT No:	DRAWING No:	REV:
70113262	HE551462-WSP-SBR-BR008-DR-S-00005	-

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Appendix E

DESIGNER'S RISK ASSESSMENT

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APPENDIX E-1

DESIGNER'S RISK ASSESSMENT

Way of Working: *Project Delivery*

T446: Design H&S Risk Register

Project No: 70041947

Project Name: A1 Birtley to Coal House Improvement Scheme: North Dene FB Replacement DRA

Provide Feedback

Guidance notes *(see guidance notes page for more details)*

Design risk management should be an integral part of the overall design development and designers should think of it in terms of considering constructability, maintainability, etc. Designers only need to document their consideration of risks in this simple risk register format. There is no requirement for quantitative design risk assessments to be carried out/documented and these should be avoided

** Risks should be considered in a logical sequence relating to the location/operational environment, constructability/installability, operability (normal/emergency), maintainability (inc. routine cleaning, replacement, etc.), and alteration/decommissioning/dismantling/demolition, and should be categorised against those headings,*

CIRIA guidance documents C662, C663, C611, C607, etc. provide a useful checklist and detailed guidance on the identification of risks to be considered during design and how those risks might be addressed - see detailed guidance notes for more details

‡ Significant residual risks are those which are unusual, not obvious, difficult to manage, or where critical design assumptions apply. The documentation by designers of residual risks that cover well-known and understood hazards should be avoided

Ref	Risk Category* (and Phase where appropriate, *e.g. location/environment, construction, operation, maintenance, alteration/demolition)*	Work Element/Location (where appropriate)	Hazard or Risk Issue Identified	Risk Management Owner	Design ERIc Action Required (*e.g.. hazard elimination/risk mitigation action, information to be provided to others)*	Significant Temporary Works Requirements/Management Arrangements and/or any Special Erection/Installation Sequences or Requirements	Design Action Status/Final Resolution Notes (*e.g.. traceability of ERIc action, communication of significant residual risk, critical design criteria, etc.*)	Significant Residual Risk‡ (Y/N)	Date Logged/ Reviewed	Raised By
001	Construction	Proposed North Dene Footbridge	Lifting of heavy bridge elements into positions	Contractor	Proposed crossing to comprise structural steel form footbridges. This would allow for a bridge structure to be provided with a high strength to weight ratio (in comparison to concrete) with improved buildability due to less onerous crane lifting requirements.	Appropriate craneage to be used with a lifting plan, Contractor will need to ensure cranes are adequately sized and located. A1 traffic to be closed during lifting.	Footbridge segments could be fabricated off site and then delivered and assembled on site to limit in-situ works.	Y	23/01/2018	Rakesh Mehta
002	Construction	Proposed North Dene Footbridge	Transport of large steel components - potential risks associated with the movement of large abnormal loads	Contractor	Detailed design to ensure the fabricated sections of truss are manageable (not excessively long etc.) to ensure they can be delivered to site with minimal potential logistical risks.	Contractor to provide assembly area as part of site compound.	By ensuring the length of truss segments are not excessively large, would reduce risk associated with transport and assembly on site.	N	23/01/2018	Rakesh Mehta
003	Construction	Proposed North Dene Footbridge	Workforce exposed to site based construction risks due to intensive in-situ works.	Designer	Proposed crossings comprise structural form (including prefixed parapets) that can be predominantly prefabricated/assembled off site reducing the extent and complexity of site based operations. The proposed main bridge is a single span without having any intermediate support, thereby further reducing the workforce exposure to site based construction risks.	Contractor to ensure SSOW in place for all site based activities.	Structural steel bridge form has an advantage that in-situ operation (associated risks) are limited. Site based construction risks further reduced by ensuring steel elements are pre-painted before arriving on site. Provision of complete truss avoids risk of falling from height for finishing works, i.e. parapet in place	N	23/01/2018	Rakesh Mehta
004	Construction	Proposed North Dene Footbridge	Live road (A1 carriageway) at risk of falling debris during lifting operation of structural elements.	Contractor	Assumed A1 carriageway to be closed during lifting operations	TM to be in place during works with the crane. Contractor to ensure TM details to be approved prior to undertaking site based operations.	Note on drawings to be provided highlighting the need for road closures during lifting operations.	Y	23/01/2018	Rakesh Mehta
005	Construction	Proposed North Dene Footbridge	Risk associated with working at height	Designer	Design to consider method of construction that reduces the risk of working at height inc. surfacing, fixings etc. Pre-fabricated steel truss sections proposed to avoid in-situ construction at height.	Truss to be installed in modular sections with parapets already fixed to provide edge protection.	Prefabrication requirements to be defined in the works information.	N	23/01/2018	Rakesh Mehta
006	Construction	Proposed North Dene Footbridge	Delivery material/structural components on site cause obstruction lead to accidents (collision etc.)	Contractor	Contractor to consider suitable holding areas on site in close proximity to the works	Contractor to provide a suitable holding area as part of the site compound.	No further action	N	23/01/2018	Rakesh Mehta
007	Construction	Proposed North Dene Footbridge	Deep excavations associated with foundations to the bridge	Designer	The lightweight steel superstructure (in comparison to concrete) results in reduced imposed bearing pressures at ground level which subsequently reduces the depth and size of the proposed spread footing foundations.	Contractor to develop SSOW for excavation of foundations	Simple and lighter form of superstructure proposed to reduce the weight of structure	N	23/01/2018	Rakesh Mehta
008	Construction	Proposed North Dene Footbridge	Damage to existing services, electrocution	Contractor	statutory undertakers information indicate that British telecom (BT108) and Northern Power Grid Services (NP109) services are located within the vicinity of North dene footbridge and may potentially be impacted by the works.	At this stage it is assumed that all services found impacting the proposed bridge works shall be diverted/ protected accordingly to progress the bridge works on site. During construction, areas to be scanned by trained and competent contractor to confirm no presence of services prior to works. Contractor to locate all services (if any) using hand tools before mechanical excavation can commence. Contractor to also liaise with the statutory undertakers/local authorities and the HA maintenance service providers to locate all services prior to piling or excavation works. Contractor to implement safe system. All excavation to be examined prior to use.	Appropriate note/reference to be put on drawings relating to service location	N	23/01/2018	Rakesh Mehta
009	Design	Proposed North Dene Footbridge	Restriction to the A1 carriageway widening due to intermediate piers	Designer	the proposed structure is a clear span replacement bridge with no intermediate supports to avoid obstruction to the A1 and provide different maintenance access in the future	-	No Action	N	23/01/2018	Rakesh Mehta
010	Construction	Proposed North Dene Footbridge	Interested members of the public watching the lifting of the bridge segments from dangerous/unauthorised viewing points.	Contractor	Consideration should be give to the provision of safe designated observation areas, within which members of the public can congregate to observe lifting operations being undertaken.	Temporary works to include TTM and control of vehicle and pedestrian movements	Details for safe viewing areas to be detailed in the specification	N	23/01/2018	Rakesh Mehta
011	Maintenance	Proposed North Dene Footbridge	Maintenance painting - working at height risk of vehicle impact/falls etc.	Operator	Design to ensure specification of paint system to comprise a robust corrosion protection system with an increase life cycle (greater than 30 years). This would limit the frequency at which the paint system renewal works will be required over the design life of the structure. In addition the design of the structure shall comprise uncomplicated details/fixings which could create a water trap and lead to accelerated rates of corrosion.	TM (closure of the A1) - will be required during future maintenance painting works.	Maintenance manual to detail the need for TM (A1 road closure/diversion) and potential encapsulation (if grit blasting preparation prior to painting) provision to undertake maintenance painting. To avoid the requirement for encapsulation and grit blasting , the maintenance manual shall include details of paint systems (Corroless® system etc.) that can be applied without the need for a grit blast surface preparation. Design to include appropriate paint system requirements.	N	23/01/2018	Rakesh Mehta
012	Maintenance	Proposed North Dene Footbridge	Corrosion of deck plate and general maintenance	Operator	The deck is given camber in both the transverse and longitudinal directions so as to ensure that the water drains off quickly to the bank seats from where it will be collected by drainage channels and pipes.	-	No action	N	23/01/2018	Rakesh Mehta
013	Operation	Proposed North Dene Footbridge	Vehicle impact on slender columns supporting the bridge initiates total collapse.	Designer	The bridge alignment as well as the support configuration is proposed in such a way that the supports are located as far as practicable from the edge of the carriageway. Supports are away from the edge of the carriageway by more than 4.5m to minimise risk of impact damage from road vehicles/ users.	-	No action	N	23/01/2018	Rakesh Mehta
014	Operation	Proposed North Dene Footbridge	Vehicle impact with the soffit of the footbridge spanning the slip roads, lead to fatal collapse.	Designer	The proposed footbridge structure over the main line shall satisfy the 5.7m + S (allowance for sag curve) headroom requirements as stipulated in TD27/05 Cross Section and Headroom. This minimum headroom requirement shall also extend beyond the mainline carriageway over the verges within the designated structure free zone. This would avoid designing the bridge superstructure to sustain impact loading which would be particularly onerous on a light footbridge structure.	-	No action	N	23/01/2018	Rakesh Mehta
015	Operation	Proposed North Dene Footbridge	Long and overly steep approach ramps make it difficult for cyclist and disabled people to use crossing, risk of fatigue and loss of breath	Designer	The new structure to incorporate a new 1 in 12 ramp provision that is 3.5m wide to ensure compatibility with the new bridge structure over the mainline. This will allow provision of a more accessible ramp (including landings) for both cyclist and disabled users in comparison to the current 1 in 6 ramp provision. Horizontal landings shall be provided at intervals producing a rise of no more than 650mm between landings. The length of landings shall also not be less than 2m	-	No action	N	23/01/2018	Rakesh Mehta
016	Operation	Proposed North Dene Footbridge	Risk of cyclist falling over the standard pedestrian parapet provision	Designer	The proposed bridge crossings shall be provided with a 1.4m parapet height (not standard 1.2m pedestrian parapet) to provide further containment to cyclist.	-	No action	N	23/01/2018	Rakesh Mehta
017	Operation	Proposed North Dene Footbridge	At grade crossing of the A1 would increase the risk of traffic related accidents	Designer	Bridge type crossings over the A1 has been proposed to eliminate risk of traffic accidents. Bridge crossing would also provide unrestricted access over the A1 with out impeding traffic flows, improving safety for traffic.	-	No action	N	23/01/2018	Rakesh Mehta
018	Demolition	Proposed North Dene Footbridge	Live road (A1) at risk of falling debris during removal lifting operation of structural elements.	Contractor	Assumed A1 carriageway to be closed during removal lifting operations	TM to be in place during works with the crane. Contractor to ensure TM details to be approved prior to undertaking site based operations. North Dene crossing to be closed during lifting operations.	Highlight risk and mitigation on drawings	Y	23/01/2018	Rakesh Mehta
019	Operations	Proposed North Dene Footbridge	Risk of motorized vehicles /service vehicles using the footbridge and approaches	Designer	Consdieration to be given for a Vehicle Restraint System comprising Bollards to provided at the entrance of bridge.	-	No action	N	23/01/2018	Rakesh Mehta
020	Operations	Proposed North Dene Footbridge	Open type foot bridge - Exposure of Pedestrians/cyclists to inclement weather and associated slips and falls.	Designer	Adequate drainage is provided on the bridge by giving good transverse and longitudinal falls to the deck. Anti skid and water proofing membrane surfacing to also specified. Pedestrian/cyclist restraint system with a height of 1.4m is provided	-	No action	N	23/01/2018	Rakesh Mehta

Copy rows then insert above this line to ensure formula are copied

Issue 1.0

Appendix F

WSP/HE KEY CORRESPONDENCE

APPENDIX F-1

WSP/HE KEY CORRESPONDENCE

Brunetti Barchetta, Giovanna

From:	Sunderland, Martin <Martin.Sunderland@highwaysengland.co.uk>
Sent:	05 February 2018 13:22
To:	Mistry, Hitan
Cc:	Al-Shalechy, Shehed; Mulla, Imtiaz; Gladstone, Peter; Akram, Irfan; Mehta, Rakesh; Wilkes, Nicola; Dennis, Stephen; Meikle, Jessica; Rawcliffe, Nigel; Pratt, Simon; Tziolas, Michail
Subject:	RE: A1B2CH - Issue of the North Dene FB SOR for HE SES comment/approval. Progress to date 15-01-18

Hitan

Thank you for your submission of the A1B2CH North Dene Footbridge SOR.

I confirm acceptance of the recommendations and conclusions of this report.

As stated in the report and previously discussed, one of the challenges for a new footbridge at this location is the ramp that will be required at the west side.
To reiterate what is stated in the report, a Departure from Standard will be required for the proposed 1 in 12 ramp provision which is the preferred option.
I confirm that I do agree with this in Principle and will support the DfS submission, but the Highways England Policy Advisor will still require a robust case to be presented as part of the departure submission.

If constructed the proposed Bow Truss Option and 1 in 12 ramps has the potential to be very aesthetically pleasing, especially compared to the existing footbridge, and hopefully this will allay some of the reservations by the local householders, and may even increase usage across the bridge.

Regards

Martin Sunderland
Safety, Engineering & Standards
Senior Structures Advisor
Highways England | Lateral | 8 City Walk | Leeds | LS11 9AT
Tel: 0300 470 6165 | **Mobile**: + 44 (0) 7702 150399
Web: http://www.highways.gov.uk

Learn more about Structures Delivery by visiting our Portal Homepage
A web version of this Homepage is currently unavailable.

From: Mistry, Hitan [mailto:Hitan.Mistry@wsp.com]
Sent: 24 January 2018 17:25
To: Sunderland, Martin
Cc: Al-Shalechy, Shehed; Mulla, Imtiaz; Gladstone, Peter; Akram, Irfan; Mehta, Rakesh; Wilkes, Nicola; Dennis,

highways england

Appendix 5.2 – North Dene Photomontage

OS Reference :	NZ 27539 57095	Horizontal Field of View:	90°
Direction of View:	NORTH	Vertical Field of View:	27°
Distance to Scheme:	0m	Camera:	CANON 6D MKii
Visualisation type:	3	Projection:	Cylindrical

Lens:	50mm f1.4 EF (Canon)
Camera Height:	1.6m
Date & Time:	03/03/20 11:30
Enlargement:	100%

Not representative of scale and distance

Rev.	Date	Description	By	Eng' Ch'k	Des' Ch'k	App'd
P01	DEC 18.	FIRST ISSUE	SW	AW	AW	NJA

Suitability: Suitable for Review and Comment — Status: S3

PINS Reference Number: TR010031

Client: highways england

Project Title: A1 Birtley to Coal House Improvement Scheme

Drawing Title: Appendix 5.2, Sheet 1 of 4
Photomontage of Angel of the North
View North from North Deen Foot Bridge
Winter Existing view

Scale	Drawn	Eng. Check	Approved	Authorised
NTS	JD	AW	AW	NJA
Original Size	**Date**	**Date**	**Date**	**Date**
A1	March 20'	March 20'	March 20'	March 20'

Drawing Number: HE PIN HE551462 | Originator WSP | Volume ELS | Section ZZ | Type | ID | Direction | Type PH | Role LE | Number

Revision: P01

PW Stage Code: Stage 3

OS Reference :	NZ 27539 57095	
Direction of View:	NORTH	
Distance to Scheme:	0m	
Visualisation type:	3	
Horizontal Field of View:	90°	
Vertical Field of View:	27°	
Camera:	CANON 6D MKii	
Projection:	Cylindrical	
Lens:	50mm f1.4 EF (Canon)	
Camera Height:	1.6m	
Date & Time:	03/03/20 11:30	
Enlargement:	100%	

Not representative of scale and distance

Rev.	Date	Description	By	Eng' Ch'k	Des' Ch'k	App'd
P01	DEC 18.	FIRST ISSUE	SW	AW	AW	NJA

Suitability: Suitable for Review and Comment

Status: S3

PINS Reference Number: TR010031

Client: highways england

Project Title: A1 Birtley to Coal House Improvement Scheme

Drawing Title: Appendix 5.2, Sheet 2 of 4
Photomontage of Angel of the North
View North from North Deen Foot Bridge
Winter Year of Opening

Scale	Drawn	Eng. Check	Approved	Authorised
NTS	JD	AW	AW	NJA
Original Size	**Date**	**Date**	**Date**	**Date**
A1	March 20'	March 20'	March 20'	March 20'

Drawing Number: HE PIN HE551462 | Originator WSP | Volume ELS | Section ZZ | Type | ID | Direction | Type PH | Role LE | Number

Revision: P01

PW Stage Code: Stage 3

OS Reference :	NZ 27539 57095	Horizontal Field of View:	90°
Direction of View:	NORTH	Vertical Field of View:	27°
Distance to Scheme:	0m	Camera:	CANON 6D MKii
Visualisation type:	3	Projection:	Cylindrical

Lens:	50mm f1.4 EF (Canon)
Camera Height:	1.6m
Date & Time:	03/03/20 11:30
Enlargement:	100%

Not representative of scale and distance

Rev.	Date	Description	By	Eng' Ch'k	Disc' Ch'k	App'd
P01	DEC 18.	FIRST ISSUE	SW	AW	AW	NJA

Suitability: Suitable for Review and Comment
Status: S3

PINS Reference Number: TR010031

Client: highways england

Project Title: A1 Birtley to Coal House Improvement Scheme

Drawing Title: Appendix 5.2, Sheet 3 of 4
Photomontage of Angel of the North
View North from North Deen Foot Bridge
Winter Design Year

Scale	Drawn	Eng. Check	Approved	Authorised
NTS	JD	AW	AW	NJA
Original Size: A1	Date: March 20'	Date: March 20'	Date: March 20'	Date: March 20'

Drawing Number
HE PIN: HE551462
Originator: WSP
Volume: ELS
ZZ | Section | Type | ID | Direction | PH Type | LE Role | Number
Revision: PO1
PW Stage Code: Stage 3

OS Reference :	NZ 27539 57095	Horizontal Field of View:	90°	Lens:	50mm f1.4 EF (Canon)
Direction of View:	NORTH	Vertical Field of View:	27°	Camera Height:	1.6m
Distance to Scheme:	0m	Camera:	CANON 6D MKii	Date & Time:	03/03/20 11:30
Visualisation type:	3	Projection:	Cylindrical	Enlargement:	100%

Not representative of scale and distance

Appendix 5.2, Sheet 3 of 4
Photomontage of Angel of the North
View North from North Deen Foot Bridge
Year of Design Winter 40° Single Frame
HE551462-WSP-6.2-ZZ-PH-LE-003

Security Class

WSP Project Number: 70041947

Appendix 5.3 – Approach to Photography and Photomontages

TECHNICAL NOTE 1

DATE:	14 February 2020	**CONFIDENTIALITY:**	Public
SUBJECT:	A1 Birtley to Coalhouse - Approach to photography and photomontages		
PROJECT:	A1 Birtley to Coalhouse	**AUTHOR:**	P Metcalfe/M Jones
CHECKED:	A Williams	**APPROVED:**	A Williams

The below outlines the approach taken to photography in support of the preparation of the photomontages for the A1 Birtley to Coalhouse scheme and is provided to demonstrate the technical information used and how this aligns with the more recently Technical Guidance Note 06/19 published by the Landscape Institute in September 2019. The key requirements of the 2019 guidance included within the WSP approach being:

- This guidance aligns with the TGN 06/19 and is in accordance or over and above the requirements for a Type 4 visualisation in terms of production and verification.
- This guidance did not include for presentation at 150% enlargement which is recommended in the TGN 06/19 but has been produced for this project.
- Viewing distance was stated to be between 400 – 500mm, however it now acceptable to state the viewing distance is at a comfortable arms length rather than a precise distance.

SURVEYING

SITE CHECKLIST

- Leica TS15 Total Station with Leica Viva Series Smart Rover (or similar)
- Qualified Surveyor
- GPS coordinate of camera location recorded
- GPS coordinates recorded of reference markers within the view
- Data supplied in Excel format

Ideally the site is attended with both the photographer and qualified surveyor. This is to prevent potential viewpoint location inaccuracies if surveyor were to attend separately.

If the surveyor cannot be present then information to be provided to the surveyors would include:

- The camera positions for each viewpoint are marked by the photographer for the surveyor to be able to locate an exact survey position; and
- Prints of the plans supplied in advance in order to reference the detail points taken.

If the surveyor cannot attend the site visit with the photographer, the surveyor will need to locate the survey nail / peg on site. To do this the surveyor refers to the set of photographs showing the camera setup and survey nail / peg location and also the photographers GPS co-ordinates. The viewpoint photography is supplied to the surveyor, marked up to show the points to be surveyed.

In rural locations, the photography and surveying should always be undertaken simultaneously in order to avoid problems with markers in soft ground moving or being removed altogether.

Where viewpoints are located on a solid surface (e.g. in urban areas or along surfaced roads), the photography should be captured first with a survey pin left on the ground directly underneath the tripods central column. Use a plumb line or drop a solid object a number of times from bottom of column to determine the point.

TECHNICAL NOTE 1

DATE:	14 February 2020	**CONFIDENTIALITY:**	Public
SUBJECT:	A1 Birtley to Coalhouse - Approach to photography and photomontages		
PROJECT:	A1 Birtley to Coalhouse	**AUTHOR:**	P Metcalfe/M Jones
CHECKED:	A Williams	**APPROVED:**	A Williams

Accuracy: Generally each individual observation set-up achieved an accuracy of + or – 45mm to Ordnance Survey grid / datum. Typically it will be far more accurate but sometimes under trees for example the signal may be disrupted.

A Leica Total Station is used by the surveyor to accurately record the camera position and also capture an array of selected survey reference points used to camera match and calibrate the photography. The Total Station must ideally have target cross hair image capture facility. These cross hair images, which show exactly where each survey point was taken, are used as visual reference showing what each surveyed co-ordinate point represents in the photography. All survey points are captured in the British National Grid (BNG) co-ordinate system, recording an X,Y and Z co-ordinate for each.

A series of clearly defined survey points are recorded along the entire panorama to verify the overall viewpoint alignment. A concentrated number of survey points are recorded across the proposed site extents to ensure enough points are available for visual verification within the final cropped field of view.

Detail points within the image may include corners of road markings, features on road signs, corners of building features, top of telegraph poles, wooden stakes, fence or gate posts, white lines on road etc. Each viewpoint location should capture as many as possible but a guide would be a minimum of 8 clearly defined detail points taken across the width and height of the image and at near, mid and far distance (i.e. a balance of points across the photograph).

Where a viewpoint does not contain many or any fixed targets suitable for surveying, temporary targets are set up to allow the survey to be completed at the same time as the photography. Ie wooden stakes/pegs.

To begin with set up survey pegs/markers in the bottom corners of the central photograph and if possible using an object in the top corners as well (ie pylon, telegraph pole). If this cannot be reached by the total station from this location and there are limited points to survey it may require surveying objects seen in the view at the objects actual location. This will add on time so should be planned for as much as possible prior to the visit.

Survey points at each viewpoint should be named by surveyor in a format recognisable to the 3D modellers ie survey points at viewpoint 1 should all start VP1.

Surveyor to confirm and record what has been surveyed and the naming format. If total station has a camera then a photo of each point ideally. Otherwise mark on an OS base what has been surveyed, how many pegs etc

Each camera location is surveyed by marking the centre of the tripod on the ground and then the point being surveyed by the total station laser or with the survey column.

The survey data is post-processed by the chartered surveyor to increase accuracy and then supplied in an Excel table for each set of viewpoint photography. These tables contain co-ordinates for the camera and

surveyed reference points along with a bearing for each reference point relative to the camera position. These bearings are used to calibrate the finalised 360° panorama.

SURVEYOR'S DELIVERABLES:

- point for the camera locations and each detail point were given a unique number that related to the viewpoint number;
- a CAD file containing the detail points and camera positions, named as per the excel spreadsheet;
- a spreadsheet of the camera locations and detail points with annotated descriptions.

PHOTOGRAPHY

Site Checklist

- Full Frame Canon EOS 5D Mark III SLR camera with Canon 50mm lens (or similar)
- Camera local time and date recorded
- Camera set up at 1.5m to simulate human viewing level, unless view was obstructed
- Camera mounted on panoramic head in portrait orientation
- Camera setup levelled using levelling plate and central levelling column
- Panoramic image taken to include relevant and appropriate context
- Images recorded in RAW format
- Plumb line used to mark ground position
- Any image corrections are done in Adobe Photoshop

A comprehensive photographic study is undertaken with up to 180° photography taken at each viewpoint, this is to provide full context and should be appropriate to the context of the view. Agree with Landscape Architect. Where possible, the proposed development is positioned in the middle of the view. If there are limited survey points available then a 360° panoramic may be required.

Photographs are taken in ideally clear weather visibility conditions. The views are photographed with a full frame digital SLR camera with a fixed 50mm lens.

The camera is mounted in portrait format on a tripod with a panoramic head attached. The lens centre (its nodal point) is set at an eye level of 1.5m (this is the standard SNH visualisation guideline camera height). The camera height may be different if features such as fences or hedges obscure the view, agree with LPA.

Level the camera using the central levelling column and levelling plate is adjusted to level the camera in both its pitch and roll axes.

Use of the panoramic head allows the camera to rotate directly around the lens centre (its nodal point) to avoid parallax effects between incremental photos. Ensure panoramic head is set up for the camera accordingly.

DATE:	14 February 2020	**CONFIDENTIALITY:**	Public
SUBJECT:	A1 Birtley to Coalhouse - Approach to photography and photomontages		
PROJECT:	A1 Birtley to Coalhouse	**AUTHOR:**	P Metcalfe/M Jones
CHECKED:	A Williams	**APPROVED:**	A Williams

Camera co-ordinates are also recorded using a handheld Trimble GPS unit by the photographer; these are recorded as back up data.

Supplementary photos are taken to record the camera setup and survey nail / peg position using a compact point and shoot camera. These are used for reference in case a return to the viewpoint location is required, and also for verification that the correct equipment has been set up and used.

Camera settings are set as follows:

- Manual focus, set to infinity;
- ISO 100-200. 100 if particularly bright day other 200 for a typical cloudy day;
- Evaluative Metering (ie averages out light reading across the image rather than central point);
- White Balance – Set appropriately to the conditions but not on auto;
- Images are captured using RAW+JPEG format;
- Aperture (F-Stop) set between F8-F11 allowing all of the scene to be in focus (the higher the F stop the more depth of field in each image but more chance of camera shake and blur) Typical dull cloudy day could be F11;
- Set to Manual mode for best stitching result. First set on auto and judging a mid light level point within the frame of the panorama (ie dark cloud or light field) look through the viewfinder to see the suggested exposure and aperture settings. Then set to Manual and set accordingly. Rotate camera to check light levels across the panorama (look at +-0 bar). If this is close to or on 0 light level for the set aperture are ok and can go ahead and take the photos. If it is consistently under or over 0 then readjust exposure setting.

The camera is then rotated 10-20° between each photograph of the panorama to allow a 50% overlap between each photograph (this is set on the panoramic head using the screw). This allows a more accurate panoramic stitch. Record the angle of rotation used;

Information such as camera, lens, lighting conditions, weather, date, time of photograph and any other site information worthy of note is recorded on field data sheets. These are electronically stored for reference.

The physical viewpoint location is marked with either a survey nail or peg hammered in to the ground BEFORE MOVING TRIPOD OFF VIEWPOINT. A plumb line is used to accurately position the survey nail / peg directly below the lens centre. Camera location co-ordinates are taken by the chartered surveyor before moving onto next viewpoint.

Photos are then stitched into the appropriate field of view of the panorama prior to sending survey data to the 3D modeller.

MODELLING

3DS Max is the three dimensional modelling programme from within which the photomontage renders are created, using the survey data, photography and site model. To aid in greater accuracy of real life camera

DATE:	14 February 2020	**CONFIDENTIALITY:**	Public
SUBJECT:	A1 Birtley to Coalhouse - Approach to photography and photomontages		
PROJECT:	A1 Birtley to Coalhouse	**AUTHOR:**	P Metcalfe/M Jones
CHECKED:	A Williams	**APPROVED:**	A Williams

settings and the production of cylindrical projection, wide angle panoramas which match the photography stitch, we use a plug-in programme called Vray.

INDIVIDUAL VIEWPOINT SETUP - SURVEY POINTS, CAMERA & LIGHTING ENVIRONMENT:

- Surveyed X, Y, Z co-ordinates of reference points and the camera position are set up in 3DS Max. Survey points are represented by renderable cross hairs. The camera position is replicated using a 'Vray Physical Camera' with correct setting taken from the photography EXIF data.
- ISO
- Exposure
- The sun lighting environment is also set up using settings related to EXIF material and global positioning.
- Time of photography
- Date of photography
- Time zone
- Site longitude & latitude
- Check the focal length of the lens used. Some models say 50mm but may be inaccurate.

SURVEY DATA VERIFICATION IMAGE OUTPUT

At this stage a panorama is rendered showing the survey point markers as verification of the overall accuracy of the survey data set up in 3DS Max. Ideally the survey marker cross hairs in 3DS Max, will match the positions of the surveyors digital cross hair reference shots taken during the survey. (This is saved for reference and verification evidence).

ADDITION OF THE SITE MODEL

The 1:1 scale site model, either received from the client or produced in-house is x-referenced (x-ref) into the scene. This one x-ref model is used for all viewpoints for ease of updating viewpoints with site design iterations. Checks are made that the site model is correctly located and sized.

Once the model x-ref is in, initial renders are made and any fine tuning of alignment, lighting and model textures now takes place. The final camera match is rendered for acceptance / verification by the project landscape architect.

CAMERA MATCHING

Survey points within each panorama to be clearly identified by landscape architect, ideally by highlighting the points on a copy of the panorama with labels. If photos were taken from the total station then these should also be provided.

The landscape architect must provide a stitched, lens corrected panorama at the correct field of view before work starts.

DATE:	14 February 2020	**CONFIDENTIALITY:**	Public
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Each viewpoint has its survey points in place and now the camera is set to the required field of view and view direction. (Generally 75-90°)

Background imagery, cut from the viewpoint photography for the required field and direction of view is now added. This has been worked out using the illustrator alignment/calibration file.

The process of camera matching creates a virtual camera in the same location and height, and pointing in the same direction as the physical camera used on site to capture the image.

The process involves accurately positioning the 3D model of the Proposed Scheme within each existing view. This was achieved through a process of matching the surveyed points in the digitised image with those recorded by the survey team on the existing photographs. The central horizon line in each of the existing views was then calculated and imported into 3DS Max as a backdrop to the 3D model. The survey points and specifications of the lens type relating to each view were also entered into 3DS Max.

The survey points of the camera position and each clearly defined detail point (relating to specified objects in the view) were then highlighted on the digitised image. A further check of the accuracy of the survey points in each digitised view was carried out by overlaying the central horizon line of each view with the digitised survey points prepared in 3DS Max. This additional check ensured that the survey points matched precisely. This process was undertaken independently by two different designers, with the results cross referenced to provide a further check on accuracy.

Once the process of camera matching is completed, the 3D model of the Proposed Scheme is accurately positioned within each of the views captured. This is achieved by rendering the camera matched 3D model of the Proposed Scheme within 3DS Max at the same size as the digitised existing view.

EARTH CURVATURE ATMOSPHERIC REFRACTION

Ordnance Survey co-ordinates are not fully 3-dimensional. The northing and easting define a point on a plane corresponding to the OS transverse Mercator map projection, and the altitude above OS datum is measured above an equipotential surface passing through the OS datum point at Newlyn. In reality, the earth is curved so a correction has to be made in order to position geographical features correctly in three dimensions for ZTV calculation and for visualisations.

3DS Max does not model earth curvature or atmospheric refraction. For any viewpoint where it is deemed necessary and the size of the site in the view would allow it, the amount of earth curvature and atmospheric refraction can be calculated and compensated for by dropping the rendered site model in Photoshop the correct amount.

TECHNICAL NOTE 1

DATE:	14 February 2020	**CONFIDENTIALITY:**	Public
SUBJECT:	A1 Birtley to Coalhouse - Approach to photography and photomontages		
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RENDER OUTPUT FROM 3DS MAX TO PHOTOSHOP

Each of the views are rendered using the Vray Rendering Engine software. This provides physically accurate full global illumination in line with the light conditions present in the existing photo. The best lighting match with the existing photo was achieved by adjusting the settings of the default daylight system in the rendering engine.

Individual elements were rendered out using different map channels to create masks (for example mask for the digital terrain model, earthworks, overhead line equipment, fencing, shadows etc). These masks ensured each visible element of the Proposed Scheme could be independently selected when individually placed into the Adobe Photoshop file for final production.

With the camera match and lighting set, renders are output for post-production in Photoshop. The site renders, that may include the site upon opening and various years of landscape mitigation, are brought into Photoshop where they are placed in their correct relationship to background and foreground details in the photography using masking techniques.

Lighting and atmospheric effects can be enhanced or simulated at this stage if it is deemed necessary.

WIRELINE OUTPUT FROM 3DS MAX TO PHOTOSHOP

A wireline should also be produced for use on the baseline panorama. If this isn't possible or appropriate then another output should be agreed with the landscape architect.

POST PRODUCTION

Using Photoshop, the quality of the RAW photos are checked, and if necessary then any minor adjustments are made to sharpening, colour, brightness and contrast. JPEGs are created from these RAW files at a high resolution.

Lens correction is undertaken in Adobe Lightroom. It will AutoDetect the camera and lens used. Save in a folder labelled 'Lens corrected Jpegs')

Viewpoint photos are stitched together using Photoshop's photomerge tool and using the cylindrical projection setting. Special care is taken to establish that no ghosting has occurred and no stitching misalignment has taken place. At this stage panoramas are checked for acceptability by the project landscape architect.

An appropriate field of view is decided upon and the panorama is cropped accordingly. This can be calculated using the known FOV for a 50mm photograph which is 39.6° horizontal and 27° Vertical. So eg if the width of a single photograph is 100cm in photoshop and a 90° FOV is required then: 90 divided by 39.6

x 100 = 227.27cm. Crop to size from the stitched panorama with the proposed scheme in the centre (if applicable).

This cropped to size panorama must be provided to the 3D modellers prior to their work so that everyone is working from the same sized images as multiple versions of the rendered model are likely to be provided following amendments, for example.

The renders of the 3D model (which will be the same width as the cropped panorama) are then superimposed on the existing panorama in Adobe Photoshop. The foreground of the existing photos visible in front of the Proposed Scheme were then carefully copied and masked to ensure the render of the 3D model sits accurately within the depth of the view.

The textured render of the 3D model will then be further adjusted to match the resolution, colouring and saturation of the photograph captured to create an accurate impression of what the textures of the buildings and structures will look like. This is a qualitative exercise and requires interpretation by the designer on how the development will look. A final qualitative check of all of the verifiable photomontages is undertaken to ensure that they provide objectively accurate views of the Proposed Scheme.

Appropriate level of post-production within Photoshop then takes place to add any landscaping at the agreed stages of development (ie Year of Opening and 15 Years). Surface textures can be added and improved upon at this point as well as adding or amending elements such as pedestrians, vehicles, lighting etc.

For vegetation growth assume approximate growth of 300mm/annum for shrubs and 450mm/annum for trees.

The wireline or basic render output is also overlaid onto the panorama for presentation of the baseline panoramic with wireline. I.e. there will be an existing, wireline, rendered panoramic at Year of Opening and where appropriate the Design Year, and 40° single frame in the final presentation of each viewpoint.

If a 360° Panorama is required due to lack of survey points:

- The 360° image is saved at an image size of 36,000 pixels wide. This gives a convenient 100 pixels per degree to work with.
- The panorama is placed in Adobe Illustrator, at a width of 720mm (2mm per degree) and is aligned against a 360° graticule. Using the surveyor's digital cross hair target images as reference, markers are placed at each site survey point on the 360° image. With reference to the surveyor's bearings for those points, the graticule is moved to correspond with the survey point bearings.
- Once the image is aligned, the final field of view to be used is decided on by the landscape architect. From the 360° panorama a full resolution, cropped area representing that field of view is exported. This is subsequently imported into the 3DS Max software for use as the background image to align and render the site model against.

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PRESENTATION

The standard WSP Layout is A3 Landscape with a 75° or 90° field of view.

- Image size on sheet – as appropriate for panorama.
- A 40° single frame extract is also presented on an A3 sheet at a size of 39 x 26cm.
- Viewing distance – only mentioned on the 40° extract as:
- 'View flat at a comfortable arm's length. If viewing this image on a screen, enlarge to full screen height.'
- For wider angle viewpoints a series of overlapping layouts may be required. Refer to SNH guidance.

Different size layouts may be used if requested by the client or project manager. Refer to SNH Guidance.

Each view is annotated with specific camera and viewpoint information and if necessary any disclaimers. Data to include:

- OS Grid Ref
- Direction of View
- Eye Level AOD
- Distance to the nearest point of the scheme within the view
- Horizontal and Vertical Field of View
- Camera
- Lens
- Camera Height
- Date and Time of photo
- Any viewing instructions
- Paper Size (eg 841x297 Half A1)
- Correct Printed Size (ie 820x260mm)

When printing there should be no scaling or fit to page options selected as this would alter the size of the image. A high quality print setting with a minimum resolution of 300 dpi should be used.

In the final presentation set/figure for each viewpoint there will be:

- Overall Viewpoint Location Plan
- Individual location plan snapshot for each viewpoint sheet
- Existing situation Panorama
- Wireline Panorama
- Year of Opening Panorama
- Design Year (tba) Panorama (if appropriate)
- A 40° Single Frame extract, typically from the centre of the panorama or of a prominent section of the scheme within the view.

Following WSP's Visualisation QA procedure, a final check of the model setup, figure layouts, images and associated technical details is undertaken.

TECHNICAL NOTE 1

DATE:	14 February 2020	**CONFIDENTIALITY:**	Public
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RECOMMENDED VIEWING DISTANCES

It is recommended that the panoramic verified images are viewed at an optimum viewing distance in relation to the size of printed photomontage, to give a correct sense of scale.

In order for the viewer at the camera location to use the images, they must be printed large enough to hold at a comfortable 400-500mm viewing distance which, for the whole panorama is often impractical because of the size. The images are provided at A3 in the Environmental Statement for practicality, and do not lend themselves to direct comparison out in the field.

For viewing in the field, it is more practical to use a set of 40 degree sections from the panorama, printed on A3 landscape sheets (with the image filling the full height of the paper). These can then be held up at the correct distance from the eye (as noted above) and at the height photographed from, and this would then match what is being seen in the field. It is crucial that the viewer is standing in the precise location of where the photograph was captured from.

If the panoramas are to be used in the field, they should be viewed by curving them either with the use of a cylindrical object or simply by hand with a radius of 450mm.

With a standard vertical field of view, panoramas should be printed at the following sizes for true representation (if the LPA request):

- 80deg – 630mm x 300mm
- 120deg – 950mm x 300mm

Appendix 5.4 – LLFA Email

Smith, Andy

From: Peter Burrows <PeterBurrows@Gateshead.Gov.UK>
Sent: 18 June 2019 13:53
To: Smith, Andy
Subject: RE: A1 BCH Review

Hi Andy

I have no further comments .

Thanks,

Peter

From: Smith, Andy <Andy.Smith@wsp.com>
Sent: 13 June 2019 14:28
To: Peter Burrows <PeterBurrows@Gateshead.Gov.UK>
Cc: Rothwell, Jodie <Jodie.Rothwell@wsp.com>; Ashworth, Nicola <Nicola.Ashworth@wsp.com>
Subject: A1 BCH Review

Peter,

I just wanted to quickly catch up as you weren't able to attend the meeting with the EA on this scheme back in April and was wondering whether you have had chance to review the Water Environment documents that we have submitted? If so did you have any questions or comments that you would like to be clarified?

Regards,
Andy

Andy Smith ***BSc MSc C.WEM CSci CEnv***
Associate Director

T +44 (0) 117 9302082
M +44 (0) 758 5795930

Kings Orchard, 1 Queen Street,
Bristol, BS2 0HQ

wsp.com

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Important Information

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Appendix 5.5 - Environment Agency Meeting Agenda & Meeting Notes

AGENDA & MEETING NOTES

PROJECT NUMBER	70041947	**MEETING DATE**	10 April 2019
PROJECT NAME	A1 Birtley to Coalhouse upgrade	**VENUE**	Environment Agency, Tyneside House, Skinnerburn Road, Newcastle upon Tyne, NE4 7AR
CLIENT	Highways England	**RECORDED BY**	[redacted]
MEETING SUBJECT	Environment Agency Comments on the A1 BCH Road Drainage and the Water Environment		

PRESENT	[redacted] - Planning Technical Specialist [redacted] - Flood and Coastal Erosion Risk Management Advisor [redacted] – Catchment Coordinator for the Tyne Catchment [redacted] – WSP Environmental Assessment Lead [redacted] – WSP Water Specialist
APOLOGIES	[redacted] Gateshead Council
DISTRIBUTION	As above plus: [redacted] - Highways England PM, [redacted] - WSP PM
CONFIDENTIALITY	**Restricted**

ITEM	SUBJECT	ACTION	DUE
1.	[redacted] presented an overview of the Scheme and provided a progress update on the stage of the environmental assessments and DCO submission. In particular it was explained that the only changes north of the northern tie-ins at junction 67 (approximately level with the end of the existing noise barrier at Lady Park) are changes to signage. The current submission of the DCO to the inspectorate is mid-June.		
2.	<u>Kingsway Viaduct Piers</u> The Environment Agency (EA) outlined that they had concerns over the need to extend the piers in the flood plain. [redacted] detailed that modelling was undertaken using the EA / ICM model. The piers have been included in the modelling (there are 5). [redacted] showed the results of the modelling that has been undertaken. This showed that none of the piers are in the baseline flood		

ITEM	SUBJECT	ACTION	DUE
	extents, they only fall in the flood extents when looking at the climate change allowances are taken into account (+25% and +50%). [redacted] showed the results of the modelling that has been undertaken. This showed that none of the piers are in the baseline flood extents, they only fall in the flood extents when looking at the climate change allowances are taken into account (+25% and +50%). [redacted] detailed that the photographs showing the piers in relation to the river.		
3.	<u>Modelling:</u> EA ([redacted] highlighted that they would like to see the modelling so that they can check that it is correct. They could then make their comments prior to DCO submittal. Once at detailed design the Flood Risk Permit would be straightforward. [redacted] to provide confirmation that the models were provided to the EA as part of the package of information. [redacted] stated that the EA flood modelling team may not get their response back prior to the DCO being submitted, as a detailed model review would normally take 2 weeks to complete and that availability of resource to carry this out may not be immediately available. [redacted] outlined that the [redacted] may need to be increased – up to £2000 + VAT for review of the model. [redacted] will send through costs. [redacted] discussed that we would confirm or send the model today.	[redacted]	11/04/19 Completed (model already provided)
4.	<u>ES Chapter:</u> [redacted] detailed that no comments had been provided on the ES chapter. EA [redacted]) confirmed that they are happy with the content of the ES chapter.		
5.	<u>EA Comments:</u> Inception / exception text – provide more information on this process and how have they been carried out? [redacted] to provide additional information into the FRA. [redacted] to send word version of the EA comments.	[redacted]	Completed 12/04/19
6.	<u>Modelling and Climate Change Guidance:</u>		

ITEM	SUBJECT	ACTION	DUE
	[redacted] discussed that climate change guidance (UK CP09) had been adopted for the modelling which was completed in December 2018. After the modelling had been completed the EA released an interim position on climate change in light of UK CP18. Due to the timing of this, the UK CP18 had therefore not been used. [redacted] detailed that the EA is currently reviewing and assessing UK CP18. [redacted] outlined that in the case of something of importance like this – the interim position would be to use UK CP18 (not UK CP09). [redacted] discussed that given that we are not in the flood plain it's likely there would not be any difference. EA [redacted]) asked if we could run the worst case scenario (8.5 scenario standard method) and that Highways England projects of this scale this should be followed. CM also noted that there could only be a minimal difference.		
7.	<u>Flood Maps in the ES:</u> [redacted] detailed that the flood map for planning as currently published does not include the findings of the EA's version of the ICM model – this is currently being updated. The maps that should be used should therefore not be the flood map for planning but use the outputs from the baseline ICM model. [redacted] stated that the figures used have got the current EA Flood maps but the ICM model has used to drive the assessment. [redacted] outlined that WSP wouldadd some text into the FRA and ES Chapter and figures as required.	[redacted]	

ITEM	SUBJECT	ACTION	DUE
8.	Lady Park Burn: [redacted] stated that the Lady Park Burn blocks during heavy extreme rainfall (the screen blocks and the watercourse backs up). This overtopped onto the A1 in 2012. [redacted] also stated that there wouldn't be enough water for a 1:5 or 1:10 year event to block the screen. [redacted] also outlined that HE can look on the EA website for levels on Lady Park Burn to inform risk assessment. [redacted] stated that this is within the area where only signage changes were taking place – there are no other changes as a result of the Scheme. [redacted] outlined that they would like the FRA to consider: • What do Highways England tolerate in this area? • What measures are put in place should it overtop? • Do Highways England put road closures in place? • Should maintenance be put in place from Highways England (however special rakes need to be used to clear the screen)? • Can asset maintainers go out and check if there is a storm event etc.? [redacted] outlined that aspect may have been considered as part of the Coal House to Metro Centre scheme. [redacted] to locate documents from that scheme, if possible and see if this aspect was considered. WSP to include text on this in the ES and that this would be investigated at detailed design (to close this issue out in the ES).	[redacted] [redacted]	

ITEM	SUBJECT	ACTION	DUE
9.	Flood Plain Compensation: [redacted] described that flood plain compensation has been provided in the Scheme for the climate change scenarios only, and its location is constrained by the location of the surface water attenuation tanks. [redacted] outlined that further information is required to demonstrate that this area will flood at the same time as the lost floodplain. This can be provided through a GIS cross section, as opposed to additional modelling. [redacted] stated that from the slides she considered that WSP have done comprehensive modelling. Just need the finer points to demonstrate that the compensation area works – this can be done in a technical note. [redacted] to produce technical note or ensure this is closed out in the ES.	[redacted]	
10.	Other: [redacted] discussed Allerdene Burn – betterment varies depending on the option. We have optimised the floodplain. We can provide additional betterment for the viaduct option compared to the embankment option. [redacted] - Tidal flood risk – this is embedded in the model. Include some information in the FRA to this effect. Groundwater Flood Risk - [redacted] detailed that this is in the updated ES chapter and FRA. WSP need to consider the model tolerance [redacted] considers that approx. 20mm) is appropriate for the ICM model. [redacted]	[redacted]	

11.	WFD Assessment: [redacted] discussed that from a WFD point of view – looking at objective year of 2027. Need to get it to "good" status by 2027. [redacted] discussed that a sediment vortex separator has been provided on Longacre Dene for woodland – identified as a sensitive receptor. [redacted] outlined that other watercourses are ephemeral and only flow at certain times. [redacted] stated that during flashy conditions sediment would be flushed through these channels particularly around the viaduct. [redacted] detailed that around the viaduct there will be the settlement pond. At Kingsway viaduct – some water goes to the pond and some water will go through the tanks. Also have oversized pipes. [redacted] stated that it was hard to see what flows were going where and would like to understand better. [redacted] to provide the surface water drainage sub catchment plan. [redacted] to provide better referencing through to the FRA from the WFD. [redacted] stated that it looked from the report that only the bare minimum had been done to achieve WFD objectives. [redacted] stated that you would need to move it in the direction of moving it towards "good". Oil interceptors, hydro-breaks and SuDS will help but it will be the bare minimum. Ideally every structure, culvert and outfall should be assessed and that WSP should look at the suite of mitigation that the WFD Assessment should provide. [redacted] also noted that this issue had also been raised on the Testos scheme and Downhill Lane. Action to ensure that mitigation is linked back to other chapters – and bring in cross referencing into WFD. [redacted] discussed that additional text could be considered in to the WFD included looking at naturalising the channel at Allerdene culvert (currently daylighting), look at the culverts and outfalls for improvements, e.g. flow spreaders, location of outfall, impacts to habitat, naturalised / cobbly outfalls set back from channel.	AS AS [redacted] [redacted]	

ITEM	SUBJECT	ACTION	DUE
	[redacted] to provide photographs of another scheme to ensure his desires are understood. It was agreed that WSP would consider changing the significant effects to beneficial as the measures are “on the path” to betterment with regards to the WFD.	[redacted] [redacted]	

NEXT MEETING

An invitation will be issued if an additional meeting is required.