A1 Birtley to Coal House

Scheme Number TR010031

7.5C Statement of Common Ground: Environment Agency

Rule 8 (1) (e)

Planning Act 2008

The Infrastructure Planning (Examination Procedure Rules) 2010

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

STATEMENT OF COMMON GROUND: ENVIRONMENT AGENCY

Regulation Number:	Rule 8 (1) (e)
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STATEMENT OF COMMON GROUND

This Statement of Common Ground has been prepared and agreed by (1) Highways England Company Limited and (2) Environment Agency.

Signed…….
[NAME]
Project Manager
on behalf of Highways England
Date: [DATE]

Signed…….
[NAME]
[POSITION]
on behalf of [Environment Agency]
Date: [DATE]

CONTENTS

1 INTRODUCTION

1.1 Purpose of this Document

1.1.1 This Statement of Common Ground ("SoCG") relates to an application made by Highways England (the "Applicant") to the Planning Inspectorate (the "Inspectorate") under the Planning Act 2008 (the "2008 Act") for a Development Consent Order (DCO). If made, the DCO would grant consent for the A1 Birtley to Coal House (the "Scheme"). A detailed description of the Scheme can be found in Chapter 2 of the Environmental Statement ((ES) (**Application Document Reference: TR010031/APP/6.1**)**.**

1.1.2 This SoCG does not seek to replicate information which is available elsewhere within the Application documents. All documents are available on the Inspectorate website: (**https://infrastructure.planninginspectorate.gov.uk/projects/North%20East/A1-Birtley-to-Coal-House-Improvement-Scheme/**).

1.1.3 The SoCG has been produced to confirm to the Examining Authority where agreement has been reached between the parties to it, and where agreement has not (yet) been reached. SoCGs are an established means in the planning process of allowing all parties to identify and so focus on specific issues that may need to be addressed during the examination.

1.2 Parties to this Statement of Common Ground

1.2.1 This SoCG has been prepared by (1) **Highways England** as the Applicant and (2) the **Environment Agency.**

1.2.2 Highways England became the Government-owned Strategic Highways Company on 1 April 2015. It is the highway authority in England for the strategic road network and has the necessary powers and duties to operate, manage, maintain and enhance the network. Regulatory powers remain with the Secretary of State. The legislation establishing Highways England made provision for all legal rights and obligations of the Highways Agency, including in respect of the Application**,** to be conferred upon or assumed by Highways England.

1.2.3 The Environment Agency is an executive non-departmental public body, sponsored by the Department for Environment, Food and Rural Affairs with the stated purpose *"to protect or enhance the environment, taken as a whole".* Within England it is responsible for, amongst other things: regulating major industry and waste; treatment of contaminated land; water quality and resources; fisheries; inland river, estuary and harbour navigations; conservation and ecology; and managing the risk of flooding from main rivers, reservoirs, estuaries and the sea.

1.3 Terminology

1.3.1 In the tables in the Issues chapter of this SoCG, "Not Agreed" indicates a final position, and "Under discussion" where these points will be the subject of on-going discussion wherever possible to resolve, or refine, the extent of

disagreement between the parties. “Agreed” indicates where the issue has been resolved.

1.3.2 It can be taken that any matters not specifically referred to in the Issues chapter of this SoCG are not of material interest or relevance to the **Environment Agency,** and therefore have not been the subject of any discussions between the parties. As such, those matters can be read as agreed, only to the extent that they are either not of material interest or relevance to the **Environment Agency.**

2 RECORD OF ENGAGEMENT

2.1.1 A summary of the meetings and correspondence that has taken place between Highways England and the Environment Agency (EA) in relation to the Application is outlined in Table 2-1.

Table 2-1- Record of Engagement

Date	Form of correspondence	Key topics discussed and key outcomes
31/10/2017	**Meeting (Appendix A)** **Stephen Marshall, Lucy Mo, Amanda McKevitt and Cameron Sked, Environment Agency**	**Key topics** The Applicant discussed the potential for the Scheme to require sheet piling in relation to widening of the piers supporting the River Team crossing. **Key outcomes** The Environment Agency confirmed this would require a bespoke permit and method statement due to the close proximity of a gauging station. At this stage sheet piling has been discounted, however, the construction works at this location would require an Environmental Permit prior to construction.
		Key topics Discussion on the publication of a new National Planning Policy Framework (NPPF) policy in 2018/ 2019 with potential implications in relation to climate change and the design life of the Scheme for surface water modelling. **Key outcomes** An approach has since been agreed with the Environment Agency, as detailed in later sections 17/04/19, email with Caroline Maarouf.
		Key topics

Date	Form of correspondence	Key topics discussed and key outcomes
		Discussed the Environment Agency's proposal for the Lamesley Pastures Flood Alleviation Scheme, which is to be a12 ha flood storage area near Coal House Roundabout (Junction 67) which would generate 80,000 m^3 surplus of engineering fill, that the Environment Agency would need to dispose of. **Key outcomes** The Environment Agency confirmed that the engineering fill may be offered to the Scheme; however, the proposal is at pre-application stage and would require full planning permission. The Applicant issued engineering specifications to the Environment Agency for the fill required. Since this discussion, the timescales have diverged, and this Scheme is likely to be completed before the Environment Agency's Lamesley Pastures Flood Alleviation Scheme.
		Key topics The Environment Agency outlined their desire to reduce rate and improve quality of surface water runoff through Lamesley Pastures to support integrated catchment management of River Team. **Key outcomes** As a result of the discussions the Scheme design includes water quality improvement measures (interceptors, sediment vortex's and ponds).
		Key topics Discussion on the design of outfalls which form part of the drainage strategy for the Scheme. **Key outcomes** The Environment Agency confirmed that all outfalls (not just high priority outfalls) need to meet future standards as the current standards will change prior to submission of the DCO.

Date	Form of correspondence	Key topics discussed and key outcomes
6/12/2017	**Letter (Appendix B)** **Lucy Mo, Environment Agency**	**Key topics** The Applicant requested comments and advice on the proposed approach to the Flood Risk Assessment (FRA). **Key outcomes** The Environment Agency confirmed that the FRA should consider/include: - Climate change allowances; which must be factored into the design of the road and drainage. - Floodplain compensation for any loss of the floodplain must be provided. This should include the provision of climate change. - Collaborating with other flood risk management authorities to join the delivery of wider strategic flood alleviation schemes. - Opportunities for environmental betterment, particularly to reduce surface water flood risk.
		Key topics The Applicant requested comments and advice on the proposed approach to flood risk Modelling. **Key outcomes** The Environment Agency confirmed that the flood risk modelling should consider/include: - The Environment Agency's 2016 Team Valley flood risk model should be used to inform the proposed development. - Hydraulic modelling will be required in support of the National Significant Infrastructure Project (NSIP) application.

Date	Form of correspondence	Key topics discussed and key outcomes
		- Any hydraulic modelling is undertaken in accordance with Methods E and F of HD45/09.
		Key topics The Applicant requested comments and advice on flood risk permits required. **Key outcomes** The Environment Agency advised that within the Order Limits is a designated "main river" and under the Environmental Permitting Regulations 2010, an environmental permit may be required for flood risk activities in the following circumstances. This would be required for any work within 8 metres of a non-tidal sections, or 16 metres of the tidal section, instance where work is proposed: a) in, under or near a main river (including where the river is in a culvert); b) on or near a flood defence on a main river; c) in the floodplain of a main river; and d) on or near a sea defence.
		Key topics The Applicant requested comments and advice on the proposed approach to the water framework (WFD) assessment. **Key outcomes** The Environment Agency advised that the WFD consider/include: - The proposed works will affect the River Team (Source to Tyne, GB103023075670). This waterbody is currently classified under the WFD as Moderate. This Heavily Modified Waterbody is impacted by urbanisation from the highway network. Sedimentation,

Date	Form of correspondence	Key topics discussed and key outcomes
		hydrocarbons and road salt from highway infrastructure has affected the water quality of the River Team. Hydraulic modelling will be required in support of the DCO application. - The WFD seeks to improve the water quality in all our waterbodies (including lakes, rivers and estuaries). In particular, it seeks to ensure that all waterbodies achieve 'good status' or 'good ecological potential'. The environmental objectives of the WFD are: a) to prevent deterioration of the status of surface waters and groundwater b) to achieve objectives and standards for protected areas c) to aim to achieve good status for all water bodies or, for heavily modified water bodies and artificial water bodies, good ecological potential and good surface water chemical status d) to reverse any significant and sustained upward trends in pollutant concentrations in groundwater e) the cessation of discharges, emissions and loses of priority hazardous substances into surface waters f) to progressively reduce the pollution of groundwater and prevent or limit the entry of pollutants - The overall objectives of the Northumbria RBMP are to 1) prevent deterioration 2) deliver protected area objectives 3) deliver improvements that make progress towards 2027 objectives where the benefits are greatest. Environmental objectives have been set for each of the protected areas and waterbodies in the Northumbria river basin district. Highway England must have regard to these objectives when making decisions that could affect the water environment. - It is considered that the proposed development provides a great opportunity to implement WFD mitigation measures and river restoration. This could include deculverting and enhancements to the river environment, such as fish and mammal passage and water

Date	Form of correspondence	Key topics discussed and key outcomes
		quality improvements. The use of sustainable drainage systems combined with oil interceptors would be a recognised way to improve the water quality from the highway draining into the watercourses.
		Key topics The Applicant requested comments and advice on the proposed assessment on biodiversity and ecology. **Key outcomes** The Environment Agency advised that: - Any works over the River Team must maintain or enhance the riparian corridor. Article 10 of the Habitats Directive stresses the importance of natural networks of linked corridors to allow movement of species between suitable habitats and promote the expansion of biodiversity. Such networks may also help wildlife adapt to climate change. - Opportunities should be sought for the development to contribute to improvement measures for the River Team. This could include local proposals to restore natural conditions in the river corridor and Lamesley Pastures conservation area and the wider vicinity. - There may be operational and/or post construction impacts to invertebrates in the area. For example, artificial lighting could impact upon feeding, breeding and movement of insects. We would request that number of lights and brightness should be assessed to avoid light spillage. This would be particularly important next to River Team. Risks should be minimised or eliminated where possible. We would also request that any planting schemes include native plants of local provenance.
		Key topics

Date	Form of correspondence	Key topics discussed and key outcomes
		The Applicant requested comments and advice on the proposed approach on protected species. **Key outcomes** **The Environment Agency advised that:** - The proposed development must ensure that protected species which could be directly or indirectly affected by the proposal are considered. European Otter records have been found in the vicinity. They are protected under Habitat Directive Annex 4, Wildlife and Countryside Act Schedule 5 and Natural Environment and Rural Communities Section 41. - Amphibians including Great Crested Newt may be present within the construction site. They are protected under Habitat Directive Annex 2. The ecological report stated that desktop studies suggested that Water Vole may be present within 1km. Water Vole are protected under Schedule 5 of the Wildlife and Countryside Act.
15/03/2018	**Meeting (Appendix C)** **Lucy Mo, Carloine Maarouf, Rob Carr and Sally Gallagher, Environment Agency**	**Key topic** Sheet piling would be contrary to the Environment Agency's desire to avoid further modification of the River Team (a 'failing water body' due to modification of its watercourse features). Potential for sheet piling into bedrock to create migratory pathways between shallow mine workings and groundwater. **Key outcome** Alternative method of construction to be sought (sheet piling may be acceptable as a temporary measure, in which case temporary flood management would be required as sheet piling would entail a reduction in the river channel capacity). Compensatory mitigation would be required (to include consideration of opportunities for betterment) to help achieve WFD objective for 2027.

Date	Form of correspondence	Key topics discussed and key outcomes
		Key topic Discussion on the proposed extension to Allerdene Culvert (sizing is due to increased embankment loading) is designed to replicate the existing flow capacity and velocity. **Key outcome** Further development of design required to 1) reduce energy of flow and 2) include a method of storage and conveyance. This would assist with flood management as there is historical downstream flooding.
		Key topic Discussion on the tequirement for balancing pond due to increase in impermeable hardstanding. **Key outcome** The balancing pond would accommodate be 1 in 100 year storm discharge (taking into account future climate change) plus a freeboard of 600 mm. Adaptions to outfalls > 300 mm would require permit to construct from Environment Agency and watercourse consent from the Gateshead Council.
		Key topic Discussion on the publication of a new NPPF policy in 2018/ 2019 with potential implications in relation to climate change and the design life of the Scheme for surface water modelling. **Key outcome** The Applicant confirmed that the surface water modelling accounts for 20% increase in rainfall intensity to take into account climate change.

Date	Form of correspondence	Key topics discussed and key outcomes
		Key topic Discussion on the increased flow at outfalls due to increased area of hardstanding (due to widening and hardening of the central reserve). **Key outcome** The drainage system prevents an increase in discharge rate from the outfalls (mitigating flood risk).
		Key topic Discussed the Environment Agency's proposal for 12 ha flood storage area near Coal House Roundabout (Junction 67) which would generate 80,000 m^3 surplus of engineering fill. **Key outcome**This will be stockpiled for the A19 Testo's Junction Alteration scheme. No further action required.
		Key topic Opportunity to improve runoff water quality in accordance with objectives of WFD and National Policy Statements (NPS). **Key outcome**
21/03/18	**Letter (Appendix D)** **Lucy Mo, Environment Agency**	**Key topic** The Environment Agency provided comments on the WFD mitigation comments following the Applicant's request on 6th February 2018. **Key outcome**

Date	Form of correspondence	Key topics discussed and key outcomes
		The Environment Agency advised that: - The proposed Scheme provides a great opportunity to implement WFD mitigation measures and river restoration. This could include deculverting, daylighting of culverts and enhancements to the river environment, such as fish and mammal passage and water quality improvements. The use of sustainable drainage systems combined with oil interceptors would be a recognised way to improve the water quality from the highways draining into the watercourses. - The delivery and implementation of the measures outlined above, would be supported by the River Team Catchment Partnership and the Agency. The River Team is a focus area for improvement for the Catchment Partnership. The Catchment Partnership has several complementary projects in the catchment which seek to improve water quality, ecology, river restoration, habitat improvement and quantity, naturalisation for flood risk, woodland planting and improvements to land contamination. Several investigations and feasibilities such as Northumbrian Water's Chemical Investigations Programme for Rowletch Burn) and significant investment by Northumbrian Water for the removal of phosphate have been carried out for the catchment. In order for the catchment to achieve its 2027 WFD objectives, every organisation, especially those identified as contributing to the WFD failure of the waterbody, should seek to deliver WFD mitigation measures which go beyond the minimum. Opportunities to deliver and enhance the environment and WFD should be undertaken.
		Key topic The Environment Agency provided comments on the proposed Biodiversity assessment following the Applicant's request on 6th February 2018. **Key outcome** **The Environment Agency advised that:**

Date	Form of correspondence	Key topics discussed and key outcomes
		- Any works over the River Team must maintain or enhance the riparian corridor.
20/07/18	**Letter (Appendix E)** **Lucy Mo, Environment Agency**	**Key topic** The Environment Agency advised that floodplain compensation will be required at the Allerdene Culvert and the River Team culverts at junction 67 (Coal House) **Key outcome** The Applicant confirmed that the modelling undertaken shows that the realigned watercourse downstream of Allerdene Culvert (for the embankment option) provides sufficient capacity to ensure the 1 in 1000-year flood plain continues to function in a similar manner. The 1 in 100 year and smaller events are already contained within the existing channel. The viaduct option provides additional biodiversity benefits and a similar flood mechanism. Floodplain storage is to be provided at the River Team/Kingsway Viaduct pier extension. This is in the form of a top soil strip to offset the loss of floodplain (approximately 12m^3) associated with the additional piers. **Key topic** The Environment Agency confirmed that the FRA must take into account pluvial flood risk on the replacement Allerdene Bridge and demonstrate a betterment in terms of flood risk. **Key outcome** The Applicant confirmed that there is currently no pluvial risk of flooding on Allerdene Bridge. The Environment Agency's risk of flooding from surface water mapping incorrectly shows a flow path onto the A1 at this point. As theA1 is substantially elevated and the railway runs north-south beneath this, any surface water flows would preferentially run along this route before building up to a depth sufficient for flooding of the road. This is confirmed through the above hydraulic modelling.

Date	Form of correspondence	Key topics discussed and key outcomes
		Key topic The Environment Agency confirmed that they are generally opposed to the culverting of watercourses because of the adverse ecological, flood risk, human safety and aesthetic impacts. They will consider each application to culvert a watercourse on its own merits and in accordance with their risk-based approach to permitting. In all cases where appropriate to do so, the Applicant must provide adequate mitigation measures, accept sole ownership and responsibility for future maintenance. **Key outcome** The Applicant confirmed that the Allerdene Burn is currently a piped arched culvert. For the embankment option, this watercourse would continue to be culverted. For the viaduct option, the culvert would be removed and replaced by an open channel in the form of a lined ditch. Suitable mitigation and maintenance proposals for both options will be provided as part of the Scheme. **Key topic** The Environment Agency confirmed they welcome the addition of Surface water Drainage Strategy (SuDS) to improve water quality and increase water attenuation. It is strongly recommended that the design maximises the biodiversity potential of the Scheme as a whole. This includes the planting of native and non-native species of local provenance and a management strategy for their ongoing maintenance. **Key outcome** The Applicant has incorporated SuDS and other water quality and attenuation measures as appropriate across the Scheme. This includes a pond, oversized pipes and attenuation tanks along with oil interceptors and a sediment vortex control at Longacre Dene.

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		The planting scheme is subject to detailed design and appropriate native and non-native species will be selected. However, this will also need to consider the Applicant's maintenance regime to ensure suitability.
8/4/2019	**Letter (Appendix F)** **Lucy Mo, Environment Agency**	**Key topic** The Environment Agency provided comments on the FRA following the Applicant's request. **Key Topic - Exception Test** Section 2.17 states that *'the FRA demonstrates that the scheme will remain safe throughout its design life and that flood risk will not be increased elsewhere'*. As it stands, the FRA does not demonstrate how both elements of the Exception Test as set out in the NPPF and Planning Practice Guidance have been addressed. Further information regarding the application of the Sequential and Exception Test must be included in the FRA. **Key topic** UKCP18 was published on 26 November 2018 and replaces the UKCP09 projections. The allowances in Flood Risk Assessment: Climate Change Allowances (published February 2016) are still the best national representation of how climate change is likely to affect flood risk for peak river flow and peak rainfall intensity. Research that is due to be published in 2019 may result in changes to these allowances. **Key outcome** The Environment Agency welcomes clarity regarding which climate change allowances have been taken into account in the FRA. **Key topic** The Environment Agency confirmed that flood zones have not been updated with the latest hydraulic modelling. As a result, the flood outlines are incorrect.

Date	Form of correspondence	Key topics discussed and key outcomes
		Key outcome Updated flood risk maps to be obtained by requesting from the Environment Agency's Newcastle department. **Key topic** The Environment Agency confirmed they welcomed references to the Government's 25 Year Environment Plan within this section. The 25 Year Environment Plan seeks to ensure that new developments are flood resilient and do not increase flood risk, whilst achieving environmental net gains. **Key outcome** The Applicant has referenced the Government's 25 Year Environment Plan within the FRA. **Key topic** The Environment Agency confirmed that flood events caused by blockages for the culvert located on Lady Park Burn have previously been discussed. **Key outcome** Blockages to the culvert should be discussed and any risks to the A1 should be appraised. **Key topic** The Environment Agency state that there is no mention to piers being located in the floodplain and channel of the River Team. **Key outcome** The FRA will need to assess the impact of this on flood waters and provide compensation. **Key topic** The Environment Agency stated that there is a reference to the option of betterment to the

Date	Form of correspondence	Key topics discussed and key outcomes
		existing Allerdene culvert, but no reasons why this option has now been discounted. In line with the 25 Year Environment Plan and NPPF, we strongly recommend that betterment is achieved. **Key outcome** Options for betterment were discussed in previous meeting with WSP/Highway England in 2018. **Key topic** The Environment Agency stated that references in the historical flooding section are out of date and need to be updated. For example, there was a flood event in 2012 in Lady Park. Section 4.2.11: an area of floodplain compensation is to be located in an area that already floods. The FRA must demonstrate that this area of land is able to fully function as floodplain compensation, and that it floods at the right flood event. Section 4.2.14: we would welcome clarity regarding whether the culvert needs to be extended or can it be a channel alignment. **Key outcome** The FRA will be updated with consideration of these points. **Key topic** The Environment Agency confirmed it should be noted that the bottom section of the River Team is tidal. **Key outcome** This will be considered in the FRA. **Key topic** The Environment Agency confirmed that the FRA does not adequately consider the risk of groundwater flooding. Groundwater within the coal measures underlying the area are currently

Date	Form of correspondence	Key topics discussed and key outcomes
		being managed by the Coal Authority to prevent mine water pollution. Water is currently being actively pumped at a site (Kibblesworth) near Birtley. There is a risk that shallow groundwater may be present, now or in future, along some parts of the proposed route. **Key outcome** The FRA will assess and consider whether this may pose a risk to any part of the proposed scheme. For example, infiltration is unlikely to be a suitable drainage option. Further information is available from the Coal Authority. **Key topic** The Environment Agency state that the Hydraulic Modelling Report demonstrates that the impact on flood levels is within the model tolerance as the largest increase is 20mm. **Key outcome** The flood difference should also be considered in terms of the impact on residential properties if there is any. This should be clarified / stated in the FRA. **Environment Agency comments on the WFD Assessment:** **Key Topic** The Environment Agency confirmed that in order to achieve the objectives of the Government's 25 Year Environment Plan and the NPPF, the WFD assessment could be more ambitious and aspirational with respect to the achievement of environmental net gains for the environment. In particular, the WFD assessment does not take into account the 25 Year Environment Plan, which states that any development or infrastructure project should seek to demonstrate net gain for the environment. **Key Outcome** The Applicant confirmed that WFD assessment takes into account the 25 Year Environment

Date	Form of correspondence	Key topics discussed and key outcomes
		Plan and identifies net gains for the environment especially in relation to the mitigation measures that should be addressed. **Key Topic** The Environment Agency confirmed that the WFD highlights the River Team and associated waterbodies in the catchment to suffer from sedimentation. This is due to urban and transport run off. **Key Outcome** Clarification to be made in relation to the silt control vortex separators; including why they are not being installed on all outfalls. Silt control vortex separators are only proposed at Longacre Dene and would be beneficial on all outfalls. The Environment Agency confirmed they would welcome clarity regarding the drainage from Kingsway Viaduct. Will this receive any treatment for water quality and sediment? There are a large number of Highways England culverts and outfalls in the proposed works. Under the WFD, these modifications have to be assessed and offer mitigation for their impact on habitat and biodiversity. The WFD assessment does not look at the options to mitigate for these. With respect to the Heavily Modified Designation (Urbanisation) the following potential mitigation measures should be looked at and enhancement measures implemented: • Align and attenuate flow to minimise impact on ecology • Alter culvert channel bed to allow longitudinal connectivity • Create habitat • Educate landowners on impacts to Hydromorphology and Hydromorphological harm • Enhance existing structures to improve ecology

Date	Form of correspondence	Key topics discussed and key outcomes
		• Ensure maintenance minimises habitat impact • Ensure maintenance prevents sediment transfer • Implement bank rehabilitation • Implement changes to locks etc. • Implement channel maintenance strategy and/or technique • Implement sediment management strategy • Install fish passes • Manage in-channel and riparian vegetation • Manage realignment of flood defences • Preserve or restore habitats • Reduce fish entrainment • Remove and prevent further dispersal of invasive non-native species • Remove obsolete structure(s) • Remove or enhance set-back embankments • Remove or soften hard bank engineering • Re-opening of culverts • Restore or increase floodplain (lateral) connectivity • Restore or Increase In-channel morphological diversity • Retain habitats

Date	Form of correspondence	Key topics discussed and key outcomes
		Key topic The Environment Agency confirmed Geomorphological impacts of the construction of the new piers should be considered and assessed in the WFD Assessment. **Key outcome** The Environment Agency confirmed that the WFD assessment should also demonstrate how the temporary works will be carried out and the impact they will have on the hydromorphology, including connectivity, sediment transport processes, the simplifying of channels and how this will be mitigated against. **Key outcome** The impact upon the hydromorphology should then be used to directly assess the impact upon ecology including fish and their habitat, invertebrates and macrophytes. This could be incorporated into the WFD. Assessment and mitigation included where appropriate.
10/4/2019	**Meeting (Appendix G)** **Lucy Mo, Caroline Maarouf and Rob Carr, Environment Agency**	**Key topic** The Environment Agency outlined that they had concerns over the need to extend the Kingsway Viaduct Piers in the flood plain. **Key outcome** The Applicant detailed that modelling was undertaken using the Environment Agency's Integrated Catchment Modelling (ICM) model. Five piers have been included in the modelling. The Applicant 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 into the flood extents when considering climate change allowances (+25% and +50%). The Applicant provided photographs showing the piers in relation to the river.
		Key topic

Date	Form of correspondence	Key topics discussed and key outcomes
		The Environment Agency 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 submission of the DCO application. Confirmed that at detailed design stage of the Scheme, the Flood Risk Permit would be straightforward. **Key outcome** The Applicant to provide confirmation that the models were previously provided to the Environment Agency as part of the package of information. 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. WSP discussed that they would confirm or send the model today.
		Key topic The Applicant highlighted that no comments had been provided on the ES chapter. **Key outcome** The Environment Agency confirmed that they are happy with the content of the ES chapter. **Key topic** The Applicant 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 Environment Agency 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. The Environment Agency is currently reviewing and assessing UK CP18. They suggested that in the case of something of importance like this – the interim position would be to use UK CP18 (not UK CP09). **Key outcome**

Date	Form of correspondence	Key topics discussed and key outcomes
		The Applicant discussed that given that the Scheme is not in the flood plain it's likely there would not be any difference. The Environment Agency requested a run of the worst-case scenario (8.5 scenario standard method) and that for Highways England projects of this scale this should be followed. The EA also noted that there could only be a minimal difference.
		Key topic Flood map for planning as currently published does not include the findings of the Environment Agency's version of the ICM model – this is currently being updated. The maps to be used should not be the flood map for planning but use the outputs from the baseline ICM model. **Key Outcome** The Applicant stated that the figures used the current EA Flood Map for planning but the ICM model has been used to drive the assessment. The Applicant will update the figures with the Environment Agency's latest ICM mapping and add some text into the FRA and ES Chapter and the figures as required to provide clarity on the differences between the mapping.
		Key topic Lady Park Burn blocks during heavy extreme rainfall (the screen blocks and the watercourse backs up). This overtopped onto the A1 in 2012. There wouldn't be enough water for a 1:5 or 1:10 year event to block the screen and cause flooding of the A1. The Applicant can look on the Environment Agency's website for levels on Lady Park Burn to inform their risk assessment. **Key Outcome** The Applicant confirmed that this is within the area where only signage changes were proposed and there are no other changes required as a result of the Scheme. FRA to consider:

Date	Form of correspondence	Key topics discussed and key outcomes
		• Highways England operations in the area • Measures put in place if overtopping occurs • Requirement for Highways England to close roads • Maintenance that could be completed by Highways England on behalf of the Environment Agency, however special rakes need to be used to clear the screen. • Possibility of asset maintainers go out and check if there is a storm event etc. **Key Topic** The Environment Agency confirmed that the above aspects may have been considered as part of the Coal House to Metro Centre scheme. **Key outcome** The Applicant to locate documents from the Coal House to Metro Centre scheme and see if this aspect was considered. The Applicant 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).
		Key topic The Applicant 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. The Environment Agency outlined that further information is required to demonstrate that this area will flood at the same time as the lost floodplain. **Key outcome** This can be provided through a GIS cross section, as opposed to additional modelling. **Key topic**

Date	Form of correspondence	Key topics discussed and key outcomes
		The Environment Agency stated that from the presentation provided at the meeting it was considered that the Applicant has undertaken comprehensive modelling. The Environment Agency confirmed the finer points are required to demonstrate that the compensation area works – which can be provided in a technical note. The Applicant to produce technical note or ensure this is closed out in the ES.
		WFD Assessment **Key topic** The Environment Agency discussed that from a WFD point of view – looking at objective year of 2027 - need to get it to "good" status by 2027. The Environment Agency stated that WFD as it stands seems as though it is only looking to do the bare minimum to match WFD objectives. Every structure, culvert and outfall should be assessed, and the Applicant should look at the suite of mitigation that the WFD Assessment should provide. Mitigation should include consideration of oil interceptors, hydro-breaks and SuDS. **Key outcome** The Environment Agency and the Applicant discussed additional measures that could be considered in the WFD included looking at naturalising the channel at Allerdene culvert (currently daylighting), consider culverts and outfalls for improvements, e.g. flow spreaders, location of outfall, impacts to habitat, naturalised / cobbly outfalls set back from channel. It was agreed that the Applicant would consider changing the significant effects to beneficial as the measures are "on the path" to betterment with regards to the WFD. The Applicant discussed that a sediment vortex separator has been provided on Longacre Dene for woodland – identified as a sensitive receptor. The Applicant outlined that other watercourses are ephemeral and only flow at certain times. **Key topic**

Date	Form of correspondence	Key topics discussed and key outcomes
		The Environment Agency stated that during flashy conditions, sediment would be flushed through these channels particularly around the viaduct. **Key outcome** The Applicant 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. **Key topic** The Environment Agency stated that it was difficult understand what flows were going where and would like to understand better. **Key outcome** The Applicant to provide the surface water drainage sub catchment plan. The Applicant to provide better referencing through to the FRA from the WFD. The Applicant to ensure that mitigation is linked back to other chapters – and bring in cross referencing into WFD.
17/4/2019	**Emails (Appendix H),** **Caroline Maarouf, Environment Agency**	Agreement on approach to assessing climate change and Lady Park Burn.
23/7/2019	**Letter (Appendix I)** **Lucy Mo, Environment Agency**	**Key topic** The Environment Agency confirmed they had reviewed the WFD Assessment, ES Chapter 8 Biodiversity and ES Chapter 13 Road Drainage and Water Environment following the Applicant's request of May 2019. A summary of comments received from the Environment Agency are set out below: **Key outcomes**

Date	Form of correspondence	Key topics discussed and key outcomes
		Flood Risk Model The Environment Agency confirmed: • Flood risk model requires further work before the Environment Agency can confirm the model and its findings, in particular the hydrology and the Allerdene surface water modelling. Full model review awaited. ES Chapter 13 The Environment Agency confirmed: • Unable to accept mitigation measures until the modelling has been agreed/accepted. • Floodplain compensation of top soil scrape needs details and calculations to be submitted with DCO application. • Temporary culvert will need Flood Risk Activity Permit. • The Scheme should seek opportunities for synergies with the Environment Agency proposed flood alleviation scheme for the Team Valley Trading Estate to broaden environmental enhancements. WFD Assessment The Environment Agency confirmed: • Regarding the topsoil scrape mitigation for the piers in the floodplain, there is an opportunity to reconnect with sections of the floodplain to enhance the River Team. • Allerdene viaduct option preferred as here is an opportunity to realign with natural processes. • They would welcome proposals as to how in-channel improvements to increase flow diversity of the modified channel could be achieved for both the Allerdene embankment

Date	Form of correspondence	Key topics discussed and key outcomes
		and Allerdene Viaduct options. • The Geomorphological Assessment to be completed at the detailed design stage should include the comments made in this advice note. • Where bank protection measures are proposed, bioengineering should be provided first. • Recommended that drainage such as SuDS, oil interceptors, filter drains and vortex separators be installed on all outfalls. • Clarification sought in respect to outfalls and what the options are for the setting back and construction/alterations of these structures. • Any outfall structure / discharge that is required to be constructed near a Main River may require a flood risk activity permit. Design of outfalls should be sympathetic to the water environment with low impact design options that mimic greenfield runoff and not drain onto or impact Habitats of Principal Importance. Soakaways to rivers must prevent any hard engineering on the banks of watercourses and ensure no degradation to its WFD statues/potential.
24/7/2019	**Meeting (Appendix J)** **Lucy Mo, Caroline Maarouf, Robert Carr and Scott Mackenzie, Environment Agency.**	Meeting to discuss Chapter 13 Road drainage and the water environment of the ES assessments and Environment Agency comments received on 23/07/2019: **Key topic - Flood Risk Model** The Applicant confirmed that comments on the flood risk model have not yet been received. Currently some issues identified. The Environment Agency confirmed it would set out what would need to be updated. If the model is fit for purpose, then the Environment Agency will accept the FRA. The Environment Agency could not identify the drawing with the top soil scrape on or the calculations to inform it. **Key outcome**

Date	Form of correspondence	Key topics discussed and key outcomes
		The Applicant provided the drawing and the meeting and confirmed the calculations that have informed it. The Applicant will issue the FRA to the Environment Agency so that they can look at the flood compensation areas / updates from the previous issue. **Key Topic - Further ES chapter comments** . The Applicant confirmed they will provide information as to what works are taking place near the Environment Agency river gauge where this is included in the Scheme Footprint. The Environment Agency confirmed that the temporary culvert would need to be as short as possible and ideally if over 7m wide then the Environment Agency would prefer a bridge. Location and design would need to be agreed with the Environment Agency as part of detailed design / preconstruction works. The Team Valley Flood Alleviation scheme was discussed. Surface water drainage and outfall vortex separators will be considered for all outfalls at detailed design. Improvements to the outfalls e.g. setting back, will also be considered at detailed design.

Date	Form of correspondence	Key topics discussed and key outcomes
25/7/2019	**Spreadsheet (Appendix K) Environment Agency's model review**	The Environment Agency provided their comments on the flood models, the key areas for refinement were: **Key topic - Method Statement** **Key outcome** Fluvial modelling was not required at Longacre Dean due to the Scheme not impacting the main channel. At Long acre dean the culvert is substantially lower than the road, with no flow route on to the A1 and no changes are proposed but the surface flow routes to the channel are of interest. **Key topic - Flow estimation points and descriptors** **Key outcome** The Applicant confirmed a review of the catchment descriptors used and adjust if required. **Key topic - Flow estimation points and descriptors**

Date	Form of correspondence	Key topics discussed and key outcomes
29/10/2019	**Technical Note (Appendix L)** **The Applicant's response to the Environment Agency's comments of 29/10/2019**	**Key outcome** The Applicant will use NRFA V8 to cross check ReFH2 hydrology using the FEH statistical method. **Key topic - Initial choice of methods** **Key outcome** The ReFH2 analysis was undertaken outside of ICM within the ReFH2 software. The Applicant will undertake a confirmatory check to ensure that the flows between the two approaches are similar. **Key topic - Initial choice of methods, Justification of approach** **Key outcome** The Applicant will include the table and explanatory text showing the differences in FEH99 and FEH13 rainfall for the study area. **Key topic - Direct rainfall modelling - 2D domain extent** **Key outcome** The Applicant will undertake a further run as a as a sensitivity check/analysis on the model downstream boundary condition

Date	Form of correspondence	Key topics discussed and key outcomes
14/11/2019	**Email (Appendix M) Lucy Mo, Environment Agency**	**Key topic - Direct rainfall modelling - Percentage runoff** **Key outcome** The Applicant will provide clarification on the approach adopted.

2.1.2 It is agreed that this is an accurate record of the key meetings and consultation undertaken between (1) the Applicant and (2) the **Environment Agency** in relation to the issues addressed in this SoCG.

3 ISSUES

Table 3-1 - Issues related to the ES

ES Chapter	Paragraph Reference	Sub-section	Environment Agency Comment	Highways England Response	Status
Chapter 13: Road Drainage and the water environment **(Application Document Reference TR010031/APP/6.1)**	Whole Chapter	N/A	The Environment Agency confirmed that they are happy with the content of Chapter 13 of the ES.	Agreed	Agreed
Chapter 13: Road Drainage and the water environment **(Application Document Reference TR010031/APP/6.1)**	13.7.1-13.7.39	Baseline Conditions	Agreed	Agreed	Agreed
Chapter 13: Road Drainage and the water environment **(Application Document**	13.9.1-13.9.26	Design, Mitigation and Enhancement Measures	The design incorporates SuDS and other water quality and attenuation measures as appropriate across the Scheme. This	The location and number of oil interceptors and sediment control measures are being refined in accordance with the on-	Under discussion

ES Chapter	Paragraph Reference	Sub-section	Environment Agency Comment	Highways England Response	Status
Reference TR010031/APP/6.1)			includes a pond, oversized pipes and attenuation tanks along with oil interceptors and a sediment control at Longacre Dene. Other aspects agreed.	going detailed design and the latest Design Manual for Roads and Bridges (DMRB) updates – LA 113 – Road Drainage and the Water Environment.	
Chapter 13: Road Drainage and the water environment **(Application Document Reference TR010031/APP/6.1)**	13.10.1-13.10.51	Assessment of Likely Significant Effects	Agreed	Agreed	Agreed
Chapter 13: Road Drainage and the water environment **(Application Document Reference TR010031/APP/6.1)**	Appendix A – Hydraulic Modelling Report 3.2.1-3.2.3	Hydrological Analysis	The Environment Agency confirmed the baseline conditions accurately reflect those for the Scheme. This includes the use of the flood maps from the Environment Agency's ICM model for the River Team.	Agreed	Agreed

ES Chapter	Paragraph Reference	Sub-section	Environment Agency Comment	Highways England Response	Status
Appendix 13.1 - FRA **(Application Document Reference TR010031/APP/6.3)**	Whole document	N/A	The Environment Agency confirmed that flood risk from ordinary watercourse and surface water falls under remit of LLFA (Gateshead Council).	Agreed	Agreed
Appendix 13.1 - FRA **(Application Document Reference TR010031/APP/6.3)**	2.3.1-2.3.11	Potential Effects of Climate Change	Agreed	Agreed	Agreed
Appendix 13.1 - FRA **(Application Document Reference TR010031/APP/6.3)**	2.4.1	Hydraulic Modelling	Modelling to be re-run based on the comments provided by the Environment Agency on the hydrology and hydraulics.	Agreed subject to revised flood modelling. If the modelling refinements demonstrate no change to flood levels / regime than the FRA findings are agreed.	Under discussion.

ES Chapter	Paragraph Reference	Sub-section	Environment Agency Comment	Highways England Response	Status
Appendix 13.1 - FRA **(Application Document Reference TR010031/APP/6.3)**	4.2.2	Fluvial Flood Risk – Lady Park Burn	The mechanisms for managing the residual risk will be agreed between the Environment Agency and the Applicant during detailed design of the Scheme.	Agreed	Agreed
Appendix 13.1 - FRA **(Application Document Reference TR010031/APP/6.3)**	4.2.12	Fluvial Flood Risk – River Team	The Environment Agency confirmed the location, volume and mechanisms of providing the flood storage to offset the loss of floodplain associated with the provision of the additional piers, is acceptable.	Agreed	Agreed
Appendix 13.1 - FRA **(Application Document Reference TR010031/APP/6.3)**	4.3.1	Tidal Flood Risk	Agreed	Agreed	Agreed

ES Chapter	Paragraph Reference	Sub-section	Environment Agency Comment	Highways England Response	Status
Appendix 13.1 - FRA **(Application Document Reference TR010031/APP/6.3)**	4.4.1-4.4.16	Surface Water Flood Risk	The Environment Agency has confirmed that hydraulic modelling of the surface water flood risk at junction 66 (Eighton Lodge) has been undertaken as the current surface water flood risk maps do not give an accurate representation as the existing culvert and drainage channel were not represented in the original surface water flood risk model.	Agreed subject to revised flood modelling. If the modelling refinements demonstrate no change to flood levels / regime than the FRA findings are agreed.	Under discussion subject to revised flood modelling.
Appendix 13.2 – WFD **(Application Document Reference TR010031/APP/6.3)**	2.1	Assessment Methodology	No Comment.	Agreed	Agreed

ES Chapter	Paragraph Reference	Sub-section	Environment Agency Comment	Highways England Response	Status
Appendix 13.2 – WFD **(Application Document Reference TR010031/APP/6.3)**	2.2.1	Desk Study Methodology – Data Sources	No Comment.	Agreed	Agreed
Appendix 13.2 – WFD **(Application Document Reference TR010031/APP/6.3)**	4.1.1.-4.7.3	Water Baseline Conditions	No Comment.	Agreed	Agreed
Appendix 13.2 – WFD **(Application Document Reference TR010031/APP/6.3)**	6.2.1-6.2.2	Construction Design and Mitigation	The Environment Agency confirmed the drainage system proposed prevents an increase in discharge rate from the outfalls (mitigating flood risk). Attenuation storage has been designed to accommodate the 1 in 100 year plus 20% climate change event for all areas	Agreed	Agreed

ES Chapter	Paragraph Reference	Sub-section	Environment Agency Comment	Highways England Response	Status
			with the discharge restricted to off-set the increases in impermeable area to the greenfield runoff rates. Offsite environmental impacts (with particular attention to Lamesley Pastures) will be managed by through the Construction Environment Management Plan (CEMP). Mitigation is included to reduce impacts upon the hydromorphology.		
Appendix 13.2 – WFD **(Application Document Reference TR010031/APP/6.3)**	6.7.1	Heavily Modified Waterbody Designation	The Environment Agency confirmed the sediment vortex and hydrocarbon interceptors are not agreed – to be confirmed in	The location and number of oil interceptors and sediment control measures are being refined in accordance with the on-going detailed design and	Under discussion.

ES Chapter	Paragraph Reference	Sub-section	Environment Agency Comment	Highways England Response	Status
			detailed design of the Scheme.	the latest DMRB updates – LA 113 – Road Drainage and the Water Environment. This matter is under discussion but the Environmental Agency have confirmed there are content that this can be subject to detailed design of the Scheme.	
Appendix 13.2 – WFD **(Application Document Reference TR010031/APP/6.3)**	Table 6-1 – Assessment of the potential for the Scheme to result in deterioration in the current ecological and chemical potential of	River Team - Ecological	The River Team would be temporarily culverted during the construction stage of the Kingsway Viaduct extension. This approach is favoured by the Environment Agency over the original sheet piling approach proposed for the Scheme.	Agreed in the context that the approach and final details will need to be adjusted and refined during detailed design of the Scheme. At this point a Flood Risk Activities Permit will be sought from the Environment Agency for all works within the watercourse or within 8m from the top of bank.	Agreed.

ES Chapter	Paragraph Reference	Sub-section	Environment Agency Comment	Highways England Response	Status
	the River Team.				
Appendix 13.2 – WFD **(Application Document Reference TR010031/APP/6.3)**	6.3.1-6.3.2	Surface Water Drainage	Agreed	Agreed	Agreed
Appendix 13.2 – WFD **(Application Document Reference TR010031/APP/6.3)**	6.4.1-6.4.2	Surface Water Body Mitigation Measures	Agreed	Agreed	Agreed
Appendix 13.2 – WFD **(Application Document Reference TR010031/APP/6.3)**	6.5.1	Environmental Net Gain	Agreed	Agreed	Agreed

ES Chapter	Paragraph Reference	Sub-section	Environment Agency Comment	Highways England Response	Status
Appendix 13.2 – WFD **(Application Document Reference TR010031/APP/6.3)**	6.6.1-6.6.3	Existing Highways England Culverts and Outfalls	Agreed	Agreed	Agreed
Appendix 13.2 – WFD **(Application Document Reference TR010031/APP/6.3)**	6.7.1	Heavily Modified Waterbody Designation	No comment	Agreed	Agreed
Appendix 13.2 – WFD **(Application Document Reference TR010031/APP/6.3)**	6.8.1	Temporary Works	Agreed	Agreed	Agreed
Appendix 13.2 – WFD **(Application Document Reference TR010031/APP/6.3)**	6.9.1	Geomorphology	Agreed	Agreed	Agreed

ES Chapter	Paragraph Reference	Sub-section	Environment Agency Comment	Highways England Response	Status
Appendix 13.3 – Highways Agency Water Risk Assessment Tool **(Application Document Reference TR010031/APP/6.3)**	Appendix A	Method A Results (Runoff Assessment)	Agreed	Agreed	Agreed

APPENDICES

Appendix A – Meeting Minutes Stephen Marshall, Lucy Mo, Amanda McKevitt and Cameron Sked, Environment Agency and Gayle Wilson, Andrew Softley, Peter Burrows and Peter Shield, Gateshead Council (31/10/2017)

AGENDA & MEETING NOTES

PROJECT NUMBER	70039571	**MEETING DATE**	31 October 2017
PROJECT NAME	A1 Birtley to Coal House	**VENUE**	Gateshead Civic Centre- Room S21.
CLIENT	Highways England	**RECORDED BY**	JR
MEETING SUBJECT	A1 widening- Flood risk/drainage		

PRESENT	**WSP**- Andy Smith, Ali Hussain, Jodie Rothwell **Environment Agency (EA)** - Stephen Marshall, Lucy Mo, Amanda McKevitt, Cameron Sked. **Gateshead Council (GC)**- Gayle Wilson, Andrew Softley, Peter Burrows, Peter Shield
APOLOGIES	Nicola Ashworth, Jim Young, Carl Hodgson, Andrew Haysey.
DISTRIBUTION	As above.
CONFIDENTIALITY	**Confidential**

ITEM	SUBJECT	ACTION	DUE
1	Introductions		
2	The outline of proposed Highways England works that may impact the water environment provided by WSP were described as follows: • River Team crossing. • Allerdene culvert • Outfalls		
3	Additional Information/Local Knowledge: Smithy Lane culvert: Gateshead Council (PB) to provide WSP with the historic records regarding the uncertainty of connections to this culvert. Surface water issues at Bowes Railway: GC highlighted there has been historical issues relating to flood damage and erosion issues at this location. GC (PB) stated the need for some form of improvement/protection measures. WSP (AH) confirmed the culvert will be lengthened as part of the works and there are no surface water outfalls at this location. AH stated that the problem may be due to overland flows upstream. EA (AM) asked WSP if there would be any opportunities to improve this by looking at the opportunities to the underpass. EA enquired about the operational storm event design standard of the highway.	GC (PB) WSP (AH)	

4	Flood Risk Implications: **River Team** WSP (AS) confirmed that two piers will be widened by approximately 8m at the base and sheet piling may be used. EA highlighted the gauging station is near the crossing and the works would require a bespoke permit and method statement. WSP (AH) mentioned that the type of piling to extend the base is to be confirmed. Modelling: WSP (AS) confirmed models undertaken to date show no impact to proposed works and no impact on the Lamesley Pastures scheme. The EA requested if WSP (AS) can check the models to see if there are any updates. WSP will also confirm using they are using the latest version. WSP will produce a technical note detailing scheme proposals, model reports and flood maps for EA's review. **Allerdene Culvert** The proposed works would require an extension to the existing 78m culvert by an additional 87m. WSP (AS) confirmed that they will be undertaking simple hydraulic monitoring of the area. WSP (AH) requested GC (PB) to provide any historical data relating to this structure and stated that the proposed design would be based on replicating the existing flow capacities and velocity.	WSP (AS) WSP (AS)	
5	**Climate Change- Flood Risk and Drainage** WSP to review new climate change guidance. The EA mentioned new NPPF policy to be published in 2018/19 which discusses a range of climate change scenarios on surface water modelling and should be updated to reflect the design life of the scheme. EA (AM) highlighted that this could be added to the risk register. WSP (AH) clarified the design principles as agreed with Highways England. The proposed drainage scheme will allow for a 20% increase to the rainfall intensities to account for climate change over the existing and proposed catchment Where it is proposed to increase the paved areas (e.g. nearside widening / hardening of the central reserve), the discharge rate can be increased above the existing by an amount equal to the greenfield runoff rate for the additional paved area. GC (PB) requested for the modelling files to be submitted for their review.	WSP (All) WSP (AH) WSP (AH)	
6	Wider flood alleviation schemes - Team Valley Flood Alleviation Scheme (£8.5m) The EA (SM) discussed that it is proposed to create 12ha of flood storage near to the Coal House Roundabout with construction commencing in 2018. It is anticipated that this will generate a surplus of 80,000 cubic meters of material for engineering fill. The excess material may be offered to the A1 or A19 Testos scheme. The scheme is at a pre-application stage and will require full planning permission, and has the potential to be completed before A1 scheme has started construction. WSP to issue MCHW Series 600 engineering specifications to the EA. The EA (SM) to forward Lamesley Pastures Flood Alleviation details to WSP. GC (GW) advised that the scheme should consider the new draft planning policy 'Making Spaces for Growing Places' which now includes the proposed Team Valley Flood Alleviation Scheme and a requirement for development to	WSP EA (SM) WSP (All)	

	consider the Team Valley Surface Water Management Plan, forthcoming coming Team Valley Flood Masterplan and forthcoming SPD on SuDS/water management. The Level 1 Strategic Risk Flood Risk Assessment is now available on the website and needs consideration. The EA and the Council expressed a desire for the Scheme to reduce surface water run off rates as betterment to aid works in Lamesley Pastures through mitigation options yet to be defined and support opportunities that contribute towards the integrated catchment management of the River Team. The EA and the Council would also like the scheme to consider opportunities to improve the water quality of the existing surface water runoff in line with the WDF objectives, reflecting the NPS. The EA requested WSP (AS) will liaise with Highways England to confirm if this is possible. WSP (JR) confirmed the relevant contacts at Highways England for the A1 scheme would be Amie Locker acting as Assistant PM and Nicola Wilkes acting as PM. The EA asked if plots of land will be available for the Team Valley Flood Alleviation scheme and Highways England to initiate discussions on this opportunity.	AS Highways England (AL)	
7	Drainage Strategy • Outfalls – the EA (CS) discussed that the outfalls need to be up to current (not just high priority outfalls) and future (changes expected before the DCO is submitted) standards with emphasis on climate change guidance to be followed. • CCTV Survey – WSP (AH) stated that a CCTV survey of the existing highway drainage has been undertaken due to limited information and currently being modelled to establish the existing flow rates. • Discharge rates – WSP (AH) confirmed that upon establishing the existing flow rates, the proposed flows will be restricted to this in order to mitigate any flooding due to discharge. • Attenuations – WSP (AH) confirmed that attenuation will be provided as part of the scheme to retain the volume of surface water due to restricted discharge. • Water Quality – WSP (AS) confirmed that WSP will be assessing the water quality and mitigating treatment where applicable.		
8	Other Schemes in the Area		
9	**AOB** EA requested if WSP could share ecology surveys and locations, ground investigations and topographical information undertaken to date. WSP (JR) to discuss with Amie Locker from Highways England regarding permission to send through this information. GC discussed that WSP could liaise with Peter Shield at GC regarding ecology. AH requested from GC (PB) their current maintenance liabilities of the ditches covered in the scheme. The EA requested that the DCO programme for the scheme could be shared and Highways England would be able to send through this information.	WSP (JR) / Highways England (AL) GC (PB) Highways England	

	Andrew Softley will be the EA case officer for the Scheme. WSP to issue a 'Statement of Ambitions' to EA/GC. EA requested that WSP prepare an Ecological Survey Scoping Report to allow comment as part of the full engagement process.	(AL) WSP WSP	

NEXT MEETING

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

Appendix B – Letter Lucy Mo, Environment Agency (06/12/2017)

creating a better place

Environment Agency

Planning Inspectorate
Temple Quay House Temple Quay
Bristol
Avon
BS1 6PN

Our ref: NA/2017/113874/01-L01
Your ref: TR010031-000007

Date: 06 December 2017

Dear Sir/Madam

PLANNING ACT 2008 (AS AMENDED) AND THE INFRASTRUCTURE PLANNING (ENVIRONMENTAL IMPACT ASSESSMENT) REGULATIONS 2017(THE EIA REGULATIONS) – REGULATIONS 10 AND 11

APPLICATION BY HIGHWAYS ENGLAND (THE APPLICANT) FOR AN ORDER GRANTING DEVELOPMENT CONSENT FOR THE A1 BIRTLEY TO COAL HOUSE IMPROVEMENT SCHEME (THE PROPOSED DEVELOPMENT) A1 BIRTLEY TO COAL HOUSE IMPROVEMENT SCHEME

Thank you for referring the above Scoping Opinion which we received on 8 November 2017. We have assessed the information submitted against matters within our remit and have the following comments/advice to offer:

Flood Risk
A Flood Risk Assessment should be undertaken to address the flood risks during the construction phase of the A1 widening and the permanent works. In particular, the Flood Risk Assessment should take into account the following matters:

Climate change allowance must be factored into the design of the road and drainage; and
Floodplain compensation for any loss of the floodplain must be provided. This should include the provision of climate change.

The scoping report makes reference to working with other flood risk management authorities to join the delivery of wider strategic flood alleviation schemes. We welcome and support this approach.

We would welcome opportunities for environmental betterment, in particular opportunities to reduce surface water flood risk. This issue was highlighted and discussed at a meeting on 31 October 2017 with the consultants managing the application and Gateshead Council.

Tyneside House, Skinnerburn Road, Newcastle Business Park, Newcastle upon Tyne, NE4 7AR.
Customer services line: 03708 506 506
Email: enquiries@environment-agency.gov.uk
www.environment-agency.gov.uk

Flood Risk Modelling

The Environment Agency's 2016 Team Valley flood risk model should be used to inform the proposed development. The existing Team Valley hydraulic model was constructed in 2011, and updated in 2016 by JBA on behalf of the Agency. The purpose of the update was to test the impact of all options proposed in the Project Appraisal Report (PAR) and to improve the understanding of the flood risk within the Team Valley area from the western tributaries. This information is available upon request. Any request for data should be sent to our Customer and Engagement Team at northeast-newcastle@environment-agency.gov.uk

It is noted that section 15.7.7 states 'where hydraulic modelling is required this will be undertaken in accordance with Methods E and F of HD45/09". It is considered that hydraulic modelling will be required in support of the National Significant Infrastructure Project (NSIP) application.

Flood Risk Permits

Within your site boundary is a designated "main river" and under the Environmental Permitting Regulations 2010, you may require an environmental permit for flood risk activities. If you want to do work within 8 metres of a non-tidal sections, or 16 metres of the tidal section, instance where work is proposed:

a) in, under or near a main river (including where the river is in a culvert;
b) on or near a flood defence on a main river c)in the floodplain of a main river
d) on or near a sea defence.

You can find out more information on permit requirements using the following link: https://www.gov.uk/guidance/flood-risk-activities-environmental-permits. If a permit is required, it must be obtained prior to beginning the works. The applicant is advised to contact the Environment Agency to discuss the issues likely to be raised.

Water Framework Directive

The proposed works will affect the River Team (Source to Tyne, GB103023075670). This waterbody is currently classified under the Water Framework Directive (WFD) as Moderate. This Heavily Modified Waterbody is impacted by urbanisation from the highway network. In particular, sedimentation, hydrocarbons and road salt from highway infrastructure has affected the water quality of the River Team.

The WFD seeks to improve the water quality in all our waterbodies (including lakes, rivers and estuaries). In particular, it seeks to ensure that all waterbodies achieve 'good status' or 'good ecological potential'. The environmental objectives of the WFD are:

to prevent deterioration of the status of surface waters and groundwater
to achieve objectives and standards for protected areas

to aim to achieve good status for all water bodies or, for heavily modified water bodies and artificial water bodies, good ecological potential and good surface water chemical status

to reverse any significant and sustained upward trends in pollutant concentrations in groundwater

the cessation of discharges, emissions and loses of priority hazardous substances into surface waters

progressively reduce the pollution of groundwater and prevent or limit the entry of pollutants

The Northumbria River Basin Management Plan provides the overarching framework for all decisions that are relevant to water management to ensure the protection and improvement of the water environment.

The overall objectives of the Northumbria RBMP is to 1) prevent deterioration 2) deliver protected area objectives 3) deliver improvements that make progress towards 2027 objectives where the benefits are greatest. Environmental objectives have been set for each of the protected areas and waterbodies in the Northumbria river basin district. Highway England must have regard to these objectives when making decisions that could affect the water environment.

It is considered that the proposed development provides a great opportunity to implement WFD mitigation measures and river restoration. This could include deculverting and enhancements to the river environment, such as fish and mammal passage and water quality improvements. The use of sustainable drainage systems combined with oil interceptors would be a recognised way to improve the water quality from the highway draining into the watercourses.

Biodiversity and Ecology
Any works over the River Team must maintain or enhance the riparian corridor. Article 10 of the Habitats Directive, stresses the importance of natural networks of linked corridors to allow movement of species between suitable habitats, and promote the expansion of biodiversity. Such networks may also help wildlife adapt to climate change.

We would welcome any opportunities for the development to contribute to improvement measures for the River Team. This could include local proposals to restore natural conditions in the river corridor and Lamesley Pastures conservation area and the wider vicinity.

There may be operational and/or post construction impacts to invertebrates in the

area. For example, artificial lighting could impact upon feeding, breeding and movement of insects. We would request that number of lights and brightness should be assessed to avoid light spillage. This would be particularly important next to River Team. Risks should be minimised or eliminated where possible. We would also request that any planting schemes include native plants of local provenance.

Protected Species
The proposed development must ensure that protected species which could be directly or indirectly affected by the proposal are considered. European Otter records have been found in the vicinity. They are protected under Habitat Directive Annex 4, Wildlife and Countryside Act Schedule 5 and Natural Environment and Rural Communities Section 41.

Amphibians including Great Crested Newt may be present within the construction site. They are protected under Habitat Directive Annex 2. The ecological report stated that desktop studies suggested that Water Vole may be present within 1km. Water Vole are protected under Schedule 5 of the Wildlife and Countryside Act.

Fisheries
With respect to section 10.7.8 to 10.7.13, the evaluation of the ecological resources should extend to fish populations of the River Team. Whilst these are known to be very poor, due to water quality and other issues. Brown Trout and Eels, are present in the river and Atlantic salmon have recently been recorded in the Eslington area. All of these species are of high conservation value and as such carry protected species status. Data on fish populations of the Team can be found on open access here: https://data.gov.uk/dataset/freshwater-fish-counts-for-all-species-all-areas-and-all-years). Please refer to the Fisheries Classification Scheme output for the Kibbleworth. They are also sensitive receptors to any impacts from the scheme such as pollution and habitat degradation. Given their impoverished status, any opportunity the scheme provides to improve the habitat in the Team for fish should also be taken.

Geomorphology
Morphology is a supporting element under WFD. The NSIP should assess any impact on the geomorphology of the watercourses that are crossed by the carriageway and the processes that determine the fluvial geomorphology. This would include (but is not limited to) any changes to crossings, alterations to piers, extension to culverts and alterations to the bed or banks (temporary or permanent). Where impacts are found, the Environmental Impact Assessment should outline how these can be mitigated e.g. deculverting of the existing converted watercourses.

Land contamination

Tyneside House, Skinnerburn Road, Newcastle Business Park, Newcastle upon Tyne, NE4 7AR.
Customer services line: 03708 506 506
Email: enquiries@environment-agency.gov.uk
www.environment-agency.gov.uk

creating a better place

The Environment Agency does not hold detailed information on the history, in terms of its previous use(s), or the current condition, of the land in the area under consideration. As such, we are unable to assess whether the land may be affected by contamination.

It is the responsibility of the landowner/developer to identify land affected by contamination and to ensure that remediation is undertaken to ensure a safe development. If there is a possibility of risks associated with land contamination to be present at the development site, we recommend that the applicant undertakes a risk assessment (RA) to quantify any risks and recommend remedial works. Further information can be found in 'Guiding Principles for Land Contamination (2010)' which provides guidance for applying a risk management process when dealing with land affected by contamination.

Groundwater
The applicant should undertake a Hydrogeological Risk Assessment (HRA) if there are risks to groundwater from the proposed development.

Please do not hesitate to contact me if you have any questions regarding this letter.

Yours faithfully

Lucy Mo
Planning Technical Specialist - Sustainable Places

Direct dial [redacted]
Direct e-mail [redacted]

Appendix C – Meeting Minutes Lucy Mo, Caroline Maarouf, Robb Carr and Sally Gallagher, Environment Agency and Gayle Wilson, Andrew Softley and Peter Burrows, Gateshead Council (15/03/2018)

AGENDA & MEETING NOTES

PROJECT NUMBER	70039571	**MEETING DATE**	15 March 2018
PROJECT NAME	A1 Birtley to Coal House	**VENUE**	Gateshead Civic Centre- Blaydon Room.
CLIENT	Highways England	**RECORDED BY**	AH
MEETING SUBJECT	A1 widening- Flood risk/drainage		

PRESENT	**WSP**- Ali Hussain **Environment Agency (EA)** - Lucy Mo, Caroline Maarouf, Rob Carr, Sally Gallagher **Gateshead Council (GC)**- Gayle Wilson, Andrew Softley, Peter Burrows
APOLOGIES	Andy Smith, Nicola Ashworth, Jimmy Young, Peter Shield, Carl Hodgson, Amanda McKevitt, Andrew Haysey
DISTRIBUTION	As above. Nigel Rawcliffe. Nicola Wilkes. Amie Locker. Highways England Project Inbox. WSP Project Inbox. Peter Henson. Sarah Proctor.
CONFIDENTIALITY	**Public**

ITEM	SUBJECT	ACTION	DUE
1	Introductions		
2	The outline of proposed Highways England works that may impact the water environment provided by WSP were described as follows: • Kingsway Viaduct - River Team crossing • Allerdene culvert • Outfalls		
3	Minutes and actions from previous meeting: Smithy Lane culvert: Gateshead Council (PB) provided WSP with the culvert and watercourse connection records regarding the uncertainty to this culvert. Surface water issues at Bowes Railway: GC highlighted there has been historical issues relating to flood damage and erosion issues at this location. WSP (AH) requested if any further information was available to the source of the flood damage as a meeting with Highways England Asset Led suggested this could be due to the change in ploughing of the fields. GC (PB) to check if this information could be investigated further.	GC (PB)	

4	**River Team** WSP (AH) confirmed that two piers will be widened by approximately 8m at the base and sheet piling has been proposed. EA highlighted the River Team as a failing water body due to the modified watercourse features. The aspiration of the EA is to divert from modification and sheet piling would be adverse to this requirement. EA (RC) requested to seek alternative methods to the construction and provided an insight to WFD mitigation measures. EA (CM) informed that sheet piling may be acceptable as a temporary measure based on factors which will not cause negative adjustment to the river. Temporary flood management measures should be set out given the reduction in channel capacity from sheet piling. EA (RC) compensatory mitigation measures would be required for any additional heavily modified elements and opportunities for betterment should be considered in order to achieve the required WFD objective to 2027. EA (SG) enquired about the depth of the sheet piling: piling into bedrock had potential to create minewater/groundwater pathway – shallow mineworkings in area needed to be considered which had implications in terms of water quality and quantity. WSP will produce a technical note detailing scheme proposals, model reports and flood maps for EA's review. **Allerdene Culvert** The proposed works would require an extension to the existing 78m culvert by an additional 87m. WSP (AH) confirmed that the hydraulic capacity has been based on the existing and the replacement structure has been sized larger due to the increased embankment loading. WSP (AH) stated the design has been based on replicating the existing flow capacities and velocity. WSP (AH) described the proposal to expose the existing culvert section and form an open ditch. EA (RC) promoted the concept as similar work was to be carried out with the culvert along Kingsway. EA (CM) initiated further development for WSP to propose methods in reducing the energy of the flows at this location and storage and conveyance e.g. swales, pools, baffles. GW highlighted that this area was designated in Draft Local Plan 'Making Spaces for Growing Places' for green infrastructure and flood management. The Strategic Flood Risk Assessment had identified historic flooding downstream of the culvert, new development should consider betterment opportunities. PB highlighted consideration should be given to opportunities upstream of the culvert to help reduce velocities within the culvert and flood risk downstream. EA (RC) informed the presence of otters in the vicinity of the culvert along Kingsway. EA stated for WSP to evaluate the requirement for providing trash screen at the headwalls for the culvert. Reference shall be made to the CIRIA guidance. WSP to consult with GC further proposals. PB suggested a larger scale drawing of the area around the culvert entrance should be supplied. This would allow assessment of whether a screen was required. **Allerdene Pond** Due to the addition of paved areas and restricted flows, WSP (AH) explained	WSP (AS) WSP (AH) WSP (AH)	

	the requirement for a balancing pond and the location of the site identified for this. EA (CM) informed that further ecological advice can be sought from Peter Shield – Council's ecologist for SuDS and watercourses/culverts. A freeboard of minimum 600mm will be required over and above the water level for a 1 in 100 year storm plus climate change allowance. PB confirmed that ecological design input was required for developing the pond shape, form and location. GW stated that location of pond should consider flood risk constraints e.g. surface water flow routes. **Outfalls** EA (CM) that a permit to construct will be required for any adaptations to outfalls greater than 300mm in diameter. RC directed towards the advice from the River Restoration website for better outfall design. GC (PB) informed that watercourse consent will be required from Gateshead Council.	WSP (AH) WSP (AH)	
5	**Climate Change- Flood Risk and Drainage** The EA mentioned new NPPF policy to be published in 2018/19 which discusses a range of climate change scenarios on surface water modelling and should be updated to reflect the design life of the scheme. WSP (AH) clarified the design principles as agreed with Highways England. The proposed drainage scheme will allow for a 20% increase to the rainfall intensities to account for climate change over the existing and proposed catchment. Where it is proposed to increase the paved areas (e.g. nearside widening / hardening of the central reserve), the discharge rate has been restricted as the existing or marginally lower. This feature has been provided as an overall betterment from the scheme. WSP (AH) provided GC (PB) with the Microdrainage model files and drawings (on CD) which are to be reviewed for comments.	WSP (AH) GC (PB)	
6	Wider flood alleviation schemes - Team Valley Flood Alleviation Scheme EA (CM) confirmed the surplus material as a result of the flood storage works will be stockpiled for the A19 Testos scheme. WSP action to issue MCHW Series 600 engineering specifications to the EA will be withdrawn. The EA (SM) to forward Lamesley Pastures Flood Alleviation details to WSP. GW it was important to ensure that the wetland habitat created at Lamesley would not be detrimentally affected by the A1 scheme either during construction or operation. The EA and the Council would also like the scheme to consider opportunities to improve the water quality of the existing surface water runoff in line with the WDF objectives, reflecting the NPS. The EA requested WSP (AS) will liaise with Highways England to confirm if this is possible. Water treatment of runoff from existing or new part of highway would be important. Consideration should be given to EIA scoping opinion comments which flagged up the importance of considering sensitive environmental receptors. GW to re-send EIA scoping comments.	EA (SM) WSP (AS) GC (GW)	
7	**Drainage Strategy** • Outfalls – the EA (CS) discussed that the outfalls need to be up to current (not just high priority outfalls) and future (changes expected before the DCO is submitted) standards with emphasis on climate change guidance to be followed. WSP (AH) informed that oil	WSP (AH)	

	interceptors will be provided at all outfalls. Design standards should consider reducing hard engineering and sediment. • Discharge rates – WSP (AH) confirmed that upon establishing the existing flow rates, the proposed flows have been restricted to this in order to mitigate any flooding due to discharge. • Attenuations – WSP (AH) confirmed that attenuation in form of large pipes and geocellular storage will be provided to retain the volume of surface water due to restricted discharge. SG (EA) groundwater /minewater considered in design. GW (GC) opportunities to integrate SuDS should be considered in line with national and local policy taking account of multifunctional benefits e.g. ecology, amenity and water quality. • Water Quality – WSP (AH) confirmed that WSP will be assessing the water quality and mitigating treatment where applicable. • Water Quality – EA (RC) shared lessons learnt from the HAWRAT assessment based on the A19 Testos scheme that the 'Toolbox' was to be updated from the superseded version. There was also a risk factor which caused an error in the traffic flows.	WSP (AS)	
8	**AOB** EA requested if WSP could share ecology surveys and locations, ground investigations and topographical information undertaken to date. WSP (JR) to discuss with Amie Locker from Highways England regarding permission to send through this information. GC discussed that WSP could liaise with Peter Shield at GC regarding ecology. AH requested from GC (PB) their current maintenance liabilities of the ditches covered in the scheme. This specifically related to the section of ditch connecting to the north end of the Allerdene culvert. The EA requested that the DCO programme for the scheme could be shared and Highways England would be able to send through this information. Andrew Softley will be the EA case officer for the scheme and all future meeting correspondence shall be forwarded to him. WSP to issue a 'Statement of Ambitions' to EA/GC. EA requested that WSP prepare an Ecological Survey Scoping Report to allow comment as part of the full engagement process. EA RC River Team Catchment Partnership was forming to improve flood management, water quality/WFD and environment. It would be beneficial if Highways England joined partnership.	Highways England (AL) GC (PB) Highways England (AL) WSP WSP Highways England (AL)	

NEXT MEETING

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

Appendix D – Letter Lucy Mo, Environment Agency (21/03/2018)

creating a better place

Environment Agency

Ms Nicola Wilkes
Highways England
Lateral 8 City Walk
LEEDS
LS11 9AT

Our ref: NA/2018/113997/01-L01
Your ref: A1B2CH

Date: 21 March 2018

Dear Ms Wilkes

SECTION 42 DUTY TO CONSULT ON A1 BIRTLEY TO COAL HOUSE SCHEME. A1 BIRTLEY TO COAL HOUSE IMPROVEMENT SCHEME

Thank you for referring the above proposal which we received on 6 February 2018. We have reviewed the information submitted and have the following comments/advice to offer:

Flood Risk
A Flood Risk Assessment should be undertaken to address the flood risks during the construction phase of the A1 widening and the permanent works. In particular, the Flood Risk Assessment should take into account the following matters:

Climate change allowance must be factored into the design of the road and drainage. Further information regarding climate change allowances are available at https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances; and
Floodplain compensation for any loss of the floodplain must be provided. This should include the provision of climate change.

Flood Risk Modelling
The Environment Agency's 2016 Team Valley flood risk model should be used to inform the highway scheme. The existing Team Valley hydraulic model was constructed in 2011, and updated in 2016 by JBA on behalf of the Agency. The purpose of the update was to test the impact of all options proposed in the Project Appraisal Report (PAR) and to improve the understanding of the flood risk within the Team Valley area from the western tributaries. This information is available upon request. Any request for data should be sent to our Customer and

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Engagement Team at northeast-newcastle@environment-agency.gov.uk

Flood Risk Permits
Within your site boundary is a designated "main river" and under the Environmental Permitting Regulations 2010, you may require an environmental permit for flood risk activities. If you want to do work within 8 metres of a non-tidal sections, or 16 metres of the tidal section, instance where work is proposed:

a) in, under or near a main river (including where the river is in a culvert;
b) on or near a flood defence on a main river c)in the floodplain of a main river
d) on or near a sea defence.

You can find out more information on permit requirements using the following link: https://www.gov.uk/guidance/flood-risk-activities-environmental-permits. If a permit is required, it must be obtained prior to beginning the works. The applicant is advised to contact the Agency to discuss the issues likely to be raised.

Water Framework Directive
The proposed works will affect the River Team (Source to Tyne, GB103023075670). This waterbody is currently classified under the Water Framework Directive (WFD) as Moderate. This Heavily Modified Waterbody is impacted by urbanisation from the highway network. In particular, sedimentation, hydrocarbons and road salt from highway infrastructure has affected the water quality of the River Team.

The WFD seeks to improve the water quality in all our waterbodies (including lakes, rivers and estuaries). In particular, it seeks to ensure that all waterbodies achieve ‘good status’ or ‘good ecological potential’ by 2027.

The environmental objectives of the WFD are:

to prevent deterioration of the status of surface waters and groundwater to achieve objectives and standards for protected areas;

to aim to achieve good status for all water bodies or, for heavily modified water bodies and artificial water bodies, good ecological potential and good surface water chemical status;

to reverse any significant and sustained upward trends in pollutant concentrations in groundwater;

the cessation of discharges, emissions and loses of priority hazardous substances into surface waters; and

progressively reduce the pollution of groundwater and prevent or limit the entry of pollutants.

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The Northumbria River Basin Management Plan provides the overarching framework for all decisions that are relevant to water management to ensure the protection and improvement of the water environment. In particular, it seeks to 1) prevent deterioration 2) deliver protected area objectives, and 3) deliver improvements that make progress towards 2027 objectives where the benefits are greatest.

Environmental objectives have been set for each of the protected areas and waterbodies in the Northumbria river basin district. Highway England must have regard to these objectives when making decisions that could affect the water environment. For example, Highway England will need to consider the water quality and address the impacts on the affected waterbodies from structures such as outfalls, bridge supports, culverts etc. These structures may need to be reduced, modified and mitigated against in order to achieve the 2027 WFD objectives.

WFD mitigation

It is considered that the proposed scheme provides a great opportunity to implement WFD mitigation measures and river restoration. This could include deculverting, daylighting of culverts and enhancements to the river environment, such as fish and mammal passage and water quality improvements. The use of sustainable drainage systems combined with oil interceptors would be a recognised way to improve the water quality from the highways draining into the watercourses.

The delivery and implementation of the measures outlined above, would be supported by the River Team Catchment Partnership and the Agency. The River Team is a focus area for improvement for the Catchment Partnership. The Catchment Partnership
has several complementary projects in the catchment which seek to improve water quality, ecology, river restoration, habitat improvement and quantity, naturalisation for flood risk, woodland planting and improvements to land contamination. Several investigations and feasibilities such as Northumbrian Water's Chemical Investigations Programme for Rowletch Burn) and significant investment by Northumbrian Water for the removal of phosphate have been carried out for the catchment. In order for the catchment to achieve its 2027 WFD objectives, every organisation, especially those identified as contributing to the WFD failure of the waterbody, should seek to deliver WFD mitigation measures which go beyond the minimum. Opportunities to deliver and enhance the environment and WFD should be undertaken.

Biodiversity

We welcome the aim to work with stakeholders to improve the water environment.

Any works over the River Team must maintain or enhance the riparian corridor.

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Article 10 of the Habitats Directive, stresses the importance of natural networks of linked corridors to allow movement of species between suitable habitats, and promote the expansion of biodiversity. Such networks may also help wildlife adapt to climate change.

With respect to section 6.3.23, it is noted that waterbodies are not mentioned as a sensitive receptor. Waterbodies that are within the footprint of the scheme and may be impacted by the proposed development are: River Team and unnamed tributaries, Black Burn, Ladypark Burn, Longacre dene and Leyburnhold Gill (not exhaustive).

Section 6.4.10: we would welcome design and enhancement measures to consider the connectivity of the watercourses that the scheme impacts upon. Consideration must be given to protected and non-protected species that use the aquatic environment and riparian corridor.

Section 6.4.11: with respect to bullet point 'buffer zone around invasive species areas to avoid spreading', we would welcome mitigation that involves managing/removing invasive species where this is practical for the species.

Section 6.4.16 states that an updated Preliminary Ecological Appraisal will be undertaken in 2018. The Agency supports this approach. With respect to bullet point 'Consideration of the potential impacts to freshwater ecology, to be included within the ES, if appropriate', we advise that an assessment of the impacts upon freshwater ecology should be undertaken as part of the proposed scheme. We would support monitoring of the freshwater environment to assess the impacts of the scheme and mitigation/compensation put in place as a result.

Section 6.9.4: we welcome the production of a detailed survey to identify outfalls within the scheme footprint. With respect to water quality, given the moderate WFD status of the River Team, Highway England should seek to control drainage from these outfalls and implement mitigation measures to reduce/eliminate polluted run-off.

Section 6.9.6: we would welcome consideration of alternatives to extending the culverted section of the watercourse which passes under Allerdene Bridge. It is the Agency's policy that no watercourse should be culverted unless there is an overriding need to do so. This is due to the negative impacts on ecology, blockages/flood risk and maintenance issues.

We welcome the assessment of residual effects in terms of climate change within the next iteration of the Environmental Impact Assessment (EIA). As part of this process, we would welcome consideration of the impact on removal of maturing highway woodland and vegetation, and the potential impact to runoff and water quality.

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Geomorphology and WFD
We welcome the reference to assessing the geomorphological impacts associated with the River Team Culvert and watercourses associated with the Allerdene culvert. A WFD Assessment should be included to assess the impact upon all WFD qualifying elements of all affected watercourses, regardless of main river or ordinary watercourse.

The baseline hydromorphological condition of the watercourses will need to be assessed. All watercourse crossing surveys should demonstrate how the temporary works will be carried out and the impact they will have on the hydromorphology, including connectivity, sediment transport processes, the simplifying of channels and how this will be mitigated against. This impact upon the hydromorphology should then be used to directly assess the impact upon ecology including fish and their habitat, invertebrates and macrophytes. This could be incorporated into the WFD Assessment and mitigation included where appropriate.

The supporting documents do not provide any details regarding what assessment will be used to assess the current hydromorphological condition, and how the construction and permanent works will affect this. River Habitat Survey, watercourse crossing surveys, geomorphological surveys will be required. The EIA should identify how the scheme can help improve the condition of the River Team and its tributaries.

Fish
Section 6.4.7: the list of protected species should also include Brown Trout, Eel and Atlantic salmon, all of which are present in the Team and sensitive receptors to any impacts arising from the scheme such as pollution and habitat degradation. Agency data on fish populations existing in the River Team can be found on open access here: https://data.gov.uk/dataset/freshwater-fish-counts-for-all-species-all-areas-and-all-years

Sections 6.4.8 & 6.4.9: consideration should be given to the mortality of fish species and adverse effects on their routes of migration, as well as patterns of behavior.

Section 6.4.10: we would welcome any opportunities the scheme provides to enhance the existing habitat of the River Team for fish, in the vicinity of Junction 67. In particular where the channel is relatively uniform and lacks diversity.

Section 6.4.11: any in river works should also be programmed out of the main migration and spawning season for salmonid fish species and eel (spring and autumn months). Monitoring of water quality should be undertaken, in order to assess impacts from construction activities on fish and other aquatic species in

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the Team.

Section 6.4.12: we welcome the opportunity the scheme provides to reduce the impact of surface water drainage from the A1 on water quality in the Team. This will have a positive effects on fish and biodiversity.

Section 6.4.16: we welcome consideration of the impacts of fish populations of the River Team, especially in view of their recovering status and recent discovery of Salmon - a species of high conservation value in the lower reaches of the river.

Groundwater / Minewater
Groundwater within the coal measures underlying the area are currently being managed by the Coal Authority to prevent mine water pollution. Water is currently being actively pumped at a site (Kibblesworth) near Birtley. There is a risk that shallow groundwater may be present, now or in future, along some parts of the proposed route. As such we recommend that the applicant consider whether this may pose a risk to any part of the proposed scheme. For example, infiltration is unlikely to be a suitable drainage option. It may be beneficial to contact the Coal Authority for further information.

Storage and use of any chemicals used on site during the development works should not pose a risk to controlled waters, suitable pollution prevention measures should be put in place e.g. storage of chemicals within appropriately sized bunds.

Land Contamination
Highway England should consider whether any potentially contaminative current and previous land uses are located along the route of the development. If there is a possibility of encountering land contamination, then an assessment of the risk posed to controlled water receptors should be undertaken with remediation and/or mitigation undertaken as required to manage the risks identified.

Please do not hesitate to contact me if you have any questions regarding this letter.

Yours sincerely

Lucy Mo
Planning Technical Specialist- Sustainable Places

[redacted]

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Appendix E – Letter Lucy Mo, Environment Agency (20/07/2018)

creating a better place

Environment Agency

Ms Nicola Wilkes
Highways England
Lateral 8 City Walk
LEEDS
LS11 9AT

Our ref: NA/2018/114158/01-L01
Your ref: A1B2CH

Date: 20 July 2018

Dear Ms Wilkes

A1 BIRTLEY TO COAL HOUSE SCHEME 22 JUNE – 20 JULY 2018. SECTION 42 CONSULTATION

Thank you for referring the above consultation, which we received on 22 June 2018. With respect to matters within our remit, we have reviewed the information submitted and have the following comments/advice to offer:

Junction 67 sign gantries
We have no comments to make regarding the location of signs and gantries at the northern end of the proposed development.

Allerdene Bridge Compound and Access
We have no comments to make regarding the proposed working compound or the access track.

General Comments
It should be noted that the comments outlined in our response dated 6 December 2017 (ref: NA/2017/113874/01-L01) and 21 March 2018 (ref: NA/2018/113997/01-L01) are still applicable. I have attached copies of these responses at the end of this letter.

Further to the comments outlined in our previous responses, we also have following comments to offer:

Flood Risk
A Flood Risk Assessment (FRA) must be submitted as part of the Development Consent Order application and climate change must be taken into account.

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Floodplain compensation will be required at the Allerdene Culvert and the River Team culverts at junction 67. This could include alterations to the weir or culvert opening and/or changes to the highway embankment.

With respect to the pluvial flood risk on the replacement Allerdene Bridge, it is proposed that Allerdene Bridge will be reconstructed south of its current location. The supporting documents state that the road could be re-profiled, and changes to the drainage regime could be included as part of the design in such a way as to reduce the risk of surface water flooding through the replacement of the structure. This approach must be taken into account within the FRA and demonstrate a betterment in terms of flood risk.

No Net Loss / Net Gain

The UK Government are committed to embedding an 'environmental net gain' principle for development, including housing and infrastructure, as part of their 25 Year Environment Plan. Highways England should seek to embed net gains in this scheme in addition to the no net loss as identified in the Preliminary Environmental Information Report.

There are several protected and priority habitats in the vicinity of these work. Therefore, it is recommended that where these sites are to sustain direct impacts, net gain enhancements should be made to expand these sites and increase their functionality and the links between them to enhance overall biodiversity in the area and wildlife corridors.

Consideration should also be given to the inclusion of wildlife crossings into the designs in and around the priority habitats identified with the Preliminary Environmental information Report. This will limit road traffic mortalities and further enhance connectivity between habitats.

Road Crossings

The scheme involves extending existing road crossings and install new ones, including bridges and culverts. Where road crossings exist, we would welcome the opportunity to be involved in the design of these, in order to ensure passage for fish, mammals and amphibians are met, whilst also minimising sediment transport routes downstream of all watercourses.

We are generally opposed to the culverting of watercourses because of the adverse ecological, flood risk, human safety and aesthetic impacts. Watercourses are important linear features of the landscape and should be maintained as continuous corridors to maximise their benefits to society.

We will consider each application to culvert a watercourse on its own merits and in accordance with our risk-based approach to permitting. We will only approve a culvert if there is no reasonably practicable alternative, or if we think the

detrimental effects would be so minor that a more costly alternative would not be justified. In all cases where it is appropriate to do so, applicants must provide adequate mitigation measures, accept sole ownership and responsibility for future maintenance.

Sustainable Urban Drainage System (SuDS)
We welcome the addition of SuDS to improve water quality and increase water attenuation. It is strongly recommended that the design of the road scheme maximises
the biodiversity potential of the scheme as a whole. This should include the planting of native and non-invasive species of local provenance and include a management strategy for their ongoing maintenance.

Invasive Non Native Species
Where Schedule 9 species listed under the Wildlife and Countryside Act (1981) are found with or adjacent to the footprint of the works, section 14 of the WCA states that it is illegal to release or allow to escape into the wild any animal which is not ordinarily resident in Great Britain and is not a regular visitor to Great Britain in a wild state, or is listed in Schedule 9 of the Act.

It is also illegal to plant or otherwise cause to grow in the wild any plant listed in Schedule 9 of the Act. This includes through the distribution of seeds and rhizome fragments that may be present in organic matter being moved from site, i.e. soil. Further information is available from the Non-Native Species Secretariat (NNSS).

Vehicles are a known vector of environmental seeds and pathogens and actively spread these across road networks in the UK. We would therefore encourage Highways England to not only avoid INNS during the works, but to actively seek to control them to prevent their subsequent spread.

Please do not hesitate to contact me if you have any questions regarding this letter.

Yours sincerely

Lucy Mo
Planning Technical Specialist - Sustainable Places

Direct dial [redacted]
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Appendix F – Letter Lucy Mo, Environment Agency (08/04/2019)

creating a better place

Environment Agency

Mr Andy Smith
WSP
Kings Orchard 1 Queen Street
St. Philips
BRISTOL
BS2 0HQ

Our ref: NA/2019/114476/01-L01
Your ref: A1 Birtley Coal House Scheme

Date: 08 April 2019

Dear Mr Smith

CHARGED PLANNING ADVICE: REVIEW OF THE WFD ASSESSMENT, FRA AND THE ROAD DRAINAGE AND WATER ENVIRONMENT SECTION OF THE ENVIRONMENT STATEMENT. A1 BIRTLEY TO COAL HOUSE IMPROVEMENT SCHEME

The following documents were reviewed:

- Appendix 13.1 Flood Risk Assessment – Draft GC and EA issue Copy
- Appendix 12.2 Water Framework Directive Assessment – Draft EA and GC issue
- Chapter 13 Road Drainage and the Water Environment – Draft EA and GC issue
- Figure 13.1 Scheme Extents and Extents of Works
- Figure 13.2. Water Feature Location Plan
- Figure 13.4 Outfall locations
- Figure 15.5a Fluvial Flood Zones
- Figure 13.5b Risk of Flooding from Surface Water
- Figure 13.6 Superficial Deposit Designations

Flood Risk Assessment

Exception Test

Section 2.17 states that 'the FRA demonstrates that the scheme will remain safe throughout its design life and that flood risk will not be increased elsewhere'. As it stands, the Flood Risk Assessment (FRA) does not demonstrate how both elements of the Exception Test as set out in the National Planning Policy Framework (NPPF) and Planning Practice Guidance have been addressed. Further information regarding the application of the Sequential and Exception Test must be included in the FRA.

Climate change
We would welcome clarity regarding which climate change allowances have been taken into account in the FRA. UKCP18 was published on 26 November 2018 and replaces the UKCP09 projections. The allowances in Flood Risk Assessment: Climate Change Allowances (published February 2016) are still the best national representation of how climate change is likely to affect flood risk for peak river flow and peak rainfall intensity. Research that is due to be published in 2019 may result in changes to these allowances.

Flood Risk Maps
The flood zones have not been updated with the latest hydraulic modeling. As a result the flood outlines are incorrect. This was highlighted in our previous meeting with WSP in 2018. Data regarding flood risk maps and models can be obtained by emailing northeast-newcastle@environment-agency.gov.uk Please note requests for information can take up to 20 working days.

National Policy
We would welcome references to the Government's 25 Year Environment Plan within this section. The 25 Year Environment Plan seeks to ensure that new developments are flood resilient and do not increase flood risk, whilst achieving environmental net gains.

3.1.8 Lady Park Burn
Blockages to the culvert should be discussed and any risks to the A1 should be appraised.

3.1.9 River Team
There is no mention to piers being located in the floodplain and channel. The FRA will need to assess the impact of this on flood waters and provide compensation.

Allerdene Burn
There is a reference to the option of betterment to the existing culvert, but no reasons why this option has now been discounted. In line with the 25 Year Environment Plan and NPPF, we strongly recommend that betterment is achieved. Options for betterment were discussed in previous meeting with WSP/Highway England in 2018.

Chapter 4 Flood Risk - Historical Flooding
References in this section are out of date and need to be updated. For example, there was a flood event in 2012 in Lady Park.

The text in figure 5 does not reflect that the flood modelling supersedes the flood map illustrated in figure 5.

Section 4.2.8: we support the use of sensors on the road.

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Section 4.2.11: an area of floodplain compensation is to be located in an area that already floods. The FRA must demonstrate that this area of land is able to fully function as floodplain compensation, and that it floods at the right flood event.

Section 4.2.14: we would welcome clarity regarding whether the culvert needs to be extended or can it be a channel alignment.

Section 4.3 Tidal Flood Risk: it should be noted that the bottom section of the River Team is tidal. This should take taken into account in the FRA.

Chapter 4.5 Groundwater Flood Risk

The FRA does not adequate consider the risk of groundwater flooding. Groundwater within the coal measures underlying the area are currently being managed by the Coal Authority to prevent mine water pollution. In particular, water is currently being actively pumped at a site (Kibblesworth) near Birtley. There is a risk that shallow groundwater may be present, now or in future, along some parts of the proposed route. Therefore, it is vital that the FRA assesses and considers whether this may pose a risk to any part of the proposed scheme. For example, infiltration is unlikely to be a suitable drainage option. Further information is available from the Coal Authority for further information.

Chapter 6. Conclusions

Section 6.1.2: please see above comments regarding flood map accuracy and modelling.

Section 6.1.5: we would welcome clarity regarding the benefits of extending Allerdene culvert and realigning the existing drainage channel. What is the overall betterment on the Allerdene from the proposed works?

A1 Birtley to Coal House Scheme Hydraulic Modelling Report

Section 1.1.5: The 2016 River Team Model is available from the Environment Agency. Data regarding flood risk maps and models can be obtained by emailing northeast-newcastle@environment-agency.gov.uk Please note requests for information can take up to 20 working days.

Section 1.3.4: the FRA and hydraulic modelling should reflect the latest flood risk modelling information.

Section 4.1.2: this paragraph states that table 7 demonstrates that the impact on flood levels is within the model tolerance as the largest increase is 20mm. What is the impact of this on residential properties, if any? This should be stated in the FRA.

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Water Framework Directive (WFD) Assessment

We welcome the application of the surface water drainage strategy including the use of Sustainable Drainage Systems (SuDS) and note the positive impact this can have on water quality and attenuation. It is also noted that the WFD assessment is based on the most up to date WFD information.

In order to achieve the objectives of the Government's 25 Year Environment Plan and the NPPF, the WFD assessment could be more ambitious and aspirational with respect to the achievement of environmental net gains for the environment. In particular, the WFD assessment does not take into account the 25 Year Environment Plan, which states that any development or infrastructure project should seek to demonstrate net gain for the environment. We would recommend that the WFD assessment takes into account the 25 Year Environment Plan, and identifies net gains for the environment especially in relation to the mitigation measures that should be addressed.

The WFD classified River Team and associated waterbodies in the catchment suffer from sedimentation. This is due to urban and transport run off. We would welcome clarity in relation to the silt control vortex separators, and why they are not being installed on all outfalls. Silt control vortex separators are only proposed at Long Acre Dene and would be beneficial on all outfalls.

We would also welcome clarity regarding the drainage from Kingsway Viaduct. Will this receive any treatment for water quality and sediment?
There are a large number of Highways England culverts and outfalls in the proposed works. Under the WFD, these modifications have to be assessed and offer mitigation for their impact on habitat and biodiversity. The WFD assessment does not look at the options to mitigate for these.

With respect to the Heavily Modified Designation: Urbanisation, the following potential mitigation measures should be looked at and enhancement measures implemented:

- Align and attenuate flow to minimise impact on ecology
- Alter culvert channel bed to allow longitudinal connectivity
- Create habitat
- Educate landowners impacts to Hydromorphology and Hydromorphological harm
- Enhance existing structures to improve ecology
- Ensure maintenance minimises habitat impact
- Ensure maintenance prevents sediment transfer
- Implement bank rehabilitation
- Implement changes to locks etc.
- Implement channel maintenance strategy and/or technique
- Implement sediment management strategy

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- Install fish passes
- Manage in-channel and riparian vegetation
- Manage realignment of flood defences
- Preserve or restore habitats
- Reduce fish entrainment
- Remove and prevent further dispersal of invasive non-native species
- Remove obsolete structure(s)
- Remove or enhance set-back embankments
- Remove or soften hard bank engineering
- Re-opening of culverts
- Restore or increase floodplain (lateral) connectivity
- Restore or Increase In-channel morphological diversity
- Retain habitats

Geomorphology
What are the geomorphological impacts of the construction of the new piers/abutment within the floodplain (before, during the construction and post development)? This should assessed as part of the WFD Assessment.

The WFD assessment should also demonstrate how the temporary works will be carried out and the impact they will have on the hydromorphology, including connectivity, sediment transport processes, the simplifying of channels and how this will be mitigated against. The impact upon the hydromorphology should then be used to directly assess the impact upon ecology including fish and their habitat, invertebrates and macrophytes. This could be incorporated into the WFD Assessment and mitigation included where appropriate.

Please do not hesitate to contact me if you have any questions regarding this letter.

Yours sincerely

Lucy Mo
Planning Technical Specialist - Sustainable Places

Direct dial [redacted]
[redacted]

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Appendix G – Meeting Minutes Lucy Mo, Carloine Maarouf and Rob Carr, Environment Agency (10/04/2019)

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**	Nicola Ashworth
MEETING SUBJECT	Environment Agency Comments on the A1 BCH Road Drainage and the Water Environment		

PRESENT	Lucy Mo - Planning Technical Specialist Caroline Maarouf - Flood and Coastal Erosion Risk Management Advisor Rob Carr – Catchment Coordinator for the Tyne Catchment Nicola Ashworth – WSP Environmental Assessment Lead Andy Smith – WSP Water Specialist
APOLOGIES	Peter Burrows, Gateshead Council
DISTRIBUTION	As above plus: Nicola Wilkes - Highways England PM, Nigel Rawcliffe - WSP PM
CONFIDENTIALITY	**Restricted**

ITEM	SUBJECT	ACTION	DUE
1.	NJA 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. AS detailed that modelling was undertaken using the EA / ICM model. The piers have been included in the modelling (there are 5). AS 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%). AS 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%). AS detailed that the photographs showing the piers in relation to the river.		
3.	<u>Modelling:</u> EA (CM) 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. AS to provide confirmation that the models were provided to the EA as part of the package of information. CM 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. LM outlined that the PO may need to be increased – up to £2000 + VAT for review of the model. LM will send through costs. NJA discussed that we would confirm or send the model today.	AS	11/04/19 Completed (model already provided)
4.	<u>ES Chapter:</u> AS detailed that no comments had been provided on the ES chapter. EA (CM and RC) 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? AS to provide additional information into the FRA. LM to send word version of the EA comments.	LM	Completed 12/04/19
6.	<u>Modelling and Climate Change Guidance:</u>		

ITEM	SUBJECT	ACTION	DUE
	AS 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. CM detailed that the EA is currently reviewing and assessing UK CP18. CM outlined that in the case of something of importance like this – the interim position would be to use UK CP18 (not UK CP09). AS discussed that given that we are not in the flood plain it's likely there would not be any difference. EA (CM) 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> CM 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. AS stated that the figures used have got the current EA Flood maps but the ICM model has used to drive the assessment. AS outlined that WSP wouldadd some text into the FRA and ES Chapter and figures as required.	AS	

ITEM	SUBJECT	ACTION	DUE
8.	Lady Park Burn: CM 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. CM also stated that there wouldn't be enough water for a 1:5 or 1:10 year event to block the screen. CM also outlined that HE can look on the EA website for levels on Lady Park Burn to inform risk assessment. AS 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. CM 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.? NJA outlined that aspect may have been considered as part of the Coal House to Metro Centre scheme. AS/NA 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).	AS/ NJA AS	

ITEM	SUBJECT	ACTION	DUE
9.	Flood Plain Compensation: AS 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. CM 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. CM 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. AS to produce technical note or ensure this is closed out in the ES.	AS	
10.	Other: AS 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. AS - Tidal flood risk – this is embedded in the model. Include some information in the FRA to this effect. Groundwater Flood Risk - AS detailed that this is in the updated ES chapter and FRA. WSP need to consider the model tolerance (CM considers that approx. 20mm) is appropriate for the ICM model. AS	AS	

	WFD Assessment: RC discussed that from a WFD point of view – looking at objective year of 2027. Need to get it to "good" status by 2027. AS discussed that a sediment vortex separator has been provided on Longacre Dene for woodland – identified as a sensitive receptor. AS outlined that other watercourses are ephemeral and only flow at certain times. RC stated that during flashy conditions sediment would be flushed through these channels particularly around the viaduct. AS 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. RC stated that it was hard to see what flows were going where and would like to understand better. AS to provide the surface water drainage sub catchment plan. AS to provide better referencing through to the FRA from the WFD.	AS AS	
11.	LM stated that it looked from the report that only the bare minimum had been done to achieve WFD objectives. RC 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. RC 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. AS 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	

ITEM	SUBJECT	ACTION	DUE
	RC 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.	RC AS	

NEXT MEETING

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

Appendix H – Emails Carloine Maarouf, Environment Agency (17/04/2019)

Smith, Andy

From: Maarouf, Caroline [redacted]
Sent: 17 April 2019 08:29
To: Smith, Andy
Cc: Mo, Lucy
Subject: RE: climate change guidance

Hi Andy,

Thanks for sending through the revised section of the water report.

Climate change
This seems reasonable.

Lady's Park Burn
This sub catchment is not gauged and so nearest gauge is the River Team at Team Valley.
The lady's park Burn is very flashy and it's a heavily wooded area, hence the risk of blinding to our screen.
Maybe an appropriate action is for the Highway officers to view the screen on coach burn road?

Regards
Caroline

Caroline Maarouf
Flood and Coastal Erosion Risk Management Advisor
Partnership and Strategic Overview Team –Durham & Tees Valley
Email: [redacted]
Jabber: 46424 | External: 020 847 46424
Environment Agency | Northumberland Durham and Tees
Tyneside House, Newcastle Business Park, Skinnerburn Road, NE4 7AR

My working days are Tuesday – Friday

From: Smith, Andy [mailto[redacted]]
Sent: 16 April 2019 17:17
To: Maarouf, Caroline [redacted]
Cc: Mo, Lucy <[redacted]; Ashworth, Nicola [redacted]
Subject: RE: climate change guidance

Caroline,

I am currently making changes to the water reports for the A1 Birtley to Coalhouse scheme as we discussed last week and would like clarification on a couple of aspects:

Climate Change

Many thanks for sending over the climate change advice. I propose to include some additional text within the FRA to outline that no further assessment is required, as below, please can you confirm that my interpretation and suggested text is ok?

The hydraulic modelling that has been undertaken has been in accordance with the allowances in 'Flood risk assessments: climate change allowances' (published by the Environment Agency in February 2016). The Environment Agency in their document (*Using 'Flood risk assessments: climate change allowances' following publication of new climate projections in UKCP18*) consider that these are still the best national representation of how climate change is likely to affect flood risk for:

- peak river flow
- peak rainfall intensity

However, in the case of sea level rise then the guidance for this type of scheme (at the time of writing, again set out in *Using 'Flood risk assessments: climate change allowances' following publication of new climate projections in UKCP18*) is that

> *"in exceptional cases where developments are very sensitive to flood risk and have a lifetime of at least 100 years2, we recommend you assess the impact of both the current allowance in 'Flood risk assessments: climate change allowances' and the 95th percentile of UKCP18 'RCP 8.5' scenario (high emissions scenario) standard method sea level rise projections of UKCP18, and plan according to this assessed risk. You will need to calculate sea level rise allowances beyond 2100 by extrapolating the UKCP18 dataset."*

As the beyond the Scheme the lower reaches of the River Team are tidally influenced due consideration needs to be given to the potential implications of future sea level rise. However, in this instance it was not felt appropriate to undertake further assessment within the hydraulic model given that:

1. The Normal Tide Level (NTL) is at a weir over 3km from the site
2. The OS mapping indicates a change in level of between 5 and 10m between the site and the NTL

Therefore, no further assessment was required within the hydraulic model, which as constructed by the Environment Agency includes an adequate representation of the tidal boundary.

Lady Park Burn

We discussed the ability for HE to view the water levels on the trash screen to aid the mitigation of the residual risk and inform emergency management plans, however, I cant find the information on the Environment Agency's website, are you able to confirm that there is a guage here and if so how it can be accessed, so I can consider the appropriate approach?

https://flood-warning-information.service.gov.uk/river-and-sea-levels?location=newcastle

GOV.UK Flood information se

River and sea levels for: Newcastle upon Tyne, Tyr and Wear, England

4:43pm Tuesday 16 April 2019

River and sea levels are regularly checked by a network of monitorin stations. These levels can help you understand your flood risk now a next few days. Enter a postcode or place to find your nearest station select one from the map.

Location newcastle

5-day river level information for this area

You can get more information about local river and sea levels. Select a monitoring station from this list, or use the map.

- Ouse Burn at Crag Hall
- Ouse Burn at Gosforth
- Ouse Burn at Woolsington
- River Team at Team Valley

- View the flood information service for England
- View your property's long term risk of flooding

▶ Flood information for Northern Ireland, Scotland and Wales

Regards,
Andy

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

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Bristol, BS2 0HQ

From: Maarouf, Caroline [redacted]
Sent: 16 April 2019 09:58
To: Smith, Andy [redacted]
Cc: Mo, Lucy [redacted]
Subject: RE: climate change guidance

Hi Andy.

Attached is our guidance internally that we are working too.
Second page first paragraph is what I have asked you to do.

Thanks
Caroline

Caroline Maarouf
Flood and Coastal Erosion Risk Management Advisor
Partnership and Strategic Overview Team –Durham & Tees Valley
Email: [redacted]
Jabber: 46424 | External: 020 847 46424
Environment Agency | Northumberland Durham and Tees
Tyneside House, Newcastle Business Park, Skinnerburn Road, NE4 7AR

My working days are Tuesday – Friday

From: Smith, Andy [redacted]
Sent: 15 April 2019 17:48
To: Maarouf, Caroline [redacted]
Subject: climate change guidance

Caroline,

Many thanks for your time on Thursday, I'm just following up on a few of the points and it would be helpful to have a copy of the latest guidance on climate change as I want to ensure that the version I have is the latest.

Regards,
Andy

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

WSP

[redacted]

Kings Orchard, 1 Queen Street,

Bristol, BS2 0HQ

wsp.com

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Appendix I – Letter Lucy Mo, Environment Agency (23/07/2019)

creating a better place

Environment Agency

Mr Andy Smith
WSP
Kings Orchard 1 Queen Street
St. Philips
BRISTOL
BS2 0HQ

Our ref: NA/2019/114620/01-L01
Your ref: A1 Birtley Coal House Scheme

Date: 23 July 2019

Dear Mr Smith

CHARGED PLANNING ADVICE: REVIEW OF WFD ASSESSMENT, BIODIVERSITY ES CHAPTER AND ROAD DRAINAGE AND WATER ENVIRONMENT CHAPTER. A1 BIRTLEY TO COAL HOUSE IMPROVEMENT SCHEME

We have reviewed the documents outlined below and have the following comments have the following comments to offer:

- Chapter 8 Biodiversity (May 2019)
- Appendix 13.2 Water Framework Directive
- Chapter 13 Road Drainage and the Water Environment
- Chapter 2 The Scheme (for info only)

Flood Risk Model
Overall the flood risk model requires further work before we accept the model and its findings. The hydrology in particular requires further clarification, and further details will need to be provided. In addition, there are number of issues in relation to Allerdene and the surface water modelling which need addressing. We will send you our model review assessment shortly, as we're currently seeking assurances from our modelling team on a number of matters.

Chapter 13 Road Drainage and the Water Environment
Within the report there is no reference to changes to the land where our river gauge is positioned. We currently lease this parcel of land from Gateshead Council, and are currently reviewing this lease.

We recognise the need for mitigation measures to be implemented in the overall scheme to reduce the increase in flood risks. However, we are unable to accept these mitigation measures until the modelling has been agreed.

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The proposed floodplain compensation has been stated as being given as a top soil scrape near the coal house roundabout. Details of the scrape and calculations have not been submitted and will need to be submitted as part of Development Consent Order application.

It should be noted that the temporary culvert to aid crossing over the team will need a Flood Risk Activity Permit from the Environment Agency (EA), as the works are within 8m of the Main River Team.

Team Valley Flood Allievation Scheme
We are currently developing a flood alleviation scheme for the Team Valley Trading Estate, which incorporates a flood alleviation scheme element at Lamesley Pastures. There could be opportunities to work together with Highways England in relation to the proposed A1 bypass works to look for synergies, and project delivery efficiencies between the two projects. Furthermore, there may be opportunities to develop scheme elements collectively, in order to broaden the environmental enhancements that might be achieved separately and realise joint efficiencies through delivery.

Chapter 8 Biodiversity
Protected and Priority Species
We are pleased to see that Biodiversity has been scoped into the Environmental Impact Assessment, and that a range of surveys for multiple species groups have been included to support the assessment of the Proposed Scheme.

European Otter
European otter are included in the Baseline Conditions and this summarises that otter could use the River Team, but then specifies that this is unlikely due to the impact of existing culverts in the area. Otter are known to be present at the Coal House Roundabout, Lamesley and the southern boundaries of the Team Valley Industrial Estate. There are also known resting places in the wider area, including records of juvenile otter.

Given the known presence of European otter and the likelihood that they do use the culverts, we feel that this assessment is unrepresentative of European otter on the River Team. Due to the outcome of this evaluation, it also prevents protective measures being included within the Design, Mitigation and Enhancement Measures section of the chapter.

We therefore recommend that European otter be re-evaluated, with appropriate mitigation included into the scheme. We are happy to liaise with the Applicant to provide information that would be pertinent to this. Mitigation measures would include (but not limited to) protective measures for the temporary River Team culvert and demolition activities in close proximity to the River. In addition, given that the assessment may change the outcome of the evaluation, separating

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European water vole from European otter is recommended.

European Water Vole
The chapter states that *"The River Team has negligible potential to support water vole on this particular stretch".* Were the smaller ditches and burns affected by the Proposed Scheme surveyed for water vole? For instance, Allerdene Burn or locations where outfalls are proposed to be built or upgraded? If not, this should be included in the assessment.

Great Crested Newt
We agree that while presence / absence surveys for great crested newt did not reveal any populations. The positive eDNA results may indicate that low populations are present, and that a Protective Method Statement is required for the Proposed Scheme.

Red Squirrel
While red squirrel are not a species led by the Environment Agency (EA), we note the report states that *"A Natural England licence must be in place for the removal of all active dreys".* We are not aware of any licensable process in England that would allow the lawful removal of an active red squirrel drey, further advice from Natural England may be required.

Invertebrates
We note that invertebrates of Principal Importance (S41 Species) that have been recorded in the desk study have been described as not a constraint to the Scheme.

It would be beneficial to include a detailed habitats based assessment on each S41 invertebrate species recorded in the data search. This would allow for more targeted habitat improvements and specific planting regimes for each species the scheme could be impacting. This detailed approach could further demonstrate Biodiversity Net Gain for the Proposed Scheme as a whole.

General biodiversity comments
It is good to see that pre-construction surveys are included in the mitigation requirements for the scheme. We recommend that this extend to all protected and notable species that may be affected by the scheme. This will ensure that any mobile species which could be present during construction, be recorded and protected.

Regular monitoring by an Ecological Clerk of works throughout construction will be important in ensuring all mitigation in the chapter be effectively implemented. Where not mentioned in this response, mitigation measures that protect species and habitats during construction and operation are all acceptable.

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Invasive Species
We note that Japanese knotweed and potential giant hogweed have been recorded during surveys. We are pleased to see that an invasive species Management Plan will be written as part of the Proposed Scheme.

We also have records of Himalayan balsam and rhododendron in the area. Himalayan balsam is known to be extensive in areas of Team Valley. Provision for these species being present on site during construction should be made within the Method Statement.

Priority Habitats and Net Gain
Priority habitats
There are a number of Habitats of Principal Importance within or adjacent to the site boundary, and it's good to see that these have been assessed as part of the development.

We do note that in Table 8-17 (page 48), there appears to be a loss of Running Water habitat. Further clarification on this loss is needed, and measures to prevent this loss included in any mitigation measures.

Net Gain
Biodiversity net gain requires developers to ensure habitats for wildlife are enhanced, and left in a measurably better state than they were pre-development. They must assess the type of habitat and its condition before submitting plans, and then demonstrate how they are improving biodiversity. The scheme must therefore deliver a measurable overall increase in biodiversity.

Biodiversity net gain is mentioned in the report and there are some calculations of loss and gain of some habitats. However, the chapter does not include any calculations on overall gain or loss of biodiversity. We therefore ask that biodiversity calculations for the scheme be produced, to demonstrate that Biodiversity Net Gain has been achieved.

Habitat Improvements and Enhancements
It is good to see enhancements will be included in the scheme such as bat and bird box creation. While these are positive measures, further measures should be included which provide varied, bespoke, and larger scale improvements to the area.

The River Team and Allerdene Burn provide opportunities for river restoration, realignment and wetland creation. Any improvements made will also help in achieving Biodiversity Net Gain for the Scheme.

We note that an attenuation pond will be included in the Scheme, could this include the creation multiple waterbodies to provide wider wetland creation and

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habitat improvements in the area. We would welcome consideration of this.

The Allerdene viaduct option is preferred, as this allows for the removal of the culvert and the restoration of this watercourse at this location.

Fisheries

Protected and Priority Species

We are pleased to see a detailed assessment of fish species recorded in the vicinity of the proposed development, and that part of the Team is recognised as an important migratory route for Salmon, Sea Trout and Eel. In addition to the records mentioned in the report, surveys carried out by the Environment Agency in October 2018 confirmed the presence of protected species such as salmon, trout and eel just downstream of the scheme footprint and trout, upstream of it. A salmonid redd (nest), dug by adult salmon or sea trout potentially, and was also recorded in the Lamesley area in January of this year.

Water quality, fish passage and habitat improvements

We welcome the proposed measures to improve the water quality of the road discharge and the knock-on beneficial effects this will have on fish populations in the watercourses concerned.

We also note that provision for fish passage and habitat will be included in the design criteria for any new culverts, and the commitment to render the existing ones passable to fish by installing baffles and other structures. This will not only complement improvements to fish passage and habitat expected to be delivered through the EA's Team Valley Flood Alleviation Scheme, which includes the removal of Eslington weir, a major barrier to migration. But is also critical for securing the wider recovery of fish populations in the Team.

The need to temporarily culvert the River Team where it runs through the centre of the Coal House roundabout, in order to facilitate the construction of the Kingsway Viaduct extension, is noted. Reinstating the river post-construction should however include measures to improve on the existing poor quality habitat available for fish within this straightened and uniform section of the Team. Any opportunity the scheme provides to improve both the in-river and marginal habitat for fish in the Allerdene Burn, which is similarly straightened and heavily modified throughout much of its' length, should also be taken.

Sedimentation and Biosecurity

It is positive to see pollution prevention and sedimentation plans in the chapter. We recommend that a detailed specific Method Statement on pollution prevention and sedimentation be written and implemented during construction. This should also include biosecurity to prevent the spread of non-native invasive species, as well as pathogens harmful to biodiversity. This will be particularly relevant for the temporary culverting of the River Team, any outfall works and demolition activities

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near the River.

Chapter 2 The Scheme

It would be useful to include some details as to how the attenuation pond can be designed in such a manner as to provide some environmental benefits as well as any maintenance that will be required.

In terms of the Allerdene culvert option, it should be designed in order to maintain sediment transport through the culvert. Where Allerdene culvert is being diverted under one of the bridge spans as an open ditch, consideration should be given to the inclusion of measures to make this less of a ditch and a more of a restored section of channel, including the carrier drains.

Appendix 13.12 Water Framework Directive (WFD) Assessment

With respect to geomorphology, the River Team is the main river which could be impacted by the scheme, as detailed in the WFD Assessment. The WFD Assessment describes mitigation for the piers in the floodplain in the form of a topsoil scrape. There is an opportunity here to reconnect with sections of the floodplain to enhance the River Team, as well as tying in with the EA's Team Valley Flood Alleviation Scheme.

In the Allerdene viaduct option, the Allerdene is noted to be realigned as part of The Scheme. There is an opportunity to realign this in such a manner as to work with natural processes, in order to gain a more diverse fluvial system than a uniform straight section of channel. The option for the Allerdene Burn viaduct gives substantially more day lighting, environmental enhancements and creation. We welcome and support this approach.

In the Allerdene embankment option, there would be a reengineered culvert. There are in-channel improvements which can be made to increase the flow diversity of the modified channel, which can in turn affect the morphology of the channel and therefore the biodiversity of the channel. We would welcome proposals as to how this may be achieved for both options.

The WFD Assessment states that a Geomorphological Assessment will be completed at the detailed design stage which is welcomed, and should include the comments made in this advice note.

Where bank protection measures have been proposed, a range of bioengineering options should be included first. These will provide stability to the bank, whilst providing the ability to trap fine sediment and improve the in channel morphology, flow diversity and natural functionality of the watercourse.

Net Gain and 25 Year Environment Plan

We welcome and support references to the Governments 25 year Plan for the

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Environment and the principle of Net Gains

Surface Water drainage and Outfalls
It is recommended that surface water drainage such as SuDS, oil interceptors, filter drains and vortex separators are installed on all outfalls. This would give improvement to water quality within the catchment, and help to achieve WFD Good classification. This would also offer mitigation for the existing overall footprint of the A1 that is impacting the catchment.

With respect to outfalls, what are the options being considered for the setting back and construction/alterations of these structures? All outfalls linked to the scheme should be improved as this would give improvement to water quality within the catchment, and help to achieve the Good classification under the WFD. This would also offer mitigation for the existing overall footprint of the A1 that is impacting the catchment.

It should be noted that any outfall structure / discharge that is required to be constructed near a Main River may require a flood risk activity permit. As part of the application, the EA will assess the application in relation to its compliance with the Northumbria River Basin Management Plan (RBMP). The RBMP states that the water environment should be protected and enhanced to prevent deterioration and promote the recovery of water bodies. It is advised that the development incorporates a scheme which will help meet objectives and to promote the recovery of water bodies. The application should also take into account impacts to protected and notable species and habitats along these watercourses, with survey information informing these impacts within the permit.

The design of any outfall should be sympathetic to the water environment with low impact design options that mimics greenfield runoff, and not drain onto or impact Habitats of Principal Importance. Designs that feature soakaways to rivers must prevent any hard engineering on the banks of watercourses, and help to ensure there will be no degradation to its WFD Status / Potential. This should also apply to any upgrades or maintenance of current outfalls.

Please do not hesitate to contact me if you have any questions regarding this letter.

Yours sincerely

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Appendix J – Meeting Minutes Lucy Mo, Caroline Maarouf, Robert Carr and Scott Mackenzie, Environment Agency (24/07/2019)

AGENDA & MEETING NOTES

PROJECT NUMBER	70041947	**MEETING DATE**	24 July 2019
PROJECT NAME	A1 Birtley to Coal House Scheme	**VENUE**	Environment Agency | Tyneside House, Skinnerburn Road, Newcastle upon Tyne NE4 7AR
CLIENT	Highways England	**RECORDED BY**	NJA
MEETING SUBJECT	Meeting to discuss road drainage and the water environment assessments and EA comments		

PRESENT	Nicola Ashworth (WSP), Andy Smith (WSP), Lucy Mo (EA), Caroline Maarouf (EA), Robert Carr (EA), Scott Mackenzie (EA)
APOLOGIES	None
DISTRIBUTION	As above plus: Nicola Wilkes (Highways England), Alyssa Young (Highways England), Kevin Stubbs (WSP)
CONFIDENTIALITY	**Restricted**

ITEM	SUBJECT	ACTION	DUE
1.1	NJA discussed that the DCO will be submitted in the middle of August. The final ES will be submitted to Highways England on 30/07/19.		
2	**Flood Risk Model**		
2.1	Flood risk model comments not yet received. Hydrology: Currently some issues identified. EA is currently discussing with reviewer as to what comments are appropriate and which should be updated. The EA will provide comments within a spreadsheet and WSP can respond on the spreadsheet as to the approach that we are intending to take, for agreement prior to the amendments being made. Following this, a technical note could be provided by WSP to outline changes to the model / FRA, if required. If the model is fit for purpose then the EA will accept the Flood Risk Assessment.	CM / LM	25/07/19
2.2	CM discussed that she couldn't see the drawing with the top soil scrape on or the calculations to inform it.	AS	25/07/19

ITEM	SUBJECT	ACTION	DUE
	AS showed CM drawing ES Figure 13.7 and the calculations that have informed it. AS will issue the FRA to the EA so that they can look at the flood compensation areas / updates from the previous issue.		
3	**Chapter 13 Road Drainage and the Water Environment**		
3.1	EA river gauge. WSP to provide information as to what works are taking place in the area of the EA river gauge where this is included in the Scheme Footprint.	NJA	25/07/19
3.2	The temporary culvert would need to be as short as possible and ideally if over 7m wide then the EA would prefer a bridge. The location and design would need to be agreed with the EA as part of detailed design / preconstruction works and environmental impacts would need to be minimised.		
4	**Team Valley Flood Alleviation Scheme**		
4.1	Update from RC: Application in for EDF funding for Phase 1 (Lobley Hill) phase. Phase 2 (upstream of Coal House roundabout) – an outline business case is being submitted soon. Rob Carr requested for his details to be passed on to NGN to discuss the works at the PRS which is to be replaced by the AGI to the south for the A1. CM noted that there a is a potential weir structure within Coal House roundabout and any changes to this may impact the EA's gauging station.		
5	**Chapter 8 Biodiversity**		
5.1	<u>Otter</u> SM discussed that Peter Shield at Gateshead Council has recent records of otter observations within Coal House roundabout. WSP to request details from Peter Shield. *Post meeting note:* NJA has requested information from Peter Shield (24/07/19).	NJA	25/07/19
5.2	<u>Watervole</u> NJA discussed that a habitat assessment was completed as part of the extended Phase 1 habitat survey and that habitats within the Scheme Footprint were considered unsuitable and were therefore scoped out of the further survey and assessment.		

ITEM	SUBJECT	ACTION	DUE
	SM discussed that it would be useful to add that the text in the chapter would benefit to extend to other associated watercourses (in addition to the River Team). *Post meeting note:* Sentence added to chapter (25/07/19).	NJA	25/07/19
5.3	Invertebrates SM discussed that it would be useful to detail in the chapter if any of the habitats within the landscape design plan would support invertebrate species. NJA to confirm if this has been / can be done. *Post meeting note:* Given that impacts on invertebrates have been scoped out of the assessment there is not a suitable place to add this text. However WSP's ecologist confirmed that woodland retention would minimise impacts, and woodland and hedgerow creation and improving water quality overall would benefit invertebrates.	NJA	25/07/19
5.4	Invasive Species SM discussed that there is Himalayan balsam in extensive areas of Team Valley and it might be beneficial to mention this in the ES chapter. *Post meeting note:* Sentence added to chapter (25/07/19).	NJA	25/07/19
5.5	Priority Habitats and Net Gain *Net Gain* NJA discussed that there is no requirement for NSIPs to achieve Biodiversity Net Gain. Whilst biodiversity has not been achieved, the Scheme has sought to minimise loss as far as possible and has sought to improve the quality of planting and enhance green corridors across the Scheme. The Scheme is constrained due to it being a widening of the existing A1, and the design has sought to minimise impacts as far as possible, within the Scheme Footprint, this has included ensuring there is no permanent land take of Longacre Wood LWS. SM discussed that it might be useful to add this explanation into the chapter text in relation to Biodiversity Net Gain. *Habitat Improvements and Enhancements* RC discussed whether the attenuation pond and whether there would be the possibility to create multiple waterbodies (either within or adjacent to the proposed pond) to provide wider wetland creation and habitat improvements in the area. AS and NJA discussed that the design of the attenuation pond would be done at detailed design but that it would be possible to include a requirement within the ES chapters (water and biodiversity) to consider this at detailed design.	NJA AS / NJA	25/07/19 25/07/19

ITEM	SUBJECT	ACTION	DUE
	Post meeting note: Sentence added to ES that consideration to ecological benefits with regards to the attenuation pond would be considered at detailed design (25/07/19).		
5.6	Protected and Priority Species NJA welcomed the additional information provided on salmon, sea trout and eel and discussed that this would be included in the ES Biodiversity chapter. RC discussed whether any measures to aid fish passage have been included in the design for Allerdene culvert (Allerdene Embankment option). *Post meeting note:* The following text is currently included in the Biodiversity Chapter in relation to this: *Culverts will be designed, where possible, to include natural beds (between 100mm and 250mm) to maintain and assist fish passage.* *To mitigate for potential downstream impacts and maintain passage along watercourses, baffles or similar structures will be installed within existing culverts.*	AS	25/07/19
6	**WFDa**		
6.1	Coal House Roundabout Flood Compensation Can improvements be made to the River Team channel to improve its current connectivity to the floodplain, it was recognised that this is what the flood plain compensation aims to do. The EA outlined that they would also like improvements to the banks of the channel to be made across Coalhouse Roundabout, as this section is highly modified and installation of the temporary river crossing and construction works would impact the river, remidal works should be considered as part of detailed design to aid the reduction in the river being considered as a HMWB.		
6.2	The realignment of Allerdene burn was discussed. NJA detailed that para 8.9.9 in Chapter 8 Biodiversity discusses that the realignment of the Allerdene culvert would create a naturalised line and to include an associated wet grassland.		
7	**Net Gain and 25 Year Environment Plan**		
7.1	It was discussed that NSIPs are not required to meet biodiversity net gain.		
8	**Surface water drainage and outfalls**		

<table>
<tr><th>ITEM</th><th>SUBJECT</th><th>ACTION</th><th>DUE</th></tr>
<tr><td>8.1</td><td>Vortex separators will be considered for all outfalls at detailed design and this is stated in the ES (Paragraph 13.9.12.c).

Improvements to the outfalls e.g. setting back, will also be considered at detailed design and this is included in the ES. (Paragraph 13.9.12.e).

A quick high level review of the scheme Red Line Boundary against the OS Mastermap has been undertaken (note that the proposed scheme or drainage design has not yet been assessed) this indicates that during detailed design it may be possible to improve some of the outfalls as part of the scheme, these are summarised below:

<table>
<tr><th>Outfall Number (ES Figure 13.4)</th><th>Summary</th></tr>
<tr><td>1</td><td>Discharges to Gateshead as highway authority drainage infrastructure</td></tr>
<tr><td>2 and 4</td><td>Land may be available within the RLB</td></tr>
<tr><td>3</td><td>Likely to discharge to a culverted ordinary watercourse</td></tr>
<tr><td>5</td><td>Probbaly outside of the RLB</td></tr>
<tr><td>6 and 7</td><td>Land may be available within the RLB for the upstream outfalls, but unlikely for the downstream outfalls</td></tr>
<tr><td>7A</td><td>Land may be available within the RLB</td></tr>
<tr><td>8</td><td>Land may be available within the RLB</td></tr>
<tr><td>9 to 13</td><td>Land may be available within the RLB as these are within the Coalhouse Roundabout</td></tr>
</table>
</td><td></td><td></td></tr>
<tr><td>8.2</td><td>RC detailed that it was great to see that the various mitigation measures discussed in the last meeting included in the WFDa.</td><td></td><td></td></tr>
</table>

NEXT MEETING

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

Appendix K – Spreadsheet Environment Agency (25/07/2019)

Technical Model Review Report		
Client	Environment Agency	
Single project or WEM package?	WEM Package	
Package name (if applicable)	2018-19 National Modelling and Forecasting Technical Support Contract	
Project name	Review No. 57 - A1 Birtley to Coal House	
JBA Project Number (or overarching project)	2018s0387	
JBA Sub-Project Number (if applicable)	57	
Review requirements	A) Previous project - hydrology	
	B) Previous project - hydraulic	
	C) New project - hydrology	Yes
	D) New project - hydraulics	Yes
	E) Survey data	
	F) Reporting	

"RAG" key	
Major issue	Omission that could make the findings subject to challenge and which requires correction/further work.
Minor issue	Non-standard method or method not following guidance but unlikely to have impacted on results
Clarification required	The approach used is unclear and requires further clarification before it can be reviewed
Recommendations	Suggestion for improved / good practice but which is unlikely to change the project outcomes.
Acceptable (but does not meet best practice)	The approach is acceptable, however it is not in line with standard industry best practice
Acceptable	Suggestion for improved / good practice but which is unlikely to change the project outcomes.

Summary of 1st hydrology review findings

Hydrology review

A few suggestions have been given below, which may give more conservative results. The reporting in Appendix A regarding the inflow calculations would benefit from additional detail , but is generally well written. The maps provided are excellent and are very helpful.

There are a few omissions that should be addressed, see individual comments below.

Summary of 1st hydraulics review findings

Allerdene Burn model:

Minor issues have been identified. Generally the baseline model and option 1 are well constructed. There were some issues identified in Option 2 that could be impacting the results. Therefore it is recommended that this model is revised.

As for all modelling studies, results of the sensitivity testing and model proving, should be provided for review.

Kingsway Viaduct model:

As the baseline model was constructed by JBA, only the described changes at the viaduct have been reviewed to avoid a conflict of interest. The representation of the existing and proposed viaduct has been done well. However, the stability of out of bank flows in the area of interest is a concern in the 0.1% AEP event, proposed scenario examined.

A	Hydrology Review
Date of hydrology analysis	Dec-18
Name of reviewer	James Molloy BE(Hons) MEngSc
Date of review	08/07/2019
Revision	V1
Applicable standards or guidance	Flood Estimation Handbook (IH, 1999) updates including Kjeldsen (DEFRA, 2008), and recent outputs from the FEH Local project
	ReFH1 and/or ReFH2 guidance documents
	EA Flood Estimation Guidelines (Operational instruction 197_08, V6)
Nature of study watercourse(s)/constraints	The study looks at various sources of flood risk along a reach of the A1 road, to the south of Allerdene near Newcastle. Various proposed engineering works along the road require an assessment of (a) fluvial flood risk from Allerdene Burn, a small tributary of the River Team and (b) surface water flood risk around Longacre Dean a short distance to the south-east. **The report also looks at flood risk from the River Team, however as no changes have been applied to the hydrology used in the underlying model for this watercourse (previously signed off by the Environment Agency), this aspect is not reviewed in this document.**
Study objectives	The aim of the analysis is to determine if the proposed changes to the road layout have any effect on local flood risk. Information provided in Appendix A of the provided modelling report is used as the basis of this review.
Summary of 1st review	A few suggestions have been given below, which may give more conservative results. The reporting in Appendix A regarding the inflow calculations would benefit from additional detail , but is generally well written. The maps provided are excellent and are very helpful. There are a few omissions that should be addressed, see individual comments below.

Category	Detail	ID	1st review			
			Comment	Suitability	Suggested actions	Consultants Response (if required)
General comments						
General comments	Method statement	A-1	Quite detailed in places, as various sources of flood risk need to be considered in the analysis. The maps provided alongside the report are very useful and clear. Some of the details regarding the hydrological inflows are quite sparse however, see individual comments below.	Clarification required	Reasoning is given in the main report text (Chapter 3) for the study requirements at each watercourse crossing of the A1 road. It seems an unusual decision why fluvial modelling was carried out on Allerdene Burn, but only pluvial modelling around Longacre Dean (why not carry out fluvial modelling at the latter site also?)	
	Previous studies	A-2	It is understood that there are no previous studies looking at flood risk for Allerdene Burn, and that only broad-scale pluvial mapping has been carried out in the region surrounding Longacre Dean, which the authors correctly point out does not account for local drainage features that would affect local flood risk.	Acceptable		
	Catchment description (any unusual features such as pumps, reservoirs, heavy urbanisation?)	A-3	Small catchments, some of which drain densely urbanised areas.	Recommendations	Has the Urban ReFH2 method been considered adequately? Checked in further detail below.	
Method statement						
Flow estimation points and descriptors	Location of FEPs / catchment descriptors provided?	A-4	Yes in Section 3.3.	Acceptable		
	Unusual catchment features (which may influence choice of approach)	A-5	The Allerdene catchment is heavily urbanised, and also has a moderately high BFIHOST, noted by the authors.	Recommendations	It may also be useful to obtain sewer drainage information for the area around the Allerdene Burn catchment, in case there are sewered areas outside the topographic catchment draining into this watercourse. However, this is unlikely given the steep slope in the urban area, but still would be a useful to check.	
	Checks on catchment descriptors	A-6	The catchment area has been correctly checked using LIDAR data, noted that this gives a larger area compared to the "default" FEH catchment.	Major issue	No further reporting given on how the change in catchment area influences other key catchment descriptors. DPLBAR should increase, and there could be significant changes to URBEXT2000 from the change in catchment boundary. Both of these need to be altered, and could have a big effect on calculated flows.	
Data review	Hiflows-UK version	A-7	NRFA V7 is the latest version	Recommendations	Should be used in FEH statistical as an independent check on ReFH2, see below.	
	Review of hydrometric data	A-8	No local hydrometric data available to calibrate hydrological methods unfortunately.	Acceptable		
	Rating reviews	A-9	n/a, no local gauges in the area apart from on the River Team, not reviewed here.	Acceptable		
	Flood history	A-10	Yes, the authors have queried data held by the Environment Agency and briefly reported this in Chapter 4 of the main report, giving some details of recent floods. This shows that the region assessed here is vulnerable to a range of flood mechanisms.	Acceptable - but does not meet best practice	There are other useful sources of flood history as well. I would recommend having a look on the CBHE website (http://www.cbhe.hydrology.org.uk/index.php), and a general internet search also.	
Initial choice of methods	Approaches suggested	A-11	Only the ReFH2 method is proposed for use for the Allerdene modelling. Depending on the software implementation used, urbanisation adjustments may/may not have been automatically applied given the very high URBEXT200 values.	Major issue	Confirm whether or not the ICM implementation of ReFH2 automatically applies the urban adjustment, giving faster response times and peak flows on highly urbanised catchments. There is no mention anywhere in the document of the FEH statistical method, which should also be applied here, given the uncertainty from catchment-descriptor methods. This at least would be useful as ball-park check on the peak flow produced from ReFH2.	
	Justification of approach	A-12	A sensible argument is given for using FEH99 rainfalls over FEH13 (although it's hidden in a footnote!), given that the former is reported to give higher rainfall totals in this case. For the purposes of construction options modelling this is a good idea. Some data needs to be presented in the Appendix however to back this up, perhaps a table comparing rainfall totals across multiple storm durations. However using FEH99 rainfall in the ReFH2 model may have an unforeseen drawback. In this situation with FEH99 rainfall, ReFH2 applies the "alpha" factor when calculating runoff (essentially a fudge factor that reduces runoff for increasing return periods - introduced to try to match FEH statistical peaks, but conceptually does not make a lot of sense!). So even though FEH99 might give more rainfall, the "alpha" factor may cancel out the effect. This factor is not used with FEH13 rainfall in the model.	Major issue	Add a table comparing FEH99 and FEH13 rainfalls to back up the argument given in Chapter 2 of Appendix A. Run the ReFH2 model for the 100 and 1,000yr events with the FEH13 rainfall also, to test if this gives larger peak flows, due to the "alpha" issue discussed to the left.	
	Lumped / distributed	A-13	n/a, as a single inflow to the model is sufficient for this case for the Allerdene model.	Acceptable		
		A-14				

Flow estimation						
FEH Statistical	Suitable for statistical?	A-15	Yes, as a check on ReFH2 results, but not used, see above.	Major issue	See above	
	QMED estimation - CDs	A-16				
	QMED estimation - AMAX / POT	A-17				
	Choice of donors	A-18				
	Growth curve methodology	A-19				
	Hydrology shape	A-20				
ReFH method	Suitable for ReFH?	A-21	Yes with caution given the heavy urbanisation	Acceptable		
	Calibration	A-22	n/a, the small catchment assessed here is ungauged.	Acceptable		
	Choice of design storm	A-23	Summer rainstorm profile is suitable in this case. However only very little discussion given for the choice of design storm duration, choosing the value used in the existing River Team model, simply assuming this will also be critical for Allerdene Burn.	Major issue	Run the ReFH2 model for a range of storm durations to see which gives the largest peak flows for Allerdene Burn. Assuming the same critical storm duration as the downstream River Team model could under-estimate peak flows on this small and fast-responding stream, especially important when testing models needed to size culverts, bridges, etc (in this case I think it's OK to mix and match durations from the main Team model and the Allerdene model, to give conservative results). Give a table of peak flows from ReFH2 versus storm duration in the text.	
Urban ReFH variant	Suitable for urban ReFH?	A-24	Yes, see previous comments	Major issue	Clarify in the text if the ICM implementation applies the urban adjustments from ReFH2.	
	Catchment delineation	A-25	n/a, a lumped approach is OK here.	Acceptable		
	Calibration	A-26	n/a, no gauges available to calibrate the ReFH2 model on these small streams.			
	Choice of URBEXT values	A-27	See comments above	Major issue	See adjustments for URBEXT200 required above.	
	Choice of percentage runoff	A-28	ReFH2 defaults are presumably applied for the Allerdene Burn model, this should be OK (but should be reported, e.g. was urbanised %runoff left at the default 70%?)	Acceptable		
Final choice of method	Final flows	A-29	N/A as only one method used. Given reliance on (uncertain) catchment descriptor methods, it is important to look at both FEH statistical and ReFH2.	Recommendations		
Miscellaneous						
	Direct rainfall modelling - 2D domain extent	A-30	The model domain for the direct-rainfall modelling around Longacre Dene looks sensible, based on LIDAR. The plot in Table 6 in Appendix A is very useful to demonstrate this.	Acceptable		
	Direct rainfall modelling - 2D downstream boundary condition	A-31	The authors state that there was no need to apply a 2D downstream boundary condition to remove excess ponding at the southern edge of the model.	Minor issue	It is usually best practice to place a downstream boundary on a direct rainfall model, to stop any glasswallng affecting results. This might be more important if longer rainstorms are being tested.	
	Direct rainfall modelling - range of storm durations tested	A-32	There is no information given on the range of storm durations used in this direct rainfall modelling in the report. The EA national-scale pluvial mapping runs separate models for storm durations of 1hr, 3hrs and 6hrs, then merges the modelled maximum depths in a final grid. This allows for runoff rates on regions with different topography to influence the results. A similar method needs to be adopted for this more detailed assessment.	Major issue	Run the direct rainfall model for a range of storm durations, then merge the results taking the maximum from each individual model grid.	
	Direct rainfall modelling - Percentage runoff	A-33	Not much detail given on this, other than use of the ReFH rainfall. Not clear from the text if this is before or after application of the ReFH2 loss model (i.e., is gross or net rainfall used)? Another issue is the use of different percentage runoff on different parts of the model. Has base mapping been used to inform where percentage runoff should be increased on urban surfaces? This is typically set at 70% but can be altered in some cases, with the ReFH model used to inform %runoff on other surfaces.	Major issue	See list of issues to the left.	
Climate change	Consistent with latest guidance?	A-34	The text in Section 3.3.4 of Appendix A suggests an unusual method was used to apply climate change allowances, altering the rainfall applied to ReFH2. As the Allerdene part of the study is a fluvial analysis, it is standard practice to simply multiply the final fluvial hydrographs by the percentage increase.	Minor issue	(Minor issue) For climate change runs on the Allerdene catchment, recommend instead simply multiplying the initial flow hydrographs using the fluvial uplift factors, instead of altering the input rainfall to ReFH2. As the results of this unusual method are not too far off the required percentages, this is a minor issue only. However this complicated method is needed for applying climate change uplifts for the pluvial analysis (the ReFH loss model is non-linear). (comment for EA) The EA also had a query on use of UKCP18 outputs instead of UKCP09 for climate change analysis. While some UKCP18 outputs are now available, research is ongoing to convert these large datasets to simple uplift factors for fluvial / rainfall inputs, due to be released later this year by CEH. Data from UKCP18 can be used manually to inform updated uplift factors, but current guidance recommends this is only needed on very high-risk areas (e.g. power stations). Therefore the use of uplift factors from the current EA guidance (2016 document) using UKCP09 is suitable in this case. (https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances)	
Reporting and follow up actions						
Reporting and Results.	Suitability of reporting	A-35	Quite detailed in places, but lacking detail in others, see the list above. The maps given alongside the report are very well put together and are very helpful.	Minor issue		
	Results	A-36	Some issues and omissions spotted, as listed above.	Major issue	See above	
	Recommendations	A-37	Key recommendations as follows: - Consider if fluvial modelling on Longacre Dene is needed as well as general pluvial modelling? - Carry out FEH statistical method as an independent ball-park check on the ReFH2 fluvial calculations - Consider sensitivity of using FEH13 rainfall due the "alpha" issue discussed above - Look at sensitivity of results to storm duration, for both fluvial and pluvial analysis.	Major issue	See above	

B	Review of River Team Viaduct
Date of model	August 2018
Name of reviewer	Jenny Hill
Date of review	24/07/2019
Revision	v2
Applicable standards or guidance	
Nature of study watercourse(s)/constraints	Allerdene Burn
Study objectives	The reporting states: Flood Risk Assessment (FRA) to support the Environmental Impact Assessment (EIA) and DCO Application for the A1 Birtley to Coal House Scheme. Three areas were identified for further modelling: - Hydraulic modelling to the River Team at Junction 67 to assess the impact of the extension of the Kingsway Viaduct. This modelling utilises an existing Environment Agency hydraulic model of the River Team constructed by JBA in 2014. - Hydraulic modelling of the Allerdene Burn to understand the impact of the A1 realignment which will require either: a. the extension of the existing Allerdene culvert and replacement of the existing section of the Burn; b. or daylighting of the existing culvert and replacement and realignment of the existing burn to accommodate a new viaduct over the existing railway line. - Hydraulic modelling of the surface water flood risk at Junction 66. **This review focusses on the River Team at Junction 67**
Summary of 1st review	As the baseline model was constructed by JBA, only the described changes at the viaduct have been reviewed to avoid a conflict of interest. The representation of the existing and proposed viaduct has been done well. However, the stability of out of bank flows in the area of interest is a concern in the 0.1% AEP event, proposed scenario examined.

Category	Detail	Prompts	ID	Comment	Suitability	Suggested actions
Data to be reviewed						
Data to be reviewed	Software	~ Versions	B-1	InfoWorks ICM v6	Acceptable	
			B-2	Updated to v8 for the purpose of this review	Acceptable	
	AEPs provided / reviewed		B-3	1% AEP + 20 or 40% and 0.1% AEP.	Acceptable	
			B-4	1% AEP event reviewed.	Acceptable	
	Scenarios provided / reviewed		B-5	Base and 'Kingsway Bridge Extension'. The Kingsway Bridge Extension scenario has been the focus of this review.	Acceptable	
	Reports	~ Reference versions ~ Technical reporting ~ General reporting	B-6	FRA report with technical appendices	Acceptable	
Reporting						
Reporting	Reporting	~ Objectives ~ Constraints ~ Approach Justification (both model scale and structure scale) ~ Clarity ~ Assumptions	B-8	The report states that Modelling changes are confined to the A1 junction 67 roundabout 424950, 558550 and included the modelling of the existing Kingsway Viaduct and the proposed widening of the viaduct to include an additional pillar.	Acceptable	
			B-9	Reporting generally clear and thorough	Acceptable	
			B-10	Results discussed	Acceptable	
General comments						
General comments	File organisation / naming convention	~ Scenarios ~ Naming ~ Flags	B-12	Flags ED and AD have been used at the changed structure, although flags have not been included in the model describe what this means.	Clarification required	In future include a CSV export of flags or a table of flags in the report
			B-13	The viaduct option has been created as a scenario from the base model, which follows best practice.	Acceptable	
			B-14	The scenario is clearly named which is helpful for future users.	Acceptable	
	Survey / topographic data	~ Age ~ Quality	B-15	Source of data is unknown as flag not included, although it is assumed that ED refers to Engineering Drawings.	Clarification required	
	Other	~ Any significant missing data	B-16	DTM was not provided although the commit history suggests a custom DTM which included topographic survey was used.	Clarification required	In future, provide the DTM used
General modelling approach						
General modelling approach	Model extents	~ Domain boundaries	B-18	Domain is unchanged from the base model	Acceptable	
	Modelling approach	~ 1D / 2D / Linked ~ georeferenced (xy/gxy/2d links)	B-19	A 1D-2D approach has been used for the watercourse and a 2D representation of the viaduct pillars has been used.	Acceptable	
			B-20	The model is fully geo-referenced.	Acceptable	
	Application of hydrological estimates	~ Lumped / distributed	B-21	The application of the hydrology is unchanged from the base model	Acceptable	
InfoWorks ICM						
InfoWorks ICM	Model build	~ Hard bed / soft bed ~ Accuracy of modelled channel length	B-23	The model is an adapted version of the JBA built, Environment Agency approved model. The changes made to the existing model have been documented in the commit history. Changes listed are all in relation to Kingsway Viaduct. The 'compare network' tool has been run on the WSP and existing EA model. This concluded that WSP's description of the changes was accurate.	Acceptable	
			B-24	The modelling report does not comment on whether hard or soft bed have been modelled. However, as the is a proposed design, it is assumed a hard bed level was implemented.	Acceptable	
			B-25	The modelled length has been calculated from the centre line and the centre line matches the mapped watercourse well.	Acceptable	
			B-26	1D river reaches have been voided from the 2D zone to avoid double counting	Acceptable	
	Watercourses	~ Deactivation ~ Interpolates ~ Bank level and DTM matchup ~ Bank coefficients ~ Baseflow	B-27	Based on the cross section naming convention, it is not thought that any interpolates have been applied. The resolution of cross sections in the study area mean no interpolates were necessary.	Acceptable	
			B-28	Discharge coefficient of 1 and modular limit of 0.9 consistently used.	Acceptable	
			B-29	The 1D river banks generally track the DTM level well. However, at chainage 50m on river reach TEAM_5156.1 the 1D bank is 1m higher than the 2D level. The 0.1% AEP water level predicted to exceed bank tops so this has potential to impact the results.	Minor issue	Modify 1D or 2D water levels to allow a better match of levels in area of interest
			B-30	River sections look sensible but few panel markers have been used.	Acceptable	
			B-31	Conveyance plots for TE05365 and TE05340 are kinked at higher depths.	Minor issue	Update panel markers and channel roughness to smooth conveyance plots at deeper flows.
	Watercourse structures	~ Bridges ~ Culverts ~ Screens ~ Weirs ~ Flap valves ~ Sluices	B-32	25 mesh zones have been used to represent viaduct pillars in the flood plain	Acceptable	
			B-33	In the proposed scenario, all the pillars use a level of 20mAOD. This is 7.5m above ground level which seems appropriate. In the base scenario, the proposed pillars are included but with a level change of 0m.	Acceptable	
			B-34	Notes have been used to describe which pillars are existing and which are proposed, which is helpful.	Acceptable	
	Mesh	~ Mesh optimisation ~ Infiltration surfaces ~ Initial conditions ~ Rainfall applied to the mesh. Use of sub catchments ~ 1D/2D linking: bank lines, manhole flood types, inline banks	B-35	The use of mesh zones with small footprints is causing the generation of small triangles (Figure 1) around the area of interest which could slow model run times.	Minor issue	In future models, simplify the geometry of 2D features (while retaining area) to avoid small triangles.
	Mesh modifications	~ Representation of roads and buildings	B-36	See watercourse structures above	Acceptable	
	Scenarios	~ Do minimum (baseline) ~ Do nothing ~ Do something	B-38	As the baseline model was constructed by JBA, only the described changes at the viaduct have been reviewed to avoid a conflict of interest.	Acceptable	
			B-39	Only Kingsway Bridge Extension scenario has been reviewed.	Acceptable	
	Run parameters and output data	~ Results generated ~ Temporal resolution of results ~ Run parameters	B-40	Results are saved every 5 minutes.	Acceptable	
			B-41	Timestep used was 4 seconds	Acceptable	
			B-42	Simulation was run for 30-hours which allows the full storm to pass in the area of interest.	Acceptable	
Runs						
	Model simulations	Model simulation runs ~ Existing (baseline) ~ Climate change ~ Sensitivity	B-136	Sims provided for the base and scenario for the 1, 1 +20 or 40% and 0.1% AEP events.	Acceptable	
			B-137	No sensitivity tests were provided.	Minor issue	Run sensitivity tests
Model results, interpretation, verification and stability						
Model results, interpretation, verification and stability	Model stability	~ zzd, eof, tlf ~ Model warnings and errors ~ Non-convergence ~ Mass balance ~ unrealistic oscillations (water level / flow / boundaries / dVol).	B-139	The base 0.1% AEP event ended incomplete.	Minor issue	
			B-140	Total mass error = 9.9 m3	Acceptable	
			B-141	Volume balance error = 0.9 %	Acceptable	
			B-142	There is some oscillation in the peak flows in the area of interest during a 0.1% AEP event (Figure 2)	Minor issue	Make updates to conveyance and bank lines to improve stability
			B-143	There is some significant oscillations in the out of bank flows in the area of interest during the 0.1% AEP event (figure 3)	Major issue	Make updates to conveyance and bank lines to improve stability. If appropriate, lower bank co-efficient
	Sensitivity testing	~ Suitability of sensitivity testing undertaken ~ Results & interpretation of sensitivity testing	B-144	Sensitivity tests not provided for review	Minor issue	Run sensitivity tests
	Calibration / performance		B-145	No model performance testing was provided for review.	Minor issue	Use the model report to provide commentary on the sensibility of predicted flooding.

Figure 1: Small triangles around pillars

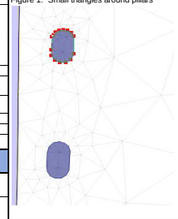


Figure 2: In channel flows ate TEAM 5156.1

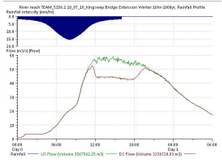
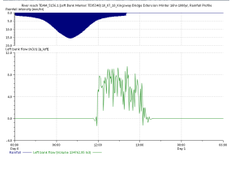


Figure 3: : Left bank flows at TEAM 5156.1



Acceptable
Acceptable - but does not meet best practice
Clarification required
Minor issue
Major issue
Recommendations

B	Review of Alledene Burn
Date of model	August 2018
Name of reviewer	Jenny Hill
Date of review	19/07/2019
Revision	v1
Applicable standards or guidance	
Nature of study watercourse(s)/constraints	Alledene Burn
Study objectives	The reporting states: Flood Risk Assessment (FRA) to support the Environmental Impact Assessment (EIA) and DCO Application for the A1 Birtley to Coal House Scheme. Three areas were identified for further modelling: - Hydraulic modelling to the River Team at Junction 67 to assess the impact of the extension of the Kingsway Viaduct. This modelling utilises an existing Environment Agency hydraulic model of the River Team constructed by JBA in 2014. - Hydraulic modelling of the Alledene Burn to understand the impact of the A1 realignment which will require either: a. the extension of the existing Alledene culvert and replacement of the existing section of the Burn; b. or daylighting of the existing culvert and replacement and realignment of the existing burn to accommodate a new viaduct over the existing railway line. - Hydraulic modelling of the surface water flood risk at Junction 66. **This review focusses on the *Alledene* Burn options**
Summary of 1st review	Minor issues have been identified. Generally the baseline model and option 1 are well constructed. There were some issues identified in Option 2 that could be impacting the results. Therefore it is recommended that this model is revised. As for all modelling studies, results of the sensitivity testing and model proving, should be provided for review.

Category	Detail	Prompts	ID	Comment	Suitability	Suggested actions
Data to be reviewed						
Data to be reviewed	Software	~ Versions	B-1	InfoWorks ICM v6	Acceptable	
	AEPs provided / reviewed		B-2	0.1% AEP model files and results	Acceptable	
	Scenarios provided / reviewed		B-3	Base, Option 1 ditch realignment, Option 1 realignment flow control, Option 2 and Option 3	Acceptable	
	Reports	~ Reference versions ~ Technical reporting ~ General reporting	B-4	FRA report with technical appendices	Acceptable	
Reporting						
Reporting	Reporting	~ Objectives ~ Constraints ~ Approach Justification (both model scale and structure scale) ~ Clarity ~ Assumptions	B-6	Objectives clearly stated in the reporting	Acceptable	
			B-7	Reporting generally clear and thorough	Acceptable	
			B-8	The scenarios are a bit unclear - more models provided than options discussed.	Clarification required	Check consistency between model and reporting provided for review.
			B-9	Results discussed	Acceptable	
General comments						
General comments	File organisation / naming convention	~ Scenarios ~ Naming ~ Flags	B-11	Scenarios and files well labelled although it was a bit confusing to establish what is the base scenario. One model network with all options as scenarios could have been a neater way to organise the options.	Acceptable - but does not meet best practice	In future, use one model network with a series of scenarios to represents options
			B-12	Flags have not been included although data has been flagged.	Acceptable - but does not meet best practice	In future include a CSV export of flags or a table of flags in the report
			B-13	Naming conventions are clear and descriptive	Acceptable	
			B-14	The DTM has not been provided which makes comparisons more difficult. A lidar clip has been made but it understood that the model DTM was a composite of three sources	Clarification required	In future, provide the DTM used
	Survey / topographic data	~ Age ~ Quality ~ Suitability	B-15	According to the report, Channel survey for Alledene Culvert was undertaken by Longdin and Browning in March 2018	Acceptable	
			B-16	Lidar data was supplemented by topo survey in the study area.	Acceptable	
	Other	~ Any significant missing data	B-17	NextMap 5m has been used to north east of the A1 which has partial or no Lidar coverage.	Acceptable	
General modelling approach						
General modelling approach	Model extents	~ Domain boundaries ~ Upstream/downstream boundaries ~ Potential downstream influences on water levels ~ Glass walling	B-19	The Alledene Burn is not mapped. However, a check against 1m Lidar suggests that the full length of the watercourse has been modelled in 1D with 2D linking.	Acceptable	
			B-20	A check on the maximum flood extent for the 0.1% AEP event showed no glass walling. Therefore the extent of the 2D model is considered appropriated.	Acceptable	
	Modelling approach	~ 1D / 2D / Linked ~ georeferenced (xy/gxy/2d links)	B-21	1D river reaches are linked to the 2D domain at banks.	Acceptable	
			B-22	Model is fully georeferenced	Acceptable	
	Application of hydrological estimates	~ Lumped / distributed ~ Applied to 1D or 2D domain ~ Lateral or point inflows ~ Consistency with reporting	B-23	Inflows have been applied at the upstream extent of the model	Acceptable	
			B-24	No lateral inflows are made, but it is not anticipated that these would be required for a watercourse of this size.	Acceptable	
			B-25	A downstream water level from the River Team for the same AEP has bee applied.	Acceptable	
InfoWorks ICM						
InfoWorks ICM	Model build	~ Hard bed / soft bed ~ Accuracy of modelled channel length	B-27	Hard bed/ soft bed not specified in the reporting	Clarification required	Specify if hard or soft bed levels were used..
			B-28	All river reach lengths have been calculated based on the length of the centre line and the centreline follows the channel indicated in the DTM well.	Acceptable	
	Watercourses	~ Deactivation ~ Interpolates ~ Bank level and DTM matchup ~ Bank coefficients ~ Baseflow	B-29	1D river reaches have been voided from the 2D zone to avoid double counting	Acceptable	
			B-30	Interpolates have been used excessively, with on interpolate every 10m. The interpolates have not caused any kinks in the conveyance plots so it is concluded that this is unlikely to impact results.	Acceptable - but does not meet best practice	
			B-31	Bank levels are interpolated between survey points rather than updated from the DTM. In some cases this can make the 1D bank 2m above the 2D level	Minor issue	In future, update bank levels from DTM in between surveyed cross sections if there is good confidence in the DTM levels.
			B-32	Discharge coefficient of 1 and modular limit of 0.8 consistently used.	Acceptable	
			B-33	No inflow applied to the river reach link as inflow hydrograph has been used.	Acceptable	
	Watercourse structures	~ Bridges ~ Culverts ~ Screens ~ Weirs ~ Flap valves ~ Sluices	B-34	7 culverts have been modelled. The data flags suggested 6 of these 7 have been modelled from survey data and 1 from As Built drawings. The size and roughness looks sensible although I would recommend that Manning's n is used for fluvial culverts over Colebrook White.	Acceptable	
			B-35	Culvert inlets and outlets consistently used with appropriate coefficients applied.	Acceptable	
			B-36	1 bridge has been modelled. The bridge opening (flagged as survey data) and deck look sensible compared to the river cross section. Bank coefficient and discharge coefficient have been left as default.	Acceptable	
			B-37	Summary on none modelled: flap valve, orifice, pump, screen, weirs	Acceptable	
	Mesh	~ Mesh optimisation ~ Infiltration surfaces ~ Initial conditions ~ Rainfall applied to the mesh. Use of sub catchments ~ 1D/2D linking: bank lines, manhole flood types, inline banks	B-38	Max triangle area was 20m^2 and minimum element was 10m^2 which is appropriate for a model of this scale. The general roughness was 0.035 which is within typical range.	Acceptable	
			B-39	No mesh warnings have were produced.	Acceptable	
			B-40	No rainfall was applied to the mesh, despite rainfall being applied in the run set up. It is understood that this was a fluvial model, and therefore the rainfall was not required. However, clarification on why rainfall files have been included is required.	Clarification required	Clarify if rainfall was an intended inflow to this model.
			B-41	1D-2D linking happens at bank lines which has been successfully achieved.	Acceptable	
	Mesh modifications	~ Representation of roads and buildings ~ Roughness	B-42	There is no representation of the conveyance in highways or the resistance caused by buildings.	Minor issue	Represent buildings, road, woodland, scrub as roughness zones in the 2D model.
			B-43	However, the raised highway embankment are represented in the DTM and therefore the mesh.	Acceptable	
	Scenarios	~ Do minimum (baseline) ~ Do nothing ~ Do something	B-44	Option 1a: Ditch re-alighment A Mesh Level Zone has been added over the existing watercourse. This adjusts the DTM elevation to give a minimum elevation of 16 mAOD and maximum elevation of 17.5 mAOD. A 3D view indicates that this level zone has lowered the existing embankment. There has been no modification of the ground levels to tie in worth the proposed bank heights. In some locations this can cause a 1m discrepancy between 1D and 2D bank level. This is not shown to impact 0.1% AEP results. The extended culvert has been connected to the proposed culvert with a break node. I would think it more likely that a manhole chamber would be installed to connect these. A manhole would have the potential to flood whereas a break node does not. However, the pipe is not surcharged at the peak of the 0.1% AEP event so this is not thought to impact results. The roughness of the proposed culvert has not been updated from default. The The new cross sections mainly look sensible but ARD1 - ARD4 all have left bank lower than the highest point, allowing for premature flooding (Figure 1). However, the max water level doesn't exceed left bank level in the 0.1% AEP event so this is not thought to impact results. The conveyance of the new cross sections is kinked at higher depths (Figure 2). However, the max water depth doesn't reach this level in the 0.1% AEP event so this is not thought to impact results.	Acceptable - but does not meet best practice	
			B-45	Option 1b: Ditch realignment + flow control A Mesh Level Zone has been added over the existing watercourse, as before (for comments see Option 1a). Pipe size of SA02USc.1 has been reduced from 1.35 to 1.2m in diameter. No other apparent changes made from Option 1a so same comments stand.	Acceptable - but does not meet best practice	
			B-46	Option 2: Viaduct A Mesh Level Zone has been added over the existing watercourse, as before (for comments see Option 1a). There is no apparent level change in the model to account for lowering the highway embankment which is present in the DTM JBA imported (no DTM provided). As a result, in some places there is a 9m miss match between the 1D and 2D bank levels modelled. In channel water levels do not exceed bank top during the 0.1% AEP so this is not impacting results. The open channel has been extended to replace the culvert. As per Option 1a, sections ARD1-ARD4 have lower left bank to the bank top (Figure 1). The same is true for ARD14-17 and ST02 US. Here channel flow does exceed bank top in the 0.1% AEP event (Figure 4) so this is impacting results. As per Option 1a, conveyance plots are kinked in at greater depths, which in this instance could impact the results as in channel depths exceed 1m.	Minor issue	Trim 1D cross sections to the highest point on the left bank. Update panel markers and channel roughness to smooth conveyance plots at deeper flows.
			B-47	Option 3: Viaduct There are no apparent changes between Options 2 and 3 so the same comments stand unless clarification of changes is provided.	Minor issue	Trim 1D cross sections to the highest point on the left bank. Update panel markers and channel roughness to smooth conveyance plots at deeper flows.
	Run parameters and output data	~ Results generated ~ Temporal resolution of results ~ Run parameters	B-48	Results saved at a 1minute interval which is high but acceptable.	Acceptable	
			B-49	Model is run for 12 hours which allows the full storm to pass	Acceptable	
			B-50	Run use a GPU card but don't link 1D and 2D calculations at minor timesteps.	Acceptable	

Figure 1: Bank too higher than left bank

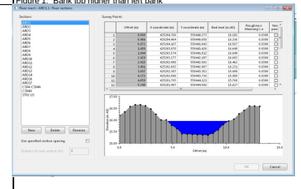


Figure 2: Kinked conveyance at higher depths

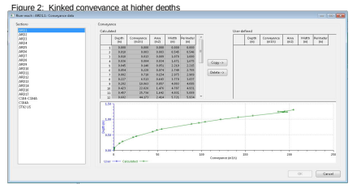


Figure 3: Bank level miss match

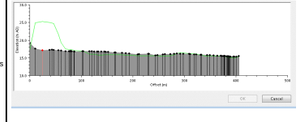
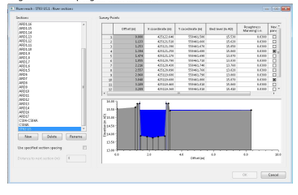


Figure 4: Bank top higher than left bank



Runs						
	Model simulations	Model simulation runs ~ Existing (baseline) ~ Climate change ~ Sensitivity	B-144	The model has been run and reviewed for the baseline and options. All results use the 0.1& AEP event.	Acceptable	
			B-145	There were no sensitivity tests provided.	Minor issue	Run sensitivity tests
Model results, interpretation, verification and stability						
Model results, interpretation, verification and stability	Model stability	~ zzd, eof, tlf ~ Model warnings and errors ~ Non-convergence ~ Mass balance ~ unrealistic oscillations (water level / flow / boundaries / dVol).	B-147	Total mass error = 0.0 m3	Acceptable	
			B-148	Volume balance error = 0.0 %	Acceptable	
			B-149	In channel flows raise and fall in a smooth hydrograph	Acceptable	
			B-150	Out of bank flows are generally stable	Acceptable	
			B-151	There is some instability at the downstream boundary due to the backing up of the River Team 0.1% AEP level but this is not impacting the results in the area of interest.	Acceptable	
	Sensitivity testing	~ Suitability of sensitivity testing undertaken ~ Results & interpretation of sensitivity testing	B-152	Sensitivity tests not provided for review	Minor issue	Run sensitivity tests
	Calibration / performance		B-153	No model performance testing was provided for review.	Minor issue	Use the model report to provide commentary on the sensibility of predicted flooding.

Acceptable
Acceptable - but does not meet best practice
Clarification required
Minor issue
Major issue
Recommendations

Appendix L Technical Note (Flood Modelling Response) to EA comments (29/10/2019)

TECHNICAL NOTE 1

DATE:	29 October 2019	**CONFIDENTIALITY:**	Public
SUBJECT:	Flood Modelling Response to EA Comments		
PROJECT:	A1 BCH	**AUTHOR:**	Chris Parker
CHECKED:		**APPROVED:**	Andy Smith

INTRODUCTION

This note has been prepared to provide a high level summary of the approach we propose to adopt to provide the clarifications requested by JBA on behalf of the Environment Agency to enable the approval of the hydraulic models that support the FRA for the A1 Birtley to Coal House scheme. This note is intended to be read in conjunction with the JBA review sheet that provides the comments in line, however this provides a high level summary.

Hydrology

- **Method Statement** - Fluvial modelling was not required at Longacre Dean due to the proposals not impacting the main channel. At Long acre dean the culvert is substantially lower than the road, with no flow route on to the A1 and no changes are proposed but the surface flow routes to the channel are of interest.
- **Flow estimation points and descriptors** - We will review the catchment descriptors used and adjust if required.
- **Flow estimation points and descriptors -** We will use NRFA V8 to cross check ReFH2 hydrology using the FEH statistical method.
- **Initial choice of methods** - The ReFH2 analysis was undertaken outside of ICM within the ReFH2 software. We will undertake a confirmatory check to ensure that the flows between the two approaches are similar.
- **Initial choice of methods, Justification of approach** - We will include the table and explanatory text showing the differences in FEH99 and FEH13 rainfall for the study area.
- **Direct rainfall modelling - 2D domain extent -** We will undertake a further run as a as a sensitivity check/analysis on the model downstream boundary condition
- **Direct rainfall modelling - Percentage runoff –** We will provide clarification on the approach adopted

Hydraulics River Team

- **General comments** – Modelling flags and DTM will be provided
- **Model stability - oscillations in the out of bank flow during a 0.1% AEP event** - we will update in the area of the scheme and rerun the model for the 1% AEP event, but nowhere else as the issue is likely to be related to instabilities in the wider model.

Hydraulics Allerdene Burn

- **Reporting** – Model scenarios will be clarified.
- **General Comments** – DTM will be provided.
- **Watercourse –** River cross sections trimmed to the highest elevation, panel markers added and bank levels updated from the DTM.
- **Sensitivity testing** – This will be undertaken and description of the tests and results added to the report.
- **Mesh modification – Roads and buildings, roughness** - This model covers a small area and this level of detail is not required in this instance.

TECHNICAL NOTE 1

DATE:	29 October 2019	**CONFIDENTIALITY:**	Public
SUBJECT:	Flood Modelling Response to EA Comments		
PROJECT:	A1 BCH	**AUTHOR:**	Chris Parker
CHECKED:		**APPROVED:**	Andy Smith

CONCLUSIONS

Please let myself know if you agree with our proposed approach to address the comments at your earliest convenience.

Andy Smith

Associate Director

[redacted]

Appendix M – Email Lucy Mo, Environment Agency (14/11/2019)

Smith, Andy

From: Mo, Lucy [redacted]
Sent: 14 November 2019 10:26
To: Smith, Andy
Subject: RE: A1 BCH FRA Model Comments

Hi Andy,

Please accept my apologies for the delay in getting back to you.

We have reviewed the technical note 'Flood Modelling Response to EA Comments, dated 29 October 2019, and we consider the proposed approach is acceptable in principle. However, the EA would need to either review the flood risk model prior to the DCO submission, or as part of the formal DCO submission to verify the model and to confirm that it is fit for purpose, and that there is no increase in flood risk. The comments outlined in previous model review are still applicable and will need to be addressed/reflected into your modelling work. For clarity, the EA have not yet signed off the proposed flood risk model for the A1 Birtley Coalhouse scheme.

Please give me a call if you have any questions.

Many thanks

Lucy

From: Smith, Andy [redacted]]
Sent: 31 October 2019 15:47
To: Mo, Lucy [redacted]
Subject: RE: A1 BCH FRA Model Comments

Lucy

Perfect, many thanks

Regards,
Andy

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

[redacted]

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

From: Mo, Lucy [redacted]
Sent: 31 October 2019 15:45
To: Smith, Andy [redacted]
Subject: RE: A1 BCH FRA Model Comments

Hi Andy,
I've spoken to Caroline, we should be able to review and send you our comments by Wed 13 November at the latest.

Many thanks
Lucy

From: Smith, Andy [redacted]
Sent: 29 October 2019 11:46
To: Mo, Lucy [redacted]
Cc: Rothwell, Jodie [redacted]; Parker, Chris [redacted]
Subject: RE: A1 BCH FRA Model Comments

Lucy,

As we discussed please find attached a high level summary of the approach that we propose to undertake in addressing the comments from JBA on the A1 BCH hydraulic models, this is only a page long so hopefully short enough for a quick review.

Regards,
Andy

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

[redacted]

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

From: Mo, Lucy [redacted]
Sent: 22 October 2019 11:58
To: Smith, Andy [redacted]
Subject: RE: A1 BCH FRA Model Comments

Hi Andy,

I've just heard back from our modelling team. It is estimated that the review of the spreadsheet will cost approximately £1400 (14 hours) plus VAT, and will be completed by Friday 22 November at the latest (the completion date is based on receiving confirmation from yourself to proceed with this work no later than Thursday 24 October).

Therefore, please let me know if you would like to proceed with work. We currently have a contract of 75 hours in place. This work could be completed under the current contract and invoicing details.

Please do not hesitate to contact me if you have any questions.

Many thanks

Lucy

From: Smith, Andy [redacted]
Sent: 21 October 2019 13:20
To: Mo, Lucy [redacted]

Cc: Rothwell, Jodie [redacted]
Subject: Re: A1 BCH FRA Model Comments

Lucy

It was submitted in August to the inspector and ideally needs to be resolved by December.

Does a dco not work in the same manner as a planning application in that there are no costs to recover in this period?

Regards
Andy

0117 930 2082
0758 5795930

From: Mo, Lucy [redacted]
Sent: Monday, October 21, 2019 10:19:12 AM
To: Smith, Andy [redacted]
Subject: RE: A1 BCH FRA Model Comments

Hi Andy,

It's great to hear from you. I hope you weren't working too much over the weekend.

We'll need to recover our costs on this work. So I've forwarded the spreadsheet onto our modelling team to get an idea of estimated costs and timescales. I'll confirm the costs and timescales once I hear back from them.

In terms of the NSIP, do you by any chance know when the application was/is submitted to the Planning Inspector?

Many thanks

Lucy

From: Smith, Andy [redacted]
Sent: 20 October 2019 21:04
To: Mo, Lucy [redacted]
Cc: Ashworth, Nicola [redacted] Rothwell, Jodie [redacted]
Subject: A1 BCH FRA Model Comments

Lucy,

I hope that you had a great weekend, apologies for the delay in getting our responses on the JBA review of our hydraulic modelling back to you, if you could arrange for Caroline to review and let me know whether you all agree with our proposed approach that would be great.

Regards,
Andy

Andy Smith ***BSc MSc C.WEM CSci CEnv***
Associate Director
Please note Monday is my non working day

WSP

[redacted]

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Appendix N – Meeting Minutes Andrew Softley, Andrew Haysey, Janet Charlton, Peter Burrows and Richard Wales, Gateshead Council (12/03/2019)

MEETING NOTES

PROJECT NUMBER	70041947	**MEETING DATE**	12th March 2019 (13:00-15:00)
PROJECT NAME	A1 Birtley to Coal House	**VENUE**	Gateshead Civic Centre
CLIENT	Highways England	**RECORDED BY**	PH
MEETING SUBJECT	DCO Meeting 3 with Gateshead Council to discuss Environmental Mitigation		

PRESENT	Andrew Softley (AS - Gateshead Council), Andrew Haysey (AH - Gateshead Council), Janet Charlton (JC - Gateshead Council), Peter Burrows (PB - Gateshead Council), Richard Wales (RW - Highways England); Vicky Moran (VM -WSP); Irfan Akram (IA - WSP), Peter Henson (PH - WSP), Nicola Ashworth (NA - WSP), Jodie Rothwell (JR - WSP), Andy Smith (ASM - WSP), Sarah Proctor (SP - WSP), Sarah Wilson (SW - WSP) Elizabeth Murray (EM - WSP -Dialled In).
APOLOGIES	Alison Murray
DISTRIBUTION	As above
CONFIDENTIALITY	**Restricted**

ITEM	SUBJECT	ACTION	DUE
1	**Introductions (ALL)**		
2	**Scheme Overview – Irfan Akram (IA)** IA provided an overview of the Scheme and tabled Scheme drawings. Points to note :- • Proposed relaxation for a 1in12 gradient access ramp to the Northdene footbridge. Standard would be 1in20. – Post meeting update – Information has been provided to Gateshead and 1in12 gradient is accepted by Gateshead as sufficient. • Gantries will be provided along the scheme, although at this stage, their locations along the scheme are not fixed to allow flexibility in later design stages.		

	• Lighting of the underpass will be provided and will be sensitive to the bats surveyed using the underpass. Lights will be provided with sensors, that will not trigger when the bats pass them. There is still some ongoing discussion over who will eventually own/maintain the lighting scheme of the underpass (HE/Gateshead). • Allerdene Bridge has two options, Viaduct option (6 or 7 span) or an embankment option. **AS** noted that Gateshead preferred the viaduct option over the embankment option. **JC** asked for clarity and plans with regards to any proposed vegetation clearance. – Plans were tabled but JC was welcome to take the copies away to review post meeting. **JC** asked what gradients the proposed embankments on the scheme would be – IA stated that the majority of the Scheme had embankments at a 1in3 gradient, with only one section providing a 1in2.5 gradient. IA stated that these gradients were achieved by widening the Scheme, in the most part, away from sensitive residential areas. **JC** Asked for clarrification with regards to sprayed concrete slopes / NA confirmed that sprayed concrete slopes were not proposed for the Scheme.		
3	**DCO Headline Programme / Update - Vicky Moran (VM)** VM - Planned submission now moved back 3 to 4 weeks from previous proposed submission data – planned submission date is now mid May. VM - Gateshead will recieve several documents as part of the submission, one of which will require Gateshead Council to confirm that they have found the consultation through the planning stage adequate.		

	VM provided two tables with regards to how the Scheme has changed as a result of consultation (tables attached to these notes). VM introduced the next part of the meeting, which aimed to clarify how the Scheme has been changed / answers to Gateshead Council's Consultation responses on environmental issues.		
4	**Environment** **EIA Progress Update - Nicola Ashworth (NA)** The EIA has been undertaken in 2018. The EIA was updated in October 2018 as a result of the proposed Allerdene Bridge options – the EIA considers both options. First draft of the EIA was submitted to Highways England in December 2018 and the second draft is to be submitted in March 2019. Agreed that NA would issue revised Biodiversity, Landscape, Water and Cultural Heritage Chapters and Cumualtive Long List to Gateshead for Comment – this approach was agreed to by RW (Highways England). AS raised concerns regarding maintaining the 'openess' of the green belt. VM stated that the NPPF defines development and its impact on openess is either 'appropriate' or 'inappropriate'. Given the strategic nature of the development and the Scheme's support by local, regional and national policy it is considered appropriate development. Land will also be replanted so during operation there will be no change in openess.	NA	

	AS agreed that the greenbelt approach was sensible, particularly where widening into the greenbelt was being proposed to negate impacts on residents at Crathie etc. AS also stated that he had discussed the Scheme with Gateshead Council ecology teams and that they were happy with the minimalist impact of the design around sensitive areas such as Longacre Wood. **Landscape and Visual – Sarah Wilson (SW)** SW presented the mitigation proposed for Landscape and visual impacts of the scheme – a copy of the presentation is attached to minutes for record. JC raised if there was going to be a 'false cutting' as part of the Embankment Option for Allerdene Bridge to minimise noise impacts. Confirmed that no 'false cutting' was proposed due to the Scheme being upgraded. The Scheme will include noise reducing surfacing over the full length of work which will decrease noise levels. An acoustic barrier will be provided along the Highway boundary from just north-west of the intersection with Long Bank to the section of the roadway adjacent to Lockwood Avenue and an additional 5m of noise proof fencing will be provided at Lady Park to tie in with the previous Coal House to Metrocentre scheme. **Andrew Haysey (AH) left the meeting.** JC asked if any photomontages were to be provided showing the impact of gantries on views of Angel of the North. VM stated that there was a fly through video of the scheme produced for the consultation exercise that can be shared. 2018 'Fly Through' can be viewed here : https://www.youtube.com/watch?v=0PqgT4NB-v8&feature=youtu.be JC confirmed that the Angel of the North is potentially going to be listed as a Scheduled Monument (SM).	IA	

	IA agreed to look at the design and location of the gantries with an aim of being sympathetic to the views of the Angel of the North. **Biodiversity – Sarah Proctor (SP)** SP presented the mitigation proposed for biodiversity impacts of the scheme – a copy of the presentation is attached to minutes for record. SP Confirmed that bat assembelages have been recorded along the scheme. This includes multiple species utilising the underpass at Bowes Railway as a commuting route and also a roost of a common and widespread species at the Eighton Lodge underbridge. The proposed lighting scheme has been designed to not impact on bats. Great Crested Newts – DNA samples were found in the 2017 survey but not found in the 2018 Survey. Wintering birds recorded (lapwings) within the bird survey area however, given the availability of habitat within the wider area these arent considered significant. Mitigation will include the creation of compensatory habitat – including new green corridors along the south of the Scheme footprint. Mitigation has been designed to ensure no impacts on the favourable conservation staus of European Protect Species – including a licence application for Bats. Overall there will not be a Net Gain in Biodiversity. **Cultural Herritage – Elizabeth Murray (EM)** EM presented the mitigation proposed for Cultural Herritage impacts of the scheme.		

	There will be direct physical impact to Bowes Railway with impacts to the importance due to loss of features, and temporary loss of key views. Impact on earthwork remains of ridge and furrow to the west of Bowes Incline Hotel. Potential impacts on remains relating to Lamesley Waggonway, Lamesley Quarry and Gateshead to Chester-le-street Roman road. Angel of the North was included as a heritage asset, there are potential beneficial impacts to the setting. JC confirmed that the Angel of the North is seeking to become a SM. Mitigation proposed includes a walkover of Longbank Bridleway and photographic survey of retaining wall of Bowes Railway SM. Archaeological trenching at proposed foundation locations for Longbank Bridleway Underpass. Bowes Railway retaining wall to be demolished in part works to be carried out by a suitably qualified archaeologist. Enhancement to offset the harm to the SM including: repair of an equivalent length of wall and the installation of an interpretation panel near to Bowes Railway SM and the Longbank Bridleway Underpass. Results of geophysical survey to be used to develop a programme of mitigation in discussion with Tyne and Wear AO. An archaeological topographical survey will be carried out of the ridge and furrow earthworks. **Water – Andy Smith (ASM)**	ASM	

ASM presented the mitigation proposed for water impacts of the scheme – a copy of the presentation is attached to minutes for record.

ASM will send through responses to all consultation comments seperately as they would take too long to go through in the meeting. ASM suggested his presentation would cover the main issues.

Road Drainage and the Water Environment ES Chapter supported by:

- Flood Risk Assessment
    - Hydraulic Modelling Report
    - Surface Water Drainage Strategy (models and details previously submitted for approval)
    - Water Framework Directive Assessment

Surface water drainage strategy (Suds) including betterment – removal of uncontrolled surface water discharge direct to the River Team and its tributaries :

- Hydrocarbon interceptors
- Attenuation storage
- Sediment vortex at Longacre Dean

Two options have been proposed with respect to the Allerdene Bridge replacement and the modifications to the Allerdene Burn and Culvert :

- Daylighting of the culvert (Allerdene viaduct option)
- New realigned two stage channel (Allerdene embankment option)

Permits required - Ordinary Watercourse Consent

PB and **JC** stated that they liked the viaduct scheme, and would like to see the channel opened up. Could the design be such that the water looked more naturally flowing with pools and riffles included?

ASM stated that this area could be made into a more natural setting, however the route is confined to the area shown on the plans, due to the location of the NGN site and the access road to Allerdene Bridge /

	Network Rail. ASM discussed that this could be considered at detailed design and a statement to this effect included in the ES. **PB** confirmed that the Team Valley Flood Alleviation Scheme Funding (TVFAS) had slowed down, so that any mitiagtion proposed by TVFAS was a, not guaranteed and b, not likely to happen within the next 2/3 years. There will be little overlap between our proposed mitigation and TVFAS Mitigation (likely that our scheme would be delivered first).		
5	**AOB & ACTIONS** **NA confirmed the actions as follows :** • AS to reissue water chapter figures to Gateshead / EA. • NA to reissue relevant draft ES Chapters to Gateshead. • IA to consider gantries and their placement on the scheme to minimiase visual impact on the Angel of the North. • WSP to include sentence in the ES on Historic England's aim to list the Angel of the North as a Scheduled Monument. • WSP to send the landscape plan to inform Gateshead Council what planting has been proposed on Gateshead Council land and to gain agreement that they will manage these areas going forwards. • ASM to send responses to Gateshead Consultation questions raised. • WSP to reissue the long list of developments used in the assessment of cumulative effects. • VM to share Draft DCO: o Work Packages o Requirements (DCO Conditions) o Approach to discharge of conditions o SOCG with Gateshead.		