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Environment Agency

The Planning Inspectorate
Room 3/19A
Temple Quay House (2 The Square)
Temple Quay
Bristol
Avon
BS1 6PN

Our ref: NA/2020/115279/03-L01
Your ref: TR010059

Date: 1 April 2021

Dear Sir/Madam

A1 IN NORTHUMBERLAND: MORPETH TO ELLINGHAM DEVELOPMENT CONSENT ORDER (DCO): DEADLINE 4 SUBMISSIONS AND EXA WRITTEN QUESTIONS.

Please find enclosed our written representations for this Development Consent Order (DCO) on behalf of the Environment Agency.

Also enclosed are our comments to the Examining Authority's written questions and requests for information (ExQ2) Issued on 19 March 2021 and Rule 17 Letter - Request for Further Information issued on 30 March 2021 [Appendix B].

If you have any questions or require any clarification on the points below, please do not hesitate to contact me.

Yours sincerely

[redacted]
Planning Technical Specialist - Sustainable Places
Direct dial 020847 46524
Direct e-mail [redacted]@environment-agency.gov.uk

A1 IN Northumberland: Morpeth to Ellingham DCO Application Planning Inspectorate Reference: TR010059

Summary of Written Representations
On behalf of the Environment Agency (EA)

Deadline 4 Change request Environment Statement Addendums
The proposed activities outlined in the Deadline 4 Environmental Statement Addendums are considered to be a **significant variation** to the original proposals. If implemented as outlined, it will result in the loss of and/or significant damage to the riparian and in-channel habitats within the DCO boundary.

We are dissatisfied with the level of assessment and compensation for the hard engineering rock amour proposed on the northern bank. The Coquet River Site of Special Scientific Interest (SSSI) has been formally recognised as a Habitat of Principal Importance (HoPI). The mitigation measures outlined in the Deadline 4 Environmental Statement Addendums only partially lessen the impact, and cannot be viewed as an appropriate alternative to a naturally functioning system.

We consider the impact to be major adverse over the lifetime of the scheme, and therefore consider the need for compensation to be essential. A compensation scheme must be developed recognising that the proposals will lead to the local deterioration of a largely unmodified priority river SSSI.

The Flood Risk Assessment (FRA) must be updated to reflect the latest proposals, including the flood risk implications of the proposed temporary bridge in certain scenarios. We also expect the proposed computational modelling to be referenced within the FRA along with discussions on any issues it raises.

6.36 Environmental Statement Addendum: Earthworks Amendments - Rev 1 [REP4-061]
The changes in the proposed earthworks will result in substantial dewatering of groundwater and require a water resources abstraction licence from the Environment Agency (EA). The dewatering assessment should consider impacts to unknown licensed and private water supplies and groundwater dependent designations such as peat bogs if present.

Borrow pit 4 is to be retained as a detention pond. It was noted that the drainage strategy stated that all detention ponds were to be lined. Therefore, the dewatering should not be an issue long term but the documents submitted do not make this clear. However the lining proposals need to be provided to convert the borrow pit 4 into a detention basin or else long term dewatering will be necessary and may require licensing. Borrow pits 1 and 2 will be backfilled to surface with unknown methodology and it is unclear what will be done with borrow pits 3 and 5. As such further information is required.

The site investigation boreholes do not record peat. But all borrow pits have base elevations below groundwater level in the bedrock. A plan which identifies the borrow pits, which require dewatering and daily quantity and duration/ restoration proposals should be submitted as part of the DCO submission.

6.38 Environmental Statement Addendum: Stabilisation Works for Change Request

The Applicant fails to address the local severe adverse effect of rock armouring, loss of natural riverbank which forms an important component of the HoPI and therefore fails to provide mitigation or compensation. The current mitigation only reflects the loss of broadleaved woodland, and does not acknowledge the riparian zone which is being lost and is classed as a different habitat type with different functions and value that is likely found on the banks and around the wetted channel. This is a quality element and therefore a key consideration under the Water Framework Directive (WFD).

We have also requested further clarity regarding a number of matters and amendments to the document narrative including Appendix D Valley Slope Instability and Appendix F (Preliminary Scour Assessment).

6.40 Environmental Statement Addendum: Southern Access Works for Change Request [REP4-064]

We have requested further clarity regarding a number of matters and amendments to the document narrative**.**

We consider the combined effects of the proposed engineering works, either during construction or operation have not been fully considered by the Applicant.

Further information is required in terms of groundwater flow and level and additional mitigation should also be provided in the event that groundwater conditions are found to be different. Any piling required should be spaced piles to mitigate impact of piling and to maintain groundwater flowpaths. Where groundwater flow is obstructed and or changed, additional drainage to divert groundwater around the pilings to its natural discharge point will be required to prevent groundwater level rising and causing flooding and or slope instability

6.28 Biodiversity No Net Loss Assessment for the Scheme (Tracked) - Rev 1a [REP4-059]

We are pleased to see a re-evaluation and drastic reduction in the reported loss of watercourses associated with Parts A and B of the scheme. However, there appears to be a heavy reliance on the planting of woodland as mitigation or compensation for the loss of watercourse. Tree planting is not like for like compensation. This is often described as ‘wet woodland’ creation, which we believe is an incorrect definition of the habitat created and should be reclassified as riparian woodland, unless this woodland is adjacent to a watercourse. Any

woodland created away from the watercourse should be correctly recorded as broadleaved woodland.

Section 4.1.4 states that 'the Scheme does demonstrate a measurable overall gain for priority woodland and wetland habitats.' We question these claims as we believe wetland habitats are referring to the 'marginal planting' within the detention basins. These are required as part of the drainage scheme and planting them with wetland species is a best practice technique. This cannot be claimed as mitigation or compensation.

We would welcome a package of works that would provide meaningful compensation for the loss of watercourses. We would encourage opportunities to compensate for this loss with equivalent river based units. Where river units or length are lost, common compensation measures could include the re-naturalising and re-meandering of heavily modified and straightened watercourses.

6.32 Environmental Impact Assessment - River Coquet Geomorphology Modelling Assessment) [REP3-009]
This assessment must be updated to reflect the activities outlined in the Deadline 4 Change Request Environmental Statement Addendums.

7.9.1.1 Annex A - Culvert Mitigation Strategy - Rev 0 [REP1-066]
It is noted that the culvert mitigation strategy has been updated since deadline 1. We disagree that the 'new wetland' (sometimes referred to as marginal planting) can be claimed as mitigation. Therefore, the Applicant is misrepresenting the schemes benefits. Detention basins and SuDS are required as part of the drainage scheme and planting them with wetland species is a best practice technique. However, this cannot be claimed as a wetland and be provided as mitigation for the culverts.

The Applicant is not following the industry best practice for the culverts. We wish to see the design of the new channel influenced by some of the ideas presented in the River Restoration Centre Design Manual.

7.3 Outline Construction Environmental Management Plan - Rev 3 (CEMP) [REP4-013]
We would welcome further details of how the Applicant is going to compensate for the loss of 86m to the River Coquets riparian and marginal habitat

We welcome the introduction of marginal planting as part of the road drainage system for the scheme. However, we would like confirmation from the Applicant that this marginal planting of detention basins has not been 'double counted', and classed as mitigation and/or compensation for the loss of watercourse due to the culverting and introduction of road drainage outfalls into the riparian environment.

We have also reiterated our comments outlined in our response dated 12 March 2021 (reference NA/2020/115170/02-L01) which has not been addressed or incorporated into the CEMP by the Applicant.

Deadline 4 Submission - 7.17.6 Written Summaries of the Applicant's Oral Submissions to Hearings: Appendix F - Proposed Woodland and Marginal Planting Plan (Part A and B) [REP4-031]
This clearly shows the vast majority of the woodland being planted as mitigation and compensation for the impact on the watercourse is neither 'wet woodland' as originally claimed nor riparian and is in fact broadleaf woodland. This habitat is not a water dependant habitat, has a different form and function and does not improve the watercourses affected by the scheme as the vast majority of this planting is disconnected from the watercourses. Therefore, we do not believe the proposals put forward by the Applicant adequately mitigates or compensates for the disturbance and damage to, and the loss of watercourses associated with the scheme.

Water Framework Directive (WFD) Addendum [REP4-068]
The scheme will result in significant disturbance to the water environment resulting from both the temporary works and loss of habitat due to the engineered bank stabilisation solution that is being proposed as part of the amendments to the scheme. This said, we do agree that it is unlikely the scheme will result in a deterioration to the WFD status of the Coquet from Forest Burn to Tidal Limit waterbody.

However we do not agree with paragraph 5.1.5 which suggests rock armour will provide adequate and suitable mitigation for the loss of 62m of riparian marginal habitat. The action of replacing a natural riparian marginal habitat with an engineered one will result in the loss of valuable riparian habitat. Appropriate compensation for the loss of this riparian habitat has not yet been provided. We would welcome further details of how the applicant is going to compensate for this loss of 86m of river bank.

Statement of Common Ground [REP4-018]
We are working with the Applicant to address the issues outlined in this letter and in our previous correspondence.

Draft DCO
We require further discussion with the Applicant before we can comment on the acceptability of the Protective Provisions and the Requirements. The proposed changes submitted on 12 March 2021 and if accepted, may have implications on the Protective Provisions and Requirements required for the DCO

A1 IN Northumberland: Morpeth to Ellingham DCO Application Planning Inspectorate Reference:

Written Representations
On behalf of the Environment Agency (EA)

Deadline 4 Change request Environment Statement Addendums [REP4-058, REP4-060 REP4-061 REP4-062 REP4-063 REP4-064 REP4-065]

Environmental Impacts and Compensation Measures
The proposed activities outlined in the Deadline 4 Environmental Statement Addendums are considered to be a **significant variation** to the original proposals. It will result in the loss of and/or significant damage to the riparian and in-channel habitats within the DCO boundary. The mitigation measures outlined in 6.40 Environmental Statement Addendum: Southern Access Works - Rev 1 [REP4-064] only partially lessen the impact, and cannot be viewed as an appropriate alternative to a naturally functioning system.

We are dissatisfied with the level of assessment and compensation for the hard engineering rock amour proposed on the north and south banks. The River Coquet and Coquet Valley Woodland Site of Special Scientific Interest (SSSI) has been formally recognised as a Habitat of Principal Importance (HoPI). This habitat is identified under England's Biodiversity Strategy (EBS) and is listed under section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. Section 40 (Duty to conserve biodiversity) of the NERC Act 2006 states that a public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity. This approach is also supported by paragraphs 5.20 – 5.38 National Policy Statement for National Networks which states that Applicant's should ensure that the environmental statement clearly sets out any likely significant effects on internationally, nationally and locally designated sites of ecological or geological conservation importance on protected species and on habitats and other species identified as being of principal importance for the conservation of biodiversity and that development should avoid significant harm to biodiversity and geological conservation interests, including through mitigation and consideration of reasonable alternatives.

The proposals outlined in the 6.40 Environmental Statement Addendum: Southern Access Works - Rev 1 [REP4-064] will result in the local deterioration of a largely unmodified section of river SSSI. River SSSIs represent the best examples of the different types of rivers within England. The multiple pressures our rivers are under means that only a small percentage of England's rivers are still considered unmodified.

It is unclear how the Applicant considers the ancient semi-natural woodland within the SSSI as irreplaceable, equating its loss as a major adverse impact. Yet the

loss of similar habitats within the riparian corridor, combined with the loss of aquatic habitat and the fixing and simplification of the channel as a minor adverse impact. They are both finite, vulnerable resources, and we consider it unacceptable for the Applicant to conclude that the proposals submitted have a minor to negligible adverse impact, and therefore do not require compensatory provision.

Geomorphology

The Applicant has failed to take into account the medium to long term impacts of the proposals. Specifically, the rock armouring of the riverbanks will permanently fix the riverbed and banks, restricting and influencing the form and function of the river well past 125 year lifetime of the bridge.

The three Geomorphological Assessments (6.32 Environmental Impact Assessment - River Coquet Geomorphology Modelling Assessment [REP3-009], 6.7 Environmental Statement - Appendix 10.7 Geomorphology Assessment - River Coquet Parameter 10 - Part A [APP-260], and 6.7 Environmental Statement - Appendix 10.4 Geomorphology Assessment - River Coquet Part – A [APP-257]) describe a stable, bedrock controlled, reasonably uniform channel. If the rock armour is installed in a fashion that mimics the natural bank profile, and does not extend into the channel, then as reported, the impact on current flow and sediment regime will be largely limited. However rivers are rarely stable for extended period's time, and generally exhibit dynamic equilibrium. 6.7 Environmental Statement – Appendix 10.7 Geomorphology Assessment – River Coquet Parameter 10 - Part A [APP-260] and the Valley Slope Assessment within 6.38 Environmental Statement Addendum: Stabilisation Works - Rev 1 [REP4-063] both record slope processes that will and have actively influenced the channel. These include rock falls, slope failures, landslides and individual large boulders. When these process reach the channel they drive change, add complexity, and alter flow and sediment dynamics.

The large boulders recorded within the study reach are an example of these random events. These boulders provide pockets of reduced flow velocity, and therefore provide the conditions for the deposition of sediment. Depositional features within a bedrock dominated channel are infrequent. These areas provide habitat niches for invertebrates, fish, aquatic and terrestrial plants. Without the random supply of material from the surrounding gorge slopes they wouldn't occur.

There is also evidence that larger slope failures play a role in influencing channel change and diversity. Towards the bottom end of the study reach, the river followed a more north course, before it was forced southwards by a landslip. Such occurrences are described as threshold events. These events temporally override the dominant control mechanism. By their nature they add sediment to the channel (fine and coarse) diversify flow conditions, and support the development of features such as bars, riffles etc that are generally absent or rare within bedrock dominated channels.

By only considering the short term impacts of the rock armouring, the River Coquet Geomorphology Modelling Assessment [REP3-009] fails to consider these medium and long term drivers that add diversity to a bed rock dominated channel.

The proposals associated with the stabilisation works and southern access will decouple the slopes from the channel, thereby preventing the processes described above from happening. They will also significantly restrict how the channel responds if any of these slope process occur up or downstream of the rock armoured reach.

The rock armour, will permanently fix the river channel and bed in its current position. The slope stabilisation piles will decouple the channel from the gorge sides, thereby preventing the supply of sediment to the channel. Flow and channel features will become these varied, thereby reducing the number and diversity of the species able to utilise the area. The proposals will also influence channel response and development beyond the footprint of the works (both up and downstream), thereby extending the potential range of deterioration.

By restricting or preventing these infrequent, yet clearly active slope processes, and by preventing the river from responding to them, there will be a progressive, long term deterioration of the channel, and the species it supports.

We welcome the commitment to undertake a quantitative geomorphological dynamics assessment, to assess potential changes in sediment transport, erosion and deposition, using additional topographic survey data and further hydraulic analysis. We would request that this enhanced undertaking includes a fresh assessment of the mobile sediment within the study reach. An assessment on the role the gorge plays in influencing channel planform and complexity through the supply of sediment either through landslips or large boulders is also requested. An assessment on the role the gorge plays in influencing channel planform and complexity through the supply of sediment either through landslips or large boulders is also requested.

The Applicant fails to adequately address the local yet permanent, moderate adverse effect of the river training works. Bank and bed features, including riparian vegetation, would be lost within the footprint of the temporary works. There may also be a requirement to ‘key in’ the temporary river training works to the bed, which may include removal of some bed material (including bedrock) to create a level surface on which to construct the retaining wall. The package of mitigation measures for the slope stabilisation and southern access have been updated, and we welcome this. However we believe delivering the measures will be challenging, and they will only partially lessen the impact, and cannot be viewed as an alternative to a naturally functioning system.

We consider the impact to be major adverse over the lifetime of the scheme, and therefore consider the need for compensation to be essential. A compensation scheme must be developed recognising that the proposals will lead to the local deterioration of a largely unmodified priority river SSSI.

Flood Risk
If the amendments are accepted we would expect to see the Flood Risk Assessment to be updated to reflect the latest proposals. More specifically, the flood risk implications of the proposed temporary bridge in certain scenarios such as high flow events, blockages and the potential for extreme events (e.g. for it to be washed downstream)

We are also expecting the proposed computational modelling to be referenced within the Flood Risk Assessment along with discussions on any issues it raises. The previous methods of assessment (Manning's equation) would not be suitable for assessing the risk of the temporary bridge crossing.

6.36 Environmental Statement Addendum: Earthworks Amendments - Rev 1 [REP4-061]
Groundwater
The changes in the proposed earthworks will result in substantial dewatering of groundwater. Whilst limited dewatering is exempt, the quantities that have been assessed in this case may be greater than those of the dewatering exemption, and as such may require a water resources abstraction licence from the Environment Agency (EA).

The dewatering assessment should consider impacts to unknown licensed and private water supplies and groundwater dependent designations such as peat bogs if present. All borrow pits are below groundwater level but only inflows (for dewatering) have been calculated for 4 and 5 which range between 1835 m3/d – 3670m3/d.

Equally the duration of the dewatering may determine whether it is an activity exempt from water resources abstraction licensing. Borrow pit 4 is to be retained as a detention pond. It was noted that the drainage strategy stated that all detention ponds were to be lined. Therefore, the dewatering should not be an issue long term but the documents submitted do not make this clear. However the lining proposals need to be provided to convert the borrow pit 4 into a detention basin or else long term dewatering will be necessary and may require licensing. Borrow pits 1 and 2 will be backfilled to surface with unknown methodology and it is unclear what will be done with borrow pits 3 and 5. As such further information is required.

The site investigation boreholes do not record peat. But all borrow pits have base elevations below groundwater level in the bedrock. A plan which identifies the

borrow pits, which require dewatering and daily quantity and duration/ restoration proposals should be submitted as part of the DCO submission.

6.38 Environmental Statement Addendum: Stabilisation Works for Change Request [REP4-063]

Biodiversity

Section 8.8.4 of '6.38 Environmental Statement Addendum: Stabilisation Works - Rev 1' [REP4-063] and section 7.8.4 of '6.40 Environmental Statement Addendum: Southern Access Works - Rev 1' [REP4-064] currently suggest the loss of 131m of HoPI river bank (north and south combined). The permanent loss of riverbank habitat is a result of construction of the temporary / permanent scour protection measures, and the loss of riverbank habitat represents an adverse impact to an ecological receptor of National importance as stated in section 8.10.6 of this document and paragraph 7.10.6 of 6.40 Environmental Statement Addendum: Southern Access Works - Rev 1 [REP4-064].

Although the Applicant has stated that this is unlikely to affect the integrity of the SSSI or its ecological function as a whole due to the replanting of woodland, this does not address the loss of a specific water dependant habitat that is a major and significant component of the HoPI and a habitat. The loss of riparian habitat, one of the major components of the HoPI cannot be mitigated for by terrestrial block woodland planting disconnected from the watercourse. We do not agree that the banks 'would naturally become vegetated over time' as stated in section 8.9.7 of this document, and be of the same ecological value when viewed locally. The Applicant has failed to differentiate between the SSSI woodland and the HoPI river and only proposes compensation for the SSSI.

The structure of the riparian zone is also a consideration within the Water Framework Directive (WFD) under the morphology assessment. The inclusion of rock amour will result in the loss of natural vegetation interaction with the channel, and natural sedimentation process between the banks and the channel, impacting morphology and natural structure. 6.7 Environmental Statement - Appendix 10.2 Water Framework Directive Assessment Part A [APP-255] states that the 'loss of riparian habitat due to vegetation clearance within the construction zone results in 'consequential impacts on reduced roughness, increased flow velocity, stream power, and the ability for the river to erode and transport sediment.'

In terms of mitigation, the Applicant is proposing to 'reinstate vegetation, with an appropriate native species mix, as soon as practicable.' 6.38 Environmental Statement Addendum: Stabilisation Works - Rev 1' [REP4-063], '6.40 Environmental Statement Addendum: Southern Access Works - Rev 1' [REP4-064], and 6.7 Environmental Statement - Appendix 10.2 Water Framework Directive Assessment Part A [APP-255] state that the rock armour will have the same ecological potential as the near natural northern river bank. However, they

do not appear to have included any mitigation or compensation for this limiting factor.

Furthermore, a second large structure above the banks will likely reduce the direct light available to the vegetation that is currently present or will potentially establish post construction. This reduction in direct light has the potential to change the habitat suitability for large trees and may also limit the possibility for other dominant native species to develop. In turn, this may leave opportunities for undesirable species such as invasive non-native species to colonise the area, potentially reducing the biodiversity.

The assessment claims that the rock armour will vegetate. However, it does not appear to be justified or evidenced. On a modified bank where a large proportion of banks will be replaced with a hard surface, where silt and other potential substrates are deposited around the rock armour to act as a growing medium, it is possible that it will equally replace the existing natural substrate that support the plant communities present. It is likely that the rock armour will support a different vegetation community, likely taller ruderals that would be able to establish lower down and within the crevices and grow up taller through the gaps. This should be acknowledged, assessed and suitable mitigation or compensation provided.

We would like clarity to whether the presence of trees near the rock armour would be acceptable from an engineering perspective, due to the impacts roots may have to the stability. If not, this should be factored into the assessment? Furthermore, in both the north bank and southern bank assessments, a single example of the existing riverbank is given in image 1. Image 1 shows some of the existing rocky banks of the southern bank and does not demonstrate the existing habitat and geomorphology of the northern bank in question which is known to be different. As there is no specific mitigation proposed it can only be assumed that the mitigation for works to banks are being counted within the woodland replacement scheme.

The current mitigation only reflects the loss of broadleaved woodland, and does not acknowledge the riparian zone, in which its current habitat structure and species composition is being lost as a result of the scheme. This separate habitat type, found on the banks and around the wetted channel, likely has different functions, value and considerations than broadleaved woodland. These habitat types and functions form part of a key consideration of the SSSI, which is of national importance. It is also a quality element and therefore key consideration under the WFD.

The proposed scheme currently concludes that no further mitigation is proposed for the rock armour to the impacted riparian habitat, as broadleaved woodland compensation is proposed. Yet it also separately states that the installed rock armour would naturalise to reflect the southern bank, which cannot be used as a proxy. Again, this does not consider the current functioning and complexities of

the riparian habitat currently present, part of the SSSI, and that it will be lost as a result of structural change that cannot be replaced in the direct envelope of the rock armour.

Geomorphology

Section 2.4.7 states 'the worst case scenario for the scour protection is 86m of scour protection on the north bank, with 62m of rock armour plus an additional 24m of green-grey bank protection at the downstream end'. Details of appropriate compensation for the loss of this riparian habitat has not been provided. We would welcome further details of how the Applicant is going to compensate for this loss of 86m of river bank.

Section 2.2.6 outlines the justification for scour protection. We would welcome the inclusion of information detailing the alternative options that were considered which did not require rock amour and scour protection. A justification of why these options were rejected should also be included.

Section 8.8.4 (River Coquet and Coquet Valley Woodlands SSSI - River Course), point (c) should read '*Loss of and/or* temporary damage to in-river habitat during the installation of temporary river training measures'.

With respect to fish, point (b) should include reference to lamprey. Point (c) should also read as '*Permanent* or temporary loss of habitat during installation of river training measures'.

Invertebrates section, point (d) should read as '*Permanent* or temporary loss of habitat during installation of river training measures"

In terms of section 8.8.5 (Operation), the slope stabilisation and scour protection will prevent this section of northern gorge supplying material to the channel. How significant will this de-coupling be, given that the large boulders and angular rocks within the channel, appear to come from the surrounding slopes? Do the landslips noted in the Appendix D River Coquet Valley Slope Instability play an important role in shaping channel planform, and/or supplying sediment to the channel? We would welcome clarity on these matters.

Section 8.10.6 states that the loss of riverbank habitat within the SSSI, as a result of the Northern Stability Works will result in a direct and permanent Moderate Adverse effect. We do not accept that the implementation of the proposed mitigation measures will account for the loss, damage and disturbance to the habitat and function of the riparian and marginal zone. Any habitat associated with the scour protection will be degraded as compared to the natural bank, and the scour protection will not interact with the flow and sediment regimes of the river in the way a natural bank will.

The scour protection is a permanent loss and/or a degradation of the natural riparian and marginal zone. Therefore, despite the successful implementation of mitigation measures, the loss, damage and disturbance to riparian and marginal zone remains at Moderate Adverse.

Section 8.10.20: it is considered that the operational impacts of the scheme on the dynamics of water flow, water velocity, sediment regime and natural fluvial processes as a result of the proposed scour protection have yet to be assessed in detail. Therefore, the Applicant is unable to determine whether the impact will be Minor adverse or Negligible.

Section 9.8.14 refers to 11m of riverbank disturbed during the construction of the original bridge. Further details regarding the disturbance and how it differs from the adjacent natural riverbank is required.

Table 9.6 (mitigation measures for operation): constructing the scour protection to mimic the natural bank profile will be challenging given the size of boulders required to provide the level of protection. It is also noted that in the Preliminary Fluvial Scour Risk Assessment, the design criteria proposed for the rock revetment comprises a rock size (dn50) of between 0.8m and 1m, installed two rock layers thick with a profile of 1:2 or steeper. The assessment also talks about installing a line of piles on the south bank. Further information regarding whether if it is possible to mimic the natural bank profile given proposals listed above is required.

Table 9-7 (Assessment of Effects During Construction), section relating to Lower north bank piling platform and associated works, bank and bed features, including riparian vegetation, would be lost within the footprint of the temporary works. Therefore, there may be a requirement to ‘key in’ the temporary river training works to the bed, which may include removal of some bed material (including bedrock) to create a level surface on which to construct the retaining wall. We consider the impacts of the temporary works at the local level constitute a permanent, magnitude of impact of moderate adverse.

Section 9.10.22: 3% of the riverbank within the gorge, within a SSSI, either lost or degraded is considered to be a significant impact. Documents 6.7 Environmental Statement – Appendix 10.7 Geomorphology Assessment – River Coquet Parameter 10 - Part A [APP-260], and 6.7 Environmental Statement - Appendix 10.4 Geomorphology Assessment - River Coquet Part – A [APP-257] previously stated that these habitats have evolved and developed over a long period of time. Not only is there a direct and permanent loss of habitat, but there is also the disruption to natural processes. Given the context of the site, it would be fair to assume that sections of riparian habitat would have taken 10’s if not 100’s of year to develop, and in some cases, would be on a par with the ancient semi natural woodland. The loss of ancient semi natural woodland is viewed as a major adverse impact, yet the loss of riparian habitat is considered minor adverse.

Images 2 and 3 (page 65 of 6.38 Environmental Statement Addendum: Stabilisation Works - Rev 1) [REP4-063] and images 1, 2 and 3 (page 41 and 64 of the 6.40 Environmental Statement Addendum: Southern Access Works - Rev 1) [REP4-064] highlight the complexity, variability and dynamic nature of the riparian zone. Can the Applicant explain why the loss of this complex habitat on the riverbank is minor yet when within the woodland it is considered major.

Sections 9.10.25 – 9.10.31: we would welcome a better understanding of the Applicant's calculations, the number and location of the channel cross sections, and how these relate the baseline channel morphology.

Section 9.10.35: in the absence of an updated geomorphological assessment to reflect the change requests to the scheme, we consider it too early to consider the operational impacts as Minor adverse.

Table 9.8 (Assessment of Effects During Operation), section 'north bank stabilisation including erosion protection': constructing the scour protection to mimic the natural bank profile will be challenging given the size of boulders required to provide the level of protection. It is also noted that in the Preliminary Fluvial Scour Risk Assessment, the design criteria proposed that the rock revetment comprises a rock size (dn50) of between 0.8m and 1m, installed two rock layers thick with a profile of 1:2 or steeper. The assessment also talks about installing a line of piles on the south bank. Further information regarding whether if it is possible to mimic the natural bank profile given proposals listed above.

Section 9.10.40: it is considered that the level of evidence to support this statement has not been adequately presented. In particular, we wish to have greater understanding of the following:

The supply of sediment, especially boulders from the gorge sides has not been adequately assessed;

- an accurate description of the changes to flow and sediment dynamics is reliant on the still to be updated hydraulic model;
- whether the mobile sediment deposits within the channel will remain; and
- it is acknowledged that destroyed and damaged habitat will take years if ever to recover.

Appendix D Valley Slope Instability

The report suggests that there have been a number of slope failures within the gorge, and it also infers that these historic events have influenced the planform of the river.

If this is the case, is it possible to describe the impact these would have had on the channel, both in terms of planform and the large rapid supply of materials?

Furthermore, is it possible to determine whether these rare, but significant threshold events are an important driver in determining the nature of the channel within the gorge? If they are, what are the consequences of stabilising the area around the bridges?

The final point on page 1 of the report references erosion. We request that the area of erosion should be highlighted on the geomorphology field maps.

Where alternative pile configurations considered that would avoid the need for scour protection. If so, why were they discounted? We would welcome the inclusion of this information.

Figure D-1 is too small to read. We would therefore welcome the inclusion of clear scalable copy of the map.

Appendix F (Preliminary Scour Assessment)
In developing the preferred option, can the Applicant confirm whether the environmental impacts considered as part of the assessment procedure? Furthermore, are there any options that will deliver the necessary level of protection without negatively impacting on the river? We would welcome the inclusion of this information.

Groundwater
There are no mapped superficial deposits. Therefore groundwater within the bedrock limestone unit (blue) and the stainmore formation (green) will be in hydraulic connectivity with the river and most likely providing baseflow. The groundwater is 0.6-4m below ground level in 6 peizometers where 5 are on the north bank, and only one on the south bank. Assuming that groundwater is 1m below ground and baseflow reduction to be not significant, localised atleration of flow path and or increased groundwater may still result from the development which may increase the flood risk, instability and erosion.

Mitigation of a preferential drain behind the barrier/ piling (bridge footings) to redirect groundwater to a known and favourable location is accepted as a suitable and probably necessary mitigation.

6.40 Environmental Statement Addendum: Southern Access Works for Change Request [REP4-064]

Geomorphology
Section 7.8.4 Construction impacts (Construction - River Coquet and Coquet Valley Woodlands SSSI – river course: we recommend that points B, C and D replace “Temporary damage of” with “Permanent damage or degradation”

Section 7.8.4 – fish, option D: the wording “Temporary damage of in-river habitat” should be replaced with “Permanent damage or degradation…”

Section 7.8.5 (Operation): the Environment Agency were also concerned about the loss of, and disturbance to the riparian zone and marginal habitats.

Section 7.10.7 (Assessment of likely significant effect): we do not accept that the implementation of the proposed mitigation measures will account for the loss off and damage and disturbance to the habitat and function of the riparian and marginal zone. Any habitat associated with the scour protection will be degraded as compared to the natural bank, and the scour protection will not interact with the flow and sediment regimes of the river in the way a natural bank will.

The scour protection is a permanent loss and/or a degradation of the natural riparian and marginal zone. We therefore believe that despite the successful implementation of mitigation measures, the loss, damage and disturbance to riparian and marginal zone remains at Moderate Adverse.

Section 7.10.20: the operational impacts of the scheme on the dynamics of water flow, water velocity, sediment regime and natural fluvial processes as a result of the proposed scour protection have yet to be assessed in detail. It is too early to say that the impact will be Minor adverse or Negligible.

Section 8.8.13: the most recent geomorphological survey (26 January and 26 Feb 2021) identified approximately 11m of riverbank disturbed during the construction of the first bridge. To understand the role and impact of this feature, we request a short description accompanied by photos showing the feature, including the riverbank directly up and downstream.

We recognise that off the 131m of riverbank protected by the scour protection, 41m will use a grey/green solution. However, whether grey/green or grey, bank protection fixes the bank permanently, cuts of a source of sediment, decouples the slope from the river and creates a hard edge altering flow and sediment dynamics along the margins.

8.10.19 states ‘the loss of some bank features is unlikely to be reversible through natural processes in the short term. Bank features such as exposed roots, undercut banks, and exposed bedrock would have developed over a long period of time through the balance between fluvial bank erosion and stabilisation by tree growth’. Despite the best intentions of the mitigation measures they will not replace or emulate the function and complexity of the natural bank that is being lost.

Section 8.8.17: the slopes of the gorge are a source of sediment, especially large boulders. The role of these boulders has been referenced a number of times in their role as anchor points allowing finer sediment to shelter around them. These depositional features within a bedrock channel are unusual and add complexity to the in-channel and marginal habitats.

The stabilisation of the north slope, combined with the scour protection on both banks could reduce or cut of this supply. The risks associated with this loss of large sediment needs to be assessed.

Table 8-4 (Potential Impacts on Fluvial Geomorphology During Operation), Natural fluvial processes section states 'the change in materials from which the bank is composed would, by necessity of design, reduce the channel's ability to adjust'. The bank protection works will locally prevent the channel's ability to adjust. Therefore, we recommend the word is 'reduce' is removed.

Table 8-5 (Mitigation Measures for Construction): we welcome the proposals to map and remove the sedimentary bed features, reinstating them on removal of the channel retaining wall. However as mentioned previously, these features are complex with finer substrate hidden by boulders, and protected by an imbricated surface layer. The boulders will be partially embedded into the finer sediment, and pioneer plant species provide an additional layer of stability. Is it considered that mimicking this complexity during reinstatement will be challenging.

Section 8.10.20 states 'where impacted, such deposits are unlikely to reform in the short term through natural deposition but over time would develop, if boulders exhibiting long-term stability can be replaced or reinstated at their original locations'. It needs to be stated within the relevant mitigation measure that there is a risk of failure associated with reinstating channel depositional features and/or it will take a number of years before these features reform again.

Table 8-6 (Mitigation Measures for Operation): constructing the scour protection to mimic the natural bank profile will be challenging given the size of boulders required to provide the level of protection. It is also noted that in the Preliminary Fluvial Scour Risk Assessment, the design criteria proposed that the rock revetment comprises a rock size (dn50) of between 0.8m and 1m, installed two rock layers thick with a profile of 1:2 or steeper. The assessment also talks about installing a line of piles on the south bank.
We would like to understand if it is possible to mimic the natural bank profile given proposals listed in the Scour Assessment report.

Sections 8.10.13 – 8.10.15: we would welcome a greater understanding regarding the calculations, the number and location of the channel cross sections, and how these relate to the baseline channel morphology.

With respect to table 8-7 (Assessment of Effects During Construction), Stabilisation Works and Southern Access Works, bank and bed features including riparian vegetation would be lost within the footprint of the temporary works. There may also be a requirement to 'key in' the temporary river training works to the bed, which may include removal of some bed material (including bedrock) to create a level surface on which to construct the retaining wall. We consider the

impacts of the temporary works at the local level constitute a permanent, magnitude of impact of moderate adverse**.**

Section 8.10.29: 3% of the riverbank within the gorge, within a SSSI, either lost or degraded should be considered as a significant impact. Bankside habitat is complex and dynamic, and as 6.7 Environmental Statement – Appendix 10.7 Geomorphology Assessment – River Coquet Parameter 10 - Part A [APP-260] and 6.7 Environmental Statement – Appendix 10.4 Geomorphology Assessment – River Coquet Part A [APP-257] has previously stated these habitats have evolved and developed over a long period of time. Not only is there a direct and permanent loss of habitat, but there is also the disruption to natural processes.

Given the context of the site, it would be fair to assume that sections of riparian habitat would have taken 10's if not 100's of year to develop, and in some cases, would be on a par with the ancient semi natural woodland. The loss of ancient semi natural woodland is viewed as a major adverse impact, yet the loss of riparian habitat is considered minor adverse.

Images 2 and 3 (page 65 of Deadline 4 Submission - Change Request - 6.38 Environmental Statement Addendum: Stabilisation Works - Rev 1) and images 1, 2 and 3 (page 41 and 64 of 6.40 Environmental Statement Addendum: Southern Access Works - Rev 1) [REP4-064] highlight the complexity, variability and dynamic nature of the riparian zone. We would welcome a greater understanding regarding why the loss of this complex habitat on the riverbank is minor yet when within the woodland it's considered major.

Sections 8.10.32 – 8.10.35: we would welcome further clarity regarding the calculations, the number and location of the channel cross sections, and how these relate the baseline channel morphology.

Section 8.10.42: in the absence of a detailed geomorphological assessment, we feel it is too early to consider the operational impacts as Minor adverse.

Table 8.8 (Assessment of Effects During Operation), with respect to south bank pier and scour protection, please see comments for table 8.6.

Section 8.10.46: the level of evidence to support this statement has not been adequately presented. The supply of sediment, especially boulders from the gorge sides has not been adequately assessed, an accurate description of the changes to flow and sediment dynamics is reliant on the still to be updated hydraulic model. It is unclear whether the mobile sediment deposits within the channel will remain, and it has been acknowledged that destroyed and damaged habitat will take years if ever to recover.

Table 12.2 make reference to the 'temporary damage of in-river habitat'. This should be read 'permanent *and* temporary damage of in-river habitat'.

Section 13.3 (conclusion): we do not feel that the combined effects of the proposed engineering works, either during construction or operation have been fully considered.

If as described, the weir at Felton exerts an influence over 300m of the functional gorge, and the proposed works associated with the new bridge alters a further 100m (this is an approximation as the extent of any alterations will extend beyond the downstream end of the bank protection). This will ultimately mean that 30% of the functional gorge could be considered as modified. This needs to be assessed/considered.

Groundwater
If the proposed amendments are to be formally submitted, further information is required in terms of groundwater flow and level. Additional mitigation should also be provided in the event that groundwater conditions are found to be different. It is noted that the only site investigation borehole is located on the south bank and an assumption has been made that conditions are same as north bank.

Any piling required should be spaced piles to mitigate impact of piling and to maintain groundwater flowpaths. Where groundwater flow is obstructed and or changed, additional drainage to divert groundwater around the pilings to its natural discharge point will be required to prevent groundwater level rising and causing flooding and or slope instability

6.28 Biodiversity No Net Loss Assessment for the Scheme (Tracked) - Rev 1a [REP4-059]
We are pleased to see a re-evaluation and drastic reduction in the reported loss of watercourses associated with Parts A and B of the scheme. We also recognise that providing Biodiversity Net Gain (BNG) will not be mandatory for planning applications until the Environment Bill becomes law and that proposals for providing BNG for Nationally Significant Infrastructure Projects within the Environment Bill. However, we believe that it should be used as a guide to provide the best possible outcomes and direct the mitigation designs.

There appears to be a heavy reliance on the planting of woodland as mitigation or compensation for the loss of watercourse. Tree planting is not like for like compensation. This is often described as ‘wet woodland’ creation, which we believe is an incorrect definition of the habitat created, and should be reclassified as riparian woodland however only if this woodland is adjacent a watercourse. Any woodland created away from the watercourse should be correctly recorded as broadleaved woodland.

We would welcome a package of works that would provide meaningful compensation for the loss of watercourses. We note an updated net loss of 11.69% of watercourse and a gain of 7.21% of area based units and a failure of 4

out 10 Net Gain Principles. Therefore, we would encourage opportunities to compensate for this loss with equivalent river based units. Where river units or length are lost, common compensation measures could include the re-naturalising and re-meandering of heavily modified and straightened watercourses. Re-naturalising of watercourses that are found to be highly modified and historically straightened will in the long term provide a benefit to ecology and river health, whilst potentially providing gains in river length lost by the scheme.

The applicant appears opposed to this due to the impression this would cause larger environmental impacts. Although there may be some short term impacts, it is considered that the majority of short term impacts can be mitigated for through appropriate design and mitigation measures, following best practice, such as those found in the Manual of River Restoration Techniques by the River Restoration Centre. Any mitigation and compensation should also support the attainment of Good Ecological Status by 2027 in the waterbodies within the Order Limits and those connected waterbodies.

We do not provide exact examples and the advice given is aimed to support the scheme achieving no net loss which it current does not do. We also note that this may require looking beyond the DCO. It is noted that National Policy Statement for National Networks (2014), paragraph 5.25 states that the applicant may also wish to make use of biodiversity offsetting in devising compensation proposals to counteract any impacts on biodiversity which cannot be avoided or mitigated. Where significant harm cannot be avoided or mitigated, as a last resort, appropriate compensation measures should be sought

With respect to table ‘3-2 – Evidence of Project Compliance with BNG Good Practice Principles’ and section 4.1.4, it is claimed that ‘the Scheme does demonstrate a measurable overall gain for priority woodland and wetland habitats.’ We question these claims as we believe wetland habitats are referring to the ‘marginal planting’ within the detention basins. These are required as part of the drainage scheme and planting them with wetland species is a best practice technique. This cannot be claimed as mitigation or compensation.

7.17.6 Written Summaries of the Applicant's Oral Submissions to Hearings: Appendix F - Proposed Woodland and Marginal Planting Plan (Part A and B) [REP4-031] clearly shows the vast majority of the woodland being planted as mitigation and compensation for the impact on the watercourse is neither ‘wet woodland’ as originally claimed nor riparian and is in fact broadleaf woodland. This habitat has a different form and function and does not improve the watercourses affected by the site. The plan also shows the ‘marginal planting’ as being solely within retention basins. These cannot be claimed as net gain, mitigation or compensation as this is scheme requirement and adhering to best practice.

Deadline 3: 6.32 Environmental Impact Assessment - River Coquet Geomorphology Modelling Assessment) [REP3-009]
This assessment must be updated to reflect the activities outlined in the Change Request Environmental Statement Addendums.

Deadline 1 Submission - 7.9.1.1 Annex A - Culvert Mitigation Strategy - Rev 0 [REP1-066]
Is it noted that the culvert mitigation strategy has been updated since deadline 1 and not yet published on the Planning Inspectorate's website. We disagree that the 'new wetland' (sometimes referred to as marginal planting) can be claimed as mitigation. Therefore, the Applicant is misrepresenting the schemes benefits. As stated above, detention basins and SuDS are required as part of the drainage scheme and planting them with wetland species is a best practice technique. This cannot be claimed as a wetland and provided as mitigation for the culverts.

Part A
There is an increase in culvert length for those channels included in the biodiversity assessment of **93.5m** (note this includes the Fenrother Burn). For the watercourses not included in the biodiversity assessment there is an increase of culvert length by **249.7m.** For the Floodgate Burn, the River Lyne and the Earsdon Burn, the proposed depth for the natural bed is 150mm or less.

The depth of the natural bed within the culvert should be sufficiently deep to ensure bed sediment transport continuity and minimise the risk of scour of the bed material (within and downstream) and exposure of the culvert surface. The design principle must be to maintain bed material diversity through the culvert and avoid conditions where the culverts flat surface is exposed. In addition the transition from the natural bed upstream through the culvert and then joining the downstream bed should avoid steps and significant changes in gradient. Failure to do so can led to either ponding or sediment deposition upstream of the culvert or scour downstream of the structure, potentially undermining the structure and causing a barrier to fish migration.

CIRIA's Culvert, Screen and Outfall Manual states that the depth of a natural bed should be between 300-600mm, while the Scottish Environment Protection Agency's (SEPA) good practice guide for River Crossings provides a useful series of recommendations for the design of culverts. SEPA's good practise guide recommends:

For culverts less than 1.2 m diameter or height (internal height) the invert should be buried at least 15 cm below the natural bed level.
For culverts 1.2 - 1.8 m diameter or height (internal height) the invert should be buried at least 20 cm below the natural bed level.
For culverts greater than 1.8 m diameter or height (internal height) the invert should be buried at least 30 cm below the natural bed level.

It is therefore disappointing that the Applicant are not following the industry best practice for the culverts on these waterbodies.

The Fenrother Burn should be included as one of the watercourses included in the Biodiversity Assessment. The Q95 and Qmed are similar to the Floodgate Burn, while the channel is marked on the 1:50000 OS map (CEH use the 1;50000 digital river network to define drainage paths for the flood estimation handbook. Given this is an industry standard, the Fenrother should be considered as a functional watercourse)

The diversion of the Fenrother Burn provides the opportunity to significantly improve the channel. Unfortunately the space provided for the new channel is very limiting, and results in a real missed opportunity.

We wish to see the design of the new channel influenced by some of the ideas presented in the River Restoration Centre Design Manual. While obviously not a direct comparison, case study 1.6 Opening up a culverted stream, the River Ravensbourne, highlights a number of techniques that could be incorporated into the design of the new channel.

We wish to see the Applicant being ambitious in the design of the new channel, and we would request that we have the opportunity to comment on any designs.

Part B

For part B there is an increase in culvert length for those channels included in the biodiversity assessment of **141.8m**. For the watercourses not included in the biodiversity assessment there is an increase of culvert length by **49.5m**. All the biodiversity assessment watercourses have natural beds of 150mm, but this doesn't extend into the existing culverts.

The Shipperton is a reasonable sized stream, with records of brown trout. A step at the downstream end of the existing culvert will be removed. Given the nature of the Shipperton Burn, a deeper depth of natural bed must be aimed for. We would expect these to be addressed in the culvert mitigation.

The minor road bridge downstream of the culvert has a small step which could be impeding fish access. This should be addressed as part of the scheme.

Compensation

Throughout the culvert strategy riparian woodland is being proposed as compensation for the loss of and damage to the watercourses as a result of culverting. We consider this woodland as an inappropriate measure to compensate for the culverted watercourses. In many cases, the planting is supplementing existing riparian woodland, and therefore has less of a benefit.

The other source of compensation are the various wetlands and associated wetland planting. These areas are part of the SuDS network and water retention basins. We consider this planting as a must do linked to the drainage scheme, and therefore not as compensation for the culverted watercourses.

7.3 Outline Construction Environmental Management Plan - Rev 3 [REP4-013]

No details has been provided in relation to how the Applicant proposes to provide compensation for the loss of 86m to the River Coquets riparian and marginal habitat due to the introduction of engineered bank stabilisation works. We would welcome further details of how the Applicant is going to compensate for this loss of 86m of river bank.

Section S-B3 refers to marginal planting of detention basins. We welcome the introduction of marginal planting as part of the road drainage system for the scheme. However, we would like conformation from the Applicant that this marginal planting of detention basins is not been 'double counted' and also classed as mitigation and/or compensation from the loss of watercourse due to the culverting and introduction of road drainage outfalls into the riparian environment.

CIRIA's Culvert, Screen and Outfall Manual states that the depth of a natural bed should be between 300-600mm, while Scottish Environment Protection Agency's (SEPA) good practice guide for River Crossings provides a useful series of recommendations for the design of culverts. SEPA's good practise guide recommends:

For culverts less than 1.2 m diameter or height (internal height) the invert should be buried at least 15 cm below the natural bed level.
For culverts 1.2 - 1.8 m diameter or height (internal height) the invert should be buried at least 20 cm below the natural bed level.
For culverts greater than 1.8 m diameter or height (internal height) the invert should be buried at least 30 cm below the natural bed level.

Action A-B40 refers to compensation due to the direct loss of ~35m of the Longdike Burn due to the Bockenfiels Culvert (12) extension. It is understood that improvements will be delivered on a ~850m section of the Longdike Burn within the DCO boundary. Although we welcome compensation for the direct loss of ~35m of watercourse, we request further details on this proposal. Improvements are described as 'nutrient management measures to address adverse impacts of run-off from agricultural land, aquatic planting and bankside stabilisation'. Can the Applicant demonstrate that nutrients from agricultural land are impacting the Longdike Burn at the prosed improvement site? Is there an identified source and point of entry to the watercourse that needs to be addressed? What form will work bank stabilisation take? Is bank stabilisation required at the proposed improvement site? We would welcome early engagement during the development

of these measures to ensure they are appropriate and effective. We are able to provide alternative locations for the Applicant to deliver mitigation and compensation for this scheme, on waterbodies that are hydraulically linked to the DCO and in need of improvements to improve their WFD status, for example the River Lyne.

Protection of protected species
Action S-G8 states that 'Any tree felling will be carried out by experienced contractors to reduce direct mortality of protected species according to agreed felling methods between contractors and the ECoW'. A 'reduction' is unacceptable and could potentially constitute a criminal offence if tree felling results in the disturbance, harm, death or damage to resting places of a number of protected species. If any tree felling could result in such an offence then it must either be avoided or a method statement produced and a Natural England licence acquired to enable tree felling whilst ensuring protection and mitigation.

Action A-B17 states that a pre-commencement walkover survey for otters. However, it does not provide timescales nor does it identify the procedure if an otter rest site is found within the scheme.

Invasive Non-Native Species (INNS)
With regards to action S-B8, we wish to review Biosecurity Method Statement (reference to S-B8) once produced. Therefore, we request that this action is updated to reflect this.

ECoW Responsibility
Table 2-1(Responsibility Matrix - Ecological Clerk of Works (ECoW) (main contractor), states that ECoWs are responsible for ensuring that all ecological mitigation measures are implemented on site and ensuring that the requirements of ecological licences. However, action B-B28 states that 'monitoring will be undertaken throughout the construction period by a site-based ECoW. The ECoW will ensure construction works remain compliant with mitigation measures prescribed within the outline CEMP and then in the CEMP produced by the main contractor'. The role and responsibilities of the ECoW suggests that the ECoW responsible for enforcing compliance with legislation and planning conditions. They do not have legal, and likely do not have contractual powers, to do so and under Construction Design and Management Regulations 2015 they are the responsibly of the principal contractor. As defined by CIEEM (https://cieem.net/i-am/current-projects/accredited-ecow/), ECoWs 'oversee the management of the risks on construction sites'.

We welcome the requirement for a competent, qualified and experienced ECoW during construction that is either an Accredited ECoW by CIEEM or a member of The Association of Environmental Clerks of Works (AECoW). As such, it should be made clear that the ECoW's responsibility is to monitor compliance with environmental legislation, policy or mitigation and advice on compliance with the

environmental planning conditions, with preparation of compliance reports for clients and stakeholders and advisory reports for site managers/staff.

Monitoring

With respect to table 5-1(Monitoring to be Carried out During Construction) it states that monitoring of the freshwater environment will be undertaken by the Environmental Manager (ECoW) and the frequency is 'As required, for instance during fish rescue activities.' It also states that surface watercourses located within 50m of earthworks will be monitored/inspected to identify any pollution as a result of e.g. silt, fuel or chemicals on a weekly basis by the Environmental Manager. This should be updated to comply with the updated S-GS13 which states: 'During construction works surface watercourses located within 50m of earthworks will be monitored/inspected regularly. Watercourses in high risk areas and where construction activities are more intensive will be subject to more regular checks, and clear actions will be defined by the main contractor in consultation with the Environment Agency, such as reporting when limits (such as turbidity NTU levels) are reached so that pollution incidents are appropriately reported to Environment Agency and issues are resolved. A baseline will be established prior to the commencement of construction.'

Watercourse Protection and Silt Treatment

The inclusion of additional silt mitigation measures and concepts such as those in action S-W9 are highly welcomed. S-GS4 states 'pollution control measures including detention basins and filter drains will be incorporated into the drainage design of the Scheme.' This appears to indicate that the permanent structures designed to handle the operational phase and not the construction phase may be used. We would like to reiterate that detention basins are designed for the operational phase of the scheme, as such these should not be relied upon to deal with the large volumes of contaminated water that are associated with construction activities, as they are highly unlikely to be able to cope, and therefore result in pollution incidents and impacts upon ecology throughout the scheme. We recommend that dedicated sediment traps and settlement ponds should be designed into the scheme, and where these are unlikely to be effective, treatment systems such as lamella tanks and chemical dosing should be costed into the scheme.

Watercourse mitigation / Compensation

Although the value and claims are disputed, the suggested mitigation of 38ha of 'wet woodland' and 12ha of 'marginal planting' is not contained within Table 3-1 - Register of Environmental Actions and Commitments: The Scheme. Therefore there does not appear to be a defined commitment for mitigation and compensation for the impacts on the watercourses. The applicant should clarify the habitat types, areas or lengths of improvements and include.

Actions
With respect to actions SW-W3, W4, W5, W6, the Environment Agency wish to consulted on developing the design of these actions. Therefore, the CEMP should be updated to reflect this.

Planning Requirement
The Environment Agency wish to be consulted on the detailed CEMP. Therefore, we request the inclusion of a requirement stating that the detailed CEMP will be approved by the Secretary of State following consultation with Northumberland County Council and the Environment Agency.

7.17.6 Written Summaries of the Applicant's Oral Submissions to Hearings: Appendix F - Proposed Woodland and Marginal Planting Plan (Part A and B) [REP4-031]
This shows the vast majority of the woodland being planted as mitigation and compensation for the impact on the watercourse is neither 'wet woodland' as originally claimed nor riparian and is in fact broadleaf woodland. This habitat is not a water dependant habitat, has a different form and function and does not improve the watercourses affected by the scheme as the vast majority of this planting is disconnected from the watercourses. Therefore, we do not believe the proposals put forward by the Applicant adequately mitigates or compensates for the disturbance and damage to, and the loss of watercourses associated with the scheme.

In total an extra 235.3m of functional watercourse (considered as part of the biodiversity assessment) will be lost to culverting, with a further 299.2m of seasonal watercourses lost. The damage and loss of watercourses will be higher than the numbers quoted above, as they do not take into account scour protection measures and headwalls.

We consider the mitigation measures put forward by the Applicant as the bare minimum and they fall well short of the industry standards. There is a failure to commit to a suitable depth of sediment within the culverts, especially for the Shipperton, Floodgate and Earsdon Burns and for the River Lyne. For all these waterbodies, the proposed bed depth is 150mm or less, rather than between 300-600mm.

On the Longdyke and Shipperton Burns, there is an opportunity to address fish access issues on minor roads within the DCO red line. We see these as an opportunity to address legacy issues, and would expect them to be considered as part of best practise.

On Longdyke Burn the Applicant has proposed to replace fish easement baffles within culverts. We consider this as necessary mitigation, and not compensation.

The proposed riparian woodland and wetland planting that has been presented as compensation for the culverted watercourses. While this is welcomed, it is not considered appropriate compensation for the loss of, or disturbance to culverted and engineered waterbodies.

In approximately 50% of the cases proposed for riparian tree planting, there are already riparian trees present along the proposed watercourse. Furthermore we believe that these areas should be planted up as part of the Applicant's broader commitment to improving biodiversity associated with it's infrastructure.

The re-routing of the Fenrother and the Kittycarter Burns provides an opportunity to significantly improve these channels, and we'd expect Highway England to be ambitious in its plans for these two streams. We feel that to date, the proposals suggested, and the space allocated to these realignments is very restrictive, and misses an opportunity to improve biodiversity.

The Applicant's mitigation package falls well below the level we would expect on a scheme of this nature, and does not delivery industry best practise. Opportunities to improve the realigned sections of watercourse will be restricted, due to the limited space allocated for this work.

Compensation through riparian woodland and wetland planting do not address the loss of aquatic habitat, and on at least half the cases, the woodland planting is enhancing existing riparian trees. We recognise that the scope for compensation within the DCO boundary is very limited, and therefore suggest that the Applicant considers supporting measures that are addressing WFD failures outside the DCO redline.

Water Framework Directive (WFD) Addendum [REP4-068]

We welcome the updates to the WFD Assessment in relation to the River Coquet amendments.

A general measure of the Northumbria River Basin Management Plan (RBMP) relates to 'reducing the impact of manmade structures for wildlife in watercourses and improving hydromorphological conditions and improving longitudinal connectivity. At the local scale, it is clear that the revised proposals are contrary to the listed general measures. The scheme will result in significant disturbance to the water environment resulting from both the temporary works and loss of habitat due to the engineered bank stabilisation solution that is being proposed as part of the amendments to the scheme. This said, we do agree that it is unlikely the scheme will result in a deterioration to the WFD status of the Coquet from Forest Burn to Tidal Limit waterbody.

However we do not agree with paragraph 5.1.5 which suggests rock armour will provide adequate and suitable mitigation for the loss of 62m of riparian marginal habitat. The action of replacing a natural riparian marginal habitat with an

engineered one will result in the loss valuable riparian habitat. Appropriate compensation for the loss of this riparian habitat has not yet been provided. We would welcome further details of how the applicant is going to compensate for this loss of 86m of river bank as detained in '6.38 Environmental Statement Addendum: stabilisation works – Rev 1' [REP4-063]. This document states 86m of scour protection on the north bank, with 62 m of rock armour plus an additional 24 m of green-grey bank protection at the downstream.

With respect to table 3 (Construction impacts assessment for Scheme) and the indicator regarding fish, invertebrates and macrophytes, this section should reference loss and/or degradation of habitat and direct harm to species

Table 4 (Operational impacts assessment for Scheme), this should include reference to lost or degraded habitat

Section 4.5.4 states 'From the above, it can be concluded that the proposed scheme would not contribute to these measures but also does not impede or obstruct their future delivery.". This statement is slightly misleading as the proposed scheme will increase the extent of modified habitat and should be amended.

Section 5.1.3 states 'river continuity will be unaffected by the proposed works and there will be no barrier to sediment movement through the works area". The WFD defines continuity as lateral and longitudinal. The proposals, at the local scale, will significantly reduce lateral continuity. The rock armour, scour protection and stabilisation piles will decouple the slope from the river. The supply of sediment from these slopes will be lost, and the natural transition from the channel through the riparian zone will be heavily modified.

Appendix D: River Coquet Valley Slope Instability outlined in 6.38 Environmental Statement Addendum: Stabilisation Works – Rev 1 [REP4-063] identifies a number of slip zones and historic landslides. It also infers that past slope failure has influenced the planform of the river.

6.32 Environmental Impact Assessment – River Coquet Geomorphology Modelling Assessment [REP3-009] states in section 5.2.6 'a local source of coarse boulder-sized clasts that are able to resist entrainment and transport during flood events was probably central to its formation (the mid channel bars) (Knighton, 1998). This material, which likely originates from the local valley sides – as evidenced by its blocky, angular form – provided localised anchor points among which much smaller particles, which would otherwise be transported through the system, could deposit'. The decoupling of the slopes will prevent the supply of course material from the slopes to the channel. Thereby limiting the future formation of in-channel depositional areas. From Appendix D River Coquet Valley Slope Instability and the 6.32 Environmental Impact Assessment – River Coquet Geomorphology Modelling Assessment [REP3-009] it may be possible to

infer that rare slope failures and occasional rock falls are an important long term control in adding complexity and variation within this bed rock channel.

We stated previously in the letter, we wish to highlight our concerns around the reliance on tree planting/woodland creation as mitigation and/or compensation for the loss of water course. Tree planting is not considered like for like compensation for the loss of watercourse and riparian habitat and therefore, the applicant must deliver wider compensation for the localised impacts the scheme will have on the water environment.

Statement of Common Ground
We are working with the Applicant to address the issues outlined in this letter and in our previous correspondence.

Draft DCO
We require further discussion with the Applicant before we can comment on the acceptability of the Protective Provisions and the Requirements. The proposed changes submitted on 12 March 2012 and if accepted, may have implications on the Protective Provisions and Requirements required for the DCO.

[Appendix A]

The Examining Authority's written questions and requests for information (ExQ2) Issued on 19 March 2021

ExQ1	Question to:	Question:
BIODIVERSITY AND HABITATS REGULATIONS ASSESSMENT		
BIO.2.3	**EA Applicant**	**The Applicant commented on responses to ExQ1 [REP2-020] including the EA's response to BIO.1.9 which focused on the impact of the Proposed Development on otters. The EA's representation at D4 [REP4-076] also addressed the impact of the Proposed Development on otters.** **The EA is asked to respond to the Applicant's comment. The Applicant is asked to respond to the EA's comments.** **EA Response;** The EA highlighted in 'Environment Agency Deadline 4 submission' [REP4-076] that otters are likely present and at least likely to be commuting. This is agreed by the applicant in BIO.1.9 comment 4 of REP2-020: 'The Applicant accepts that there is potential for otter to use crossing points / watercourses as commuting routes'. Yet despite historical records of dead otters from road traffic collisions on the A1, they are considered absent and therefore no mitigation proposed. Mitigation to minimise road traffic collisions is essential.
BIO.2.9	**EA**	**Appendix F – Proposed Woodland and Marginal Planting Plan [REP4-031] describes how the marginal planting and riparian woodland is proposed to offset the impacts to watercourses. The plan was produced in response to discussion at ISH2 involving the Applicant and the EA. The EA is asked to comment on the proposals and whether they adequately offset the impacts to watercourses.** **EA response;** Appendix F – Proposed Woodland and Marginal Planting Plan [REP4-031] clearly shows the vast majority of the woodland being planted as mitigation and compensation for the impact on the watercourse is neither 'wet woodland' as originally claimed nor riparian and is in fact broadleaf

ExQ1	Question to:	Question:
		woodland. This habitat is not a water dependant habitat, has a different form and function and does not improve the watercourses affected by the scheme as the vast majority of this planting is disconnected from the watercourses. We do not believe the proposals put forward by the Applicant adequately mitigates or compensates for the disturbance and damage to, and the loss of watercourses associated with the scheme.
WATER ENVIRONMENT		
WE.2.2	**EA**	**Can the EA confirm whether they are satisfied with the pollution control measures proposed within the outline CEMP [REP4-013] in relation to the impact of the Proposed Development on watercourses?** **EA response;** The EA are generally satisfied with the proposed pollution related measures set out in the CEMP. The EA notes the inclusion of additional silt mitigation measures and concepts such as those in S-W9 which are highly welcomed. However, we would like to reiterate our comments made on 12 March 2021[REP4-076] in regards to the avoidance of using the permanent detention basins to treat silt. S-GS4 states 'Pollution control measures including detention basins and filter drains will be incorporated into the drainage design of the Scheme.' This appears to indicate that the permanent structures designed to handle the operational phase and not the construction phase may be used. Detention basins are designed for the operational phase of the scheme, as such these should not be relied upon to deal with the large volumes of contaminated water that are associated with construction activities, as they are highly unlikely to be able to cope, and therefore result in pollution incidents and impacts upon ecology throughout the scheme. It is recommended that dedicated sediment traps and settlement ponds should be designed into the scheme, and where these are unlikely to be effective, treatment systems such as lamella tanks and chemical dosing should be costed into the scheme.'
		Part A
WE.2.	**EA**	**Paragraph 10.4.13 of the ES [APP-050] states that**

ExQ1	Question to:	Question:
5		**following consultation with the EA it was agreed that detailed hydraulic modelling of the River Coquet would not be required, as the proposed southern pier would be aligned with the existing pier. Annex B – Flood Risk Assessment Addendum [REP1-067] states that the potential movement of the southern pier would take this structure further towards the river channel and potentially within the estimated 1 in 1000 years flood extent.** **Is the EA content with the information and advice provided in light of changes detailed in Annex B – Flood Risk Assessment Addendum?** **EA response:** The EA are happy with this approach. This is due to the minimal expected impact on flood risk, the incised nature of the River Coquet at this location and the lack of receptors upstream of the proposals.

[Appendix B]

Rule 17 – Request for Further Information 30 March 2021

Q2 to the Applicant and the Environment Agency:
The Applicant is asked to explain why it was not possible to submit the hydraulic modelling and geomorphological information at D4 alongside other change request submissions. Furthermore, the Applicant is asked to confirm the extent of dialogue it has had with the Environment Agency on this matter since Issue Specific Hearing (ISH) 2 on Thursday 25 February. The Environment Agency is asked to confirm the extent of dialogue which it has had with the Applicant since ISH2 and to confirm when it expects to have receipt of the necessary hydraulic modelling and geomorphological information in order to assess the impacts of the proposed changes.

EA response:
Our discussions with the Applicant have mainly been with regards to the timings of the review process and how we can review each stage of the model creation in order to make the review as efficient as possible given the short timeframes. It is anticipated the hydraulic model will be submitted to the EA for review after the Easter weekend. This will take between 4-5 weeks to review. The EA have also reviewed and provided comments back to the Applicant regarding hydrology report.