

Infrastructure Planning Directorate
Planning Inspectorate
Temple Quay House
Temple Quay
Bristol
BS1 6PN

Our ref: RA/2015/132060/03-L02
Your ref: EN060004
Our ID: 10031562
Date: 12 October 2015

WRITTEN REPRESENTATION

Dear Sir/Madam,

A REPLACEMENT HIGH-PRESSURE GAS PIPELINE WITHIN A BORED TUNNEL BENEATH THE HUMBER ESTUARY AND ASSOCIATED DEVELOPMENT, INCLUDING A CONNECTING PIPELINE, MINOR MODIFICATIONS TO PAULL ABOVE GROUND INSTALLATION AND ASSOCIATED TEMPORARY LAY DOWN, WORKING AND MITIGATION AREAS. FROM PAULL, EAST RIDING OF YORKSHIRE TO GOXHILL, NORTH LINCOLNSHIRE.

We would like to make the following Written Representation. This is largely based on our Relevant Representation (RR) but with updates provided where the situation has changed, and additions where further detail can be provided. To assist the Inspector we have highlighted in light grey those sections which have been added or amended to our RR. As per our RR, we have split our representation, with main comments provided in the main body of this letter, but with more detailed appendices attached.

1.0 Groundwater (also see Appendix 1)

1.1 We have very serious concerns that the project is not currently supported by adequate information about its impacts on groundwater.

1.2 The project will involve construction phase activities which will impact upon groundwater. The tunnel is to be driven south to north and in order to facilitate this, a large sub-surface structure, known as the 'drive-pit', is proposed at Goxhill (in addition to a smaller 'reception pit' at Paull). In order to construct the drive-pit, groundwater management will be needed to draw-down the water table. The Hydrogeological Impacts Assessment is not currently supported by adequate site investigation and therefore does not form a suitable basis on which to assess the proposed design, its environmental effects or the mitigation proposed.

1.3 A full pump test must be undertaken to provide accurate characterisation of the aquifer and, following that, the Hydrogeological Impact Assessment (and any other

related chapters) updated. Without this information, predictions made about the extent and length of dewatering necessary, the resultant impacts and the suitability of mitigation, cannot reasonably be relied upon.

1.4 Depending on the spatial and temporal extent of dewatering needed, this will result in a zone of influence within which groundwater will be affected. Of key interest within this zone of influence will be understanding the impacts on:

- 1) Other users of water in the area, including local food-related industry, public drinking water supplies and small-scale private abstractors;
- 2) Flows within East Halton Beck and other surface watercourses – including their related ecology; and
- 3) The intrusion of saline water from the estuary into the otherwise freshwater aquifers.

1.5 The groundwater management needed to facilitate these works is likely to need an abstraction licence from the Environment Agency if either:

- 1) Dewatering becomes a licensable activity between now and the project being constructed (this is currently due to be implemented in October 2015); or
- 2) Any abstracted water is utilised for other uses, e.g. for hydrostatic testing or cement production.

Even if the proposed activities would not fall under the abstraction licensing regime, we will still seek to apply the spirit of the licensing regime through the DCO process.

1.6 There is currently a limit on abstraction licences in the Humber South Bank area due to the chalk aquifer being over abstracted, as set out in the Environment Agency's 2006 Grimsby, Ancholme and Louth Catchment Abstraction Management Strategy (CAMS). Our updated February 2013 CAMS states that the chalk groundwater resource is fully committed to existing users and the environment.

1.7 We will only be in a position to support the proposals, either through our role as a statutory planning consultee to the DCO or through our role as regulator under the Water Resources Act, if the application is supported by robust evidence demonstrating that, as a result of the proposed groundwater management:

- 1) Other licensed and lawful unlicensed water users (including small-scale, private abstractors) will not be unacceptably impacted;
- 2) Unacceptable saline intrusion will not occur; and
- 3) Flows in East Halton Beck and other surface watercourses (including their related ecology) will not be unacceptably impacted.

1.8 We feel it is essential that comprehensive pump-testing is undertaken at the earliest opportunity and that this informs an updated Hydro-geological Impact Assessment. In our view, this will provide the certainty needed to finalise the construction design, assess its environmental effects and demonstrate that the mitigation strategy will be effective and deliverable.

1.9 Outside the formal DCO process we have been provided, for our review, with:

- The results of mini pump tests undertaken in August 2015;
- A response to comments we made previously about a draft Hydrogeological Impact Assessment Addendum.
- A revised HIA Addendum.

To date, these documents don't appear to have been submitted to the ExA, including as part of the deadline 1 submissions. We will provide our formal comments to the ExA in due course, once these documents are finalised and submitted to the examination.

2.0 Flood Risk (also see Appendix 2)

2.1 The Flood Risk Assessment (FRA) supporting the application is currently inadequate as it does not make use of the best available information and is unclear and inconsistent on certain matters. In particular:

- 1) The FRA does not take account of the latest interim tidal levels for the Humber. The levels are ~300-500mm higher than those assessed in the FRA. As such its assessment may substantially underestimate the risk;
- 2) There are inconsistencies in the FRA and other documentation regarding the provision of flood bunds during construction around the drive and reception pits. These should be clarified;
- 3) We have concerns that in the event of tunnel collapse during construction, the tunnel would act as a conduit allowing water from the estuary to flow into the floodplain in which there is existing critical infrastructure;
- 4) We disagree with the applicant that climate change needs not be considered. Climate change must be considered for the lifetime of the development. In addition, aspects of the development classed as 'essential infrastructure' (e.g. kiosks) must also be tested against a more extreme flood event;
- 5) Insufficient minimum cover is proposed for Works 1A as these are in a location where the Environment Agency is proposing a managed realignment site which will involve land lowering to encourage tidal inundation. Minimum cover should be increased;
- 6) There has been insufficient assessment of risk following a breach in the tidal defences. Given that depths of water, based on present day risk, are expected to be between 1.5- 1.75m in some areas of the site, it is important that this information is provided. The information should be used to inform the Emergency Warning and Flood Incident Response Plan;
- 7) The FRA identifies that flood depths from fluvial flooding will be increased as a result of the development. However, insufficient assessment has been made of the potential receptors for this;
- 8) The 'Indicative Paull Site Layout' shows an area denoted as the 'water discharge work area' which appears to coincide with the existing flood defence and Thorngumbald Pumping Station outfall. More detail is requested to assess any potential impacts. This was discussed with the applicant at a site meeting, but additional information has not yet been forthcoming;
- 9) Any mitigation measures deemed necessary in a suitably updated and approved FRA will need to be secured via an appropriate requirement in the DCO.

2.2 We note that a FRA Addendum was submitted by the applicant at Deadline 1. We have not yet had the opportunity to review the document, but will provide our comments at Deadline 3.

3.0 Biodiversity (also see Appendix 3)

3.1 Further to the concerns we have raised regarding groundwater, a potential receptor for these impacts is water voles and their habitat within various ditches and watercourses which may be affected by groundwater dewatering. The lack of certainty over these groundwater impacts, therefore extends to the project's predicted impacts on water voles.

3.2 The project's biodiversity impacts generally will need to be re-visited in light of an updated Hydrogeological Impact Assessment, reflecting any revised understanding of the nature and extent of the project's predicted impacts on groundwater.

3.3 There also appears to have been no investigation of potential opportunities to provide ecological enhancement through the scheme, as is required by EN-1 and other local policies. We request that the applicant provides an assessment of all potential opportunities to contribute to ecological enhancement, and reasoned justification as to whether or not the scheme could assist with the delivery of this enhancement. This should be accompanied by a detailed schedule of committed enhancements which are secured through the DCO.

3.4 We would also like to highlight that we have recently delivered a flood defence managed realignment site at Paull Holme Strays which was necessary compensation to ensure that our flood risk management activities in the estuary are compliant with the Habitats Regulations (as set out in our Humber Flood Risk Management Strategy and its associated Habitat Regulations Assessment). The function of this site must be safeguarded from the proposed development, particularly in relation to the disturbance of birds (but may also include vegetation, benthic invertebrates, topography etc). It is therefore essential that appropriate mitigation and monitoring is secured for the construction programme. We propose to defer to Natural England on this matter, who will be providing more detailed comments.

4.0 Pollution Prevention (also see Appendix 4)

4.1 We are generally content that the pollution mitigation measures proposed in relation to surface water are sufficiently robust to ensure that any potential impacts can be minimised. However, we would like to see some minor amendments to the CEMP, as set out Appendix 4.

5.0 Waste (also see Appendix 5)

5.1 The application states that some material (tunnel arisings) would be left on site for possible reuse in infilling etc, around the laid pipe. This would be acceptable in most circumstances, however further information would be needed as to what the material would consist of, how long it would be stored and how it is intended to be stored, before determining whether the activity would require an Environmental Permit under the Environmental Permitting Regulations.

6.0 Land Interest (also see Appendix 6)

6.1 We have land interests that may be affected by the project. We object to the interference with certain of these. These objections are set out in Appendix 6, along with various points of clarification and requests for minor amendments to the book of reference.

7.0 Disapplication & Draft DCO (also see Appendix 7)

7.1 We note that the draft DCO includes disapplication of various aspects of the Yorkshire Land Drainage Byelaws 1980. Whilst we do not object in principle to this, we will need to enter into negotiations with the applicant regarding the inclusion of suitable protective provisions. Only when appropriate protective provisions have been agreed will we be able to confirm our acceptance of the proposed disapplication.

7.2 We note that the above byelaws apply solely to the north bank of the Humber and that no request has been made to disapply the equivalent byelaws on the south bank. The applicant has indicated that they now wish to disapply all byelaws on both north and south bank. We await confirmation of this and revised wording for the DCO.

7.3 We have provided some draft Protective Provisions to the applicant and will continue to liaise with them to finalise the wording, accounting for any changes to the DCO in respect to disapplication.

7.4 Article 16(5) of the DCO provides that 'the undertaker must not, in carrying out or maintaining works pursuant to this article, damage or interfere with the bed or banks of any watercourse forming part of a main river unless otherwise authorised under the provisions of Part 3 (for the protection of the Environment Agency) of Schedule 10 (protective provisions) of this Order.' It does not specify that a Flood Defence Consent also has to be complied with, which it should be as section 109 of the Water Resources Act 1991 has not been disapplied in the DCO.

7.5 Requirement 5 of the DCO needs to say 'a site water management plan has been submitted' rather than 'site water management plan have been submitted'.

7.6 We note that Requirement 9 does not currently have a clause requiring compliance with the approved agricultural land drainage scheme.

Should you require any additional information or clarification, please don't hesitate to contact me on the details below.

Yours faithfully

Mr Sam Kipling
Sustainable Places Planning Specialist
Direct dial 0113 819 6386
Direct fax 0113 819 6299
Direct e-mail sam.kipling@environment-agency.gov.uk

8.0 Appendix 1 - Groundwater

8.0 Outside of the formal DCO process, we have been sent a revised HIA Addendum, the results of a mini pump test undertaken in August 2015 and a response to comments we made about a previous HIA Addendum. This information is yet to be provided to the ExA. We will continue to work with the applicant and will provide formal comments to the ExA in due course, once these documents are finalised and submitted.

8.1 The Hydrogeological Impact Assessment (HIA)(6.13.3 Appendix 13.3) is an important document. The principal purpose of this document is to identify what groundwater-related impacts could arise in the surrounding area and how mitigation measures could reduce this impact. Information in the HIA draws on data provided in accompanying reports such as '6.8 Geology and Soils' and 'Appendix 8.5 Chalk Report'. It uses this information to describe how the proposed drive pit and reception pit may affect the water environment and the stability of surface structures. The report identifies that the construction phase of the drive pit and reception pit could have wide ranging impacts on surface water and groundwater.

8.2 For this reason the report proposes mitigation measures and explores how these could reduce the impact. The mitigation proposed is to pile at the drive and reception pits, then to dewater before excavations commence. The hypothesis is that the combination of piling and groundwater dewatering within the piled area would minimise groundwater draw-down (i.e. the lowering of groundwater levels) and therefore limit adverse effects on the surrounding environment.

8.3 Examples of adverse impacts include:

- Saline intrusion - the movement of estuary water into the freshwater chalk aquifer from works at the drive pit;
- Reduced groundwater levels;
- Reductions in groundwater level or quality and a resultant impact on licensed and unlicensed groundwater users;
- Reduced flows in surface watercourses (including drainage ditches) and potential effects on ecology.

8.4 The report provides a summary of sensitive water features in the surrounding area. These are licensed and unlicensed abstractions, surface water features and any other pertinent water feature. This information has been gathered from information requests to relevant authorities in the area. This information is important as it seeks to identify the receptors for any potential adverse impacts.

8.5 The chalk and sand and gravels are the main water-bearing units that will be encountered during the drive pit and reception pit works. How this water is managed is key to minimising impacts on the water environment. The characteristics of the chalk and sand and gravels are based on information that has been gathered from the site investigation, literature search and professional opinion and has been presented within the HIA. This information is important because it has been used to infer certain assumptions about how the water environment could behave during the construction phase. The conceptual model and subsequent computer modelling use these hydrogeological characteristics - of the chalk at the drive pit and of the sand and gravels at the reception pit. How the mitigation is predicted to work relies on this evidence. Being confident in this information is therefore critical to being able to assess and agree the suitability of the mitigation proposed.

8.6 The results of computer modelling, as presented in the HIA, are that up to 70 cubic metres per day of groundwater for 35 days will need to be abstracted during the drive pit

works. It also suggests that 149 cubic metres per day of groundwater will need to be abstracted for the reception pit over 39 days. We consider that there is significant uncertainty about these figures, both in respect to the quantities of groundwater abstraction and the duration of the proposed works. We strongly recommend that pump tests are undertaken to provide more appropriate site-specific evidence to confirm and substantiate the findings of the HIA.

8.7 During pre application discussions with consultants for National Grid, we recommended that work should be done to characterise the chalk aquifer. Specifically pump tests should be used to obtain site specific information on chalk permeability. It was felt that this information was key to establishing confidence in the proposed method of drive pit construction. This is because the proposed method of mitigation, by piling around the drive pits, relies on the chalk having horizontal permeability but relatively little vertical permeability. The main zone of the groundwater movement in the chalk aquifer is generally felt to be in the top 50 metres. With piling proposed to a depth of 28 metres, if there is a strong element of vertical permeability then dewatering within the piled excavation may necessitate significantly more abstraction than currently predicted. This could also lead to delays in the period excavation would take, as well as resulting in significant changes to the nature and extent of the predicted impacts. It is therefore critically important to be confident about the chalk characteristics prior to the granting of any consent.

8.8 The Ground Investigation Report identifies and discusses differences between in situ permeability tests and feedback from drilling operations. The report identifies significantly differing (orders of magnitude) permeability between the tests and feedback. The report continues that, "it is considered that a greater understanding of the permeability will only be possible when full scale pumping tests have been completed as part of the Phase 2 ground investigation."

8.9 Secondly, the driller's logs that have been provided as part of this submission identify much weak chalk, with some losses of core during drilling. This indicates soft, weak chalk that has the potential to provide vertical permeability.

8.10 Based on the information gathered to-date, the indication is that adverse impacts would be insignificant and any residual impacts would be for the short duration of excavation and concrete base placement. The predicted pump rate relies on the data gathered so far on chalk characteristics. The additional pump test information would inform the proposed method of drive pit excavation as well as the groundwater conditions to be encountered by the Tunnel Boring Machine. This evidence should provide the confidence needed on whether the proposed method is feasible and whether or not impacts in the area can be adequately mitigated. Without this information to support the proposed methodology we cannot be confident that the proposal will not have significant and unacceptable impact on the wider environment.

8.11 We would also like to highlight that no new groundwater licences are currently available from the Environment Agency in the South Humber Bank area. Whilst dewatering is not yet a licensable activity, DEFRA have been looking to make it licensable for some time. There is therefore a possibility that by the time construction commences a licence (for groundwater abstraction above 20 cubic metres per day) would be needed in any case. However, even if dewatering remains an unlicensed activity, if dewatered groundwater is stored and used for other purposes on site - which has been proposed - a licence would be needed regardless. There are similar licensing constraints on the surface water system in the South Humber Bank area, however this is not the case in the North Humber Bank area.

8.12 Paragraph 2.3.12 of the Scheme Description states that for the drive pit and reception pit, groundwater control is likely to be achieved by combining four approaches:

- Cut off walls (secant and sheet piling);
- Deep well dewatering;
- Sump pumping; and
- Passive relief wells within the base of the pit.

Although no dimensions are presented in this section, from previous correspondence it is understood that the drive pit will be advanced into the chalk aquifer while the reception pit will remain within the superficial deposits. As a result, we consider that there are likely to be fundamental differences in the behaviour of groundwater at the drive pit compared with the reception pit. It is the behaviour of groundwater which needs to be clearly understood before substantial and irreversible decisions are made on the principle and methodology of pit construction.

8.13 Paragraph 2.3.10 of the Scheme Description states that the tunnel, drive pit and reception pit would be kept reasonably dry during the construction of the tunnel and installation of the pipeline by controlling groundwater in-flow. Key to this is whether or not groundwater can be controlled. Our view is that the nature of the geology and the potential for significant groundwater ingress must be explored through pump testing, prior to the principle and construction methodology being established. Without suitable pump testing being undertaken, we cannot be confident that the proposed mitigation would be effective or what the residual magnitude of impact on the wider environment could be.

8.14 Paragraph 2.4.34 of the Scheme Description states that the pipeline test sections for the Goxhill side require water to be pumped in or out. Paragraph 2.4.38 states that there are three alternative sources. The preferred source is presented in paragraph 2.4.42 and relates to groundwater. The paragraph described that dewatered groundwater from the drive pit and reception pit could be stored on site for use in the hydrostatic testing. We would like to highlight that the quantity of water required for hydrostatic testing may not match the water produced. Secondly, no new licences are available on the Goxhill side of the works due to the Catchment Abstraction Management Strategy status of the area. It is unclear whether storage of up to and over 5.5 million litres of water has been allowed for in the design proposal.

8.15 Paragraphs 2.4.73 to 2.4.76, of the Scheme Description describe the decommissioning proposals of the Goxhill construction Site. The decommissioning or infilling of the drive pit will require special consideration as this will be particularly challenging due to the groundwater conditions. There is no mention of this aspect in the report. Similarly Paragraphs 2.5.37 to 2.5.39 of the Scheme Description do not consider the decommissioning of the reception pit at Paull in any detail.

8.16 With regard to the methodology section of the Geology and Soils chapter (6.8), paragraph 8.3.2 states that the Water Resources Chapter only considers the construction phase of the Scheme as PINS agreed in their Scoping Opinion that operational impacts are unlikely given the nature of the development and could be scoped out of this chapter. In our view, based on the information currently available, the “reconfining” of the chalk aquifer after construction, may present a major challenge with the potential for medium and long term management of groundwater required in and around the sheet piled trench. This issue should be addressed.

8.17 Paragraph 8.3.7 of the Geology and Soils chapter states that the study area

includes the area within the application boundary plus a buffer zone of 250 metres. The study area for this topic is stated as being agreed with the Local Authorities and the Environment Agency (Appendix 8.1 - document 6.8.1). It should be noted that the study zone for the hydrogeology is considerably larger at around 4km.

8.18 Paragraph 8.4.33 of Chapter 6.8 states that hydrogeology is discussed in detail within Chapter 13. Paragraphs 8.7.1 and 8.10.2 state that once constructed and in operation the pipeline would be buried and all land use returned to its former use with vegetation reinstated. The report considers that there would be no significant effects on the geology and soils during the operational phase. It should be remembered that secant piling and the concrete slab for the trenching works would remain in place and there is uncertainty regarding the post construction monitoring and maintenance of groundwater within the chalk aquifer. This should be considered in Chapter 13, with any necessary monitoring and/or maintenance secured in the DCO.

8.19 Paragraph 8.8.5 of Chapter 6.8 states that geology and soils are considered to have a 'low' value. In our view this conclusion is incorrect. The chalk geology is a principal aquifer and due to its groundwater bearing capacity and importance for water resources, its value should not be assigned as 'low'.

8.20 Paragraph 8.10.10 of Chapter 6.8 states that, based on the information available to date and the environmental design and enhancement measures proposed, the potential significant effects that could arise from construction of the scheme are considered to be negligible. The effects for geology are not considered to be negligible and the hydrogeological impacts associated with this are discussed in Chapter 13. This Chapter should cross-reference and account for the potential significant effects on hydrogeology.

8.21 We have some concerns about chapter 6.8.5, Appendix 8.5: Chalk Report in relation to the cross referencing of photographs with driller's logs to confirm the succession of chalk geology. Chapter 7 page 16 recommends that density classifications on the core logs need to be supported by the descriptive evidence (e.g. breaking by hand or with a geological hammer). The outcome of this could be fed into Chapter 13 on hydrogeology as the evidence may be useful in understanding the vertical and horizontal components of groundwater flow, which are crucial to understanding the potential impacts of dewatering of the trench.

9.0 Appendix 2 - Flood Risk

9.1 We note that a FRA Addendum has been submitted at deadline 1. We will provide comments on this at deadline 3. As we are not yet in a position to take it into account, the comments made in our RR are repeated below. We request the provision of an updated FRA addressing the following points:

9.2 The FRA does not take account of the latest interim tidal levels for the Humber, which are now available. An initial comparison shows that the interim 0.5% Annual Exceedence Probability (AEP) levels are between approximately 300 and 500 mm higher than those levels stated in the FRA. This new information may have implications for many aspects of the FRA and need to be taken account of.

9.3 The flood bunds mentioned in Section 6.1.5 of the FRA are not shown on Indicative Goxhill and Paull Site Layout drawings. Given the detail and complexity of these drawings which show fencing, spoil bunds and the like, we would expect the flood bunds to have been included. This drawing should be updated to include the bunds so that their relationship with other site features can be seen.

9.4 Sections 5.6.4. and 6.1.2/6 of the FRA contain contradictory statements in terms of the provision of 1.4 m high (3.3 to 3.4 mAOD) flood bund around the drive and reception pits. The former states bunds are not required and the latter say they will be provided. Some of the plans don't show a continuous bund around the drive pit. Definitive clarification of what is proposed is requested.

9.5 Section 7.6.5 of the FRA discusses the issue of settlement of defences at Paull and distinguishes between historic settlement and settlement attributable to the proposed project. It is worth stating that the settlement detected by the Environment Agency and our consultants in 2014 is some distance to the west of the proposed corridor. The defence immediately above the corridor was not found to have settled historically since construction in the early 2000s.

9.6 We disagree with the applicant that climate change need not to be considered. Climate change must be considered for the lifetime of the development and the essential infrastructure elements (kiosks stated as having a design life of 40 years in s6.1.8) tested against the extreme water levels arising from the 0.1% and mitigation specified. The FRA states that the document has been produced in accordance with the Overarching National Policy Statement for Energy EN-1 which states 'While climate change mitigation is essential to minimise the most dangerous impacts of climate change, ... If new energy infrastructure is not sufficiently resilient against the possible impacts of climate change, it will not be able to satisfy the energy needs as outlined in Part 3 of this NPS.' It further states that this [mitigation or adaptation] should cover the estimated lifetime of the new infrastructure. Section 5.7.5 further supports our requirement that the extreme 0.1% scenario should be tested for the most sensitive (essential infrastructure i.e. kiosk) components of the development over its lifetime and states that a FRA should 'consider if there is a need to be safe and remain operational during a worst case flood event over the development's lifetime'. Furthermore, no details of the mitigation for the kiosks, deemed essential infrastructure, have been provided, other than to advise that they are flood resilient. We cannot advise on the suitability of approach without these details.

9.7 Although the FRA states that the 'less vulnerable' aspects of the development such as generators will be located on raised platforms, the height of the platforms has not been quantified, so we are unable to advise on their suitability. The mitigation proposed for the temporary welfare/office facilities should also be specified. If these facilities are

solely reliant on a Flood Warning and Evacuation Plan this should be identified so we can advise.

9.8 In addition, the Scheme Description Figure 2.3 'Indicative Paull Site Layout' shows an area denoted as the 'water discharge work area', which appears to coincide with the existing flood defences and Thorngumbald pumping station outfall. There is no explanation of the nature and purpose of this area in the accompanying text or any assessment of potential interactions with this existing infrastructure. Additional explanation is needed to understand the impacts on the flood defence/outfall and Paull Holme Strays designated area.

9.9 Document 5.5, 'Details of other consents and licences' refers to the disapplication of Environment Agency Yorkshire Land Drainage Byelaws (6H). It should be noted that the Yorkshire Land Drainage Byelaws do not extend to the Goxhill side of the project. It should also be noted that, as stated elsewhere in the submitted documentation, the Yorkshire disapplication refers to three particular byelaws: numbers 11, 12 and 20 - applicable to Main Rivers & Sea banks.

9.10 We note that a minimum cover of 1.2m below existing land levels is proposed for the onshore section at Goxhill (Works 1A). We have previously advised that the Goxhill onshore length falls within or in extremely close proximity to an area identified as a future realignment site. It is usual practice for such sites to win material locally for realigned tidal defences and scrapes and channels are often created to encourage tidal inundation and more rapid evolution of the habitats that realignment sites seek to create. Whilst we welcome the proposal that the tunnel will be filled with water upon commissioning to address the risk of the tunnel floating, the lowering of existing land levels would place the proposed tunnel at risk of being exposed in this area.

9.11 The exact location and extent of any realignment site is not yet known but we would like to see the limits of deviation amended in this location, to provide additional protection for the pipeline and for the proposed realignment site. We would not wish the presence of the tunnel to hinder the future delivery of realignment in this area as this would negatively impact on flood risk to third parties by impacting on our delivery of wider flood risk management schemes in the middle Humber Estuary, which is an area containing a wide range of critical infrastructure. We therefore request that the vertical limit of deviation for Works 1A is amended from 1.2m to 1.7m in order to provide this additional protection.

9.12 We welcome the proposed pre and post construction survey of the defences to monitor for the effects of settlement. We request that a requirement is included within the draft DCO to secure this measure. Any such requirement should ensure consultation with the Environment Agency and must secure the implementation of remedial works should settlement be detected. The standard of protection afforded by the existing defences must not be compromised as a result of the works.

9.13 At the decommissioning stage (depending on the exact location and development of the proposed realignment site at Goxhill) we are likely to request that the tunnel end is suitably capped to avoid any future collapse passing under the alignment of flood defences at that time. It may be necessary to include a requirement to cover the need for submission and approval of a pipeline decommissioning scheme, such that this detail may subsequently be agreed.

9.14 We recommend that the ExA takes advice on the Emergency Warning and Flood Incident Response Plan, as the Environment Agency does not fulfil these roles in an

emergency. We are therefore not best placed to provide comments or advice. We suggest that the Humber emergency planners at East Riding of Yorkshire Council are contacted.

9.15 We maintain that the proposed bunds of 1.4m (3.3mAODN) which are not indicated on any of the plans and would need continuity to provide any degree of protection from inundation, are not sufficiently high. In the event of tunnel collapse during construction, the tunnel would act as a conduit allowing water from the estuary to flow into the floodplain in which there is existing critical infrastructure and ports which are reliant on the defences. In such an event, the flow of water through this route would not require a significant tidal flood event to cause a problem, as the land levels in the floodplain are lower than normal daily astronomical tides. This indicates that outflow into the floodplain would be for long durations each day.

9.16 The applicant has presented some evidence that tunnel collapse is very unlikely. However we are not in a position to critique this assessment as tunnel construction is a specialist matter on which we have no remit or direct expertise. We are clear however, that the consequence of such an event could be severe, thereby resulting in an overall risk which we feel should be more robustly mitigated. We advocate that if the applicant continues to refuse to bund the drive pit to a height equivalent to the adjacent defences, then an alternative means of closing the tunnel entrance, should failure occur, should be proposed.

9.17 It should also be noted that whilst the proposed bunds could be reasonably expected to offer a degree of protection to the works from fluvial inundation, they would not be expected to be sufficient to provide protection following the effects of a breach in the tidal defences given that depths of water are expected to be between 1.5- 1.75m in some areas of the site in the current day. Our hazard mapping has been previously supplied and remains the 'best available' information in relation to the consequences of a breach. The ExA should satisfy itself that the proposed Emergency Warning and Flood Incident Response Plan is sufficient to address the risk of a breach of the tidal defences, in consultation with the relevant emergency planners.

9.18 The FRA identifies a temporary (duration 35months) displacement of river waters, quantified to be in the region of a 10cm uplift in flood depths during a 1% fluvial flood from the undefended East Halton Beck and 6cm increase in depths from the higher probability 4% fluvial flood. It would be advisable for the FRA to identify whether there are any flood risk receptors in the location where an increase in flood risk is predicted.

9.19 Please be advised that as of 15 April 2015, Lead Local Flood Authorities became statutory consultees on all major development proposals, thereby taking over the Environment Agency's role in relation to surface water. We have therefore not considered the temporary works for managing and storing surface water on the site. We also note that the DCO does not allow for the LLFA to pick up this element of technical advice. We recommend that advice is sought on this matter from the two Lead Local Flood Authorities (North Lincolnshire Council and East Riding of Yorkshire Council). We also suggest that consultation with the LLFAs is also added to requirement 5.

9.20 Works 4D in the DCO describe a "temporary groundwater discharge point at East Halton Beck (Skitter Drain)". This section should be amended to make clear that a discharge will only be acceptable in the flushing basin, or downstream in Skitter Drain. Discharge above this point is unlikely to be acceptable because of the salinity of the water in question. Any such discharge may also require an Environmental Permit under

the Environmental Permitting Regulations.

10.0 Appendix 3 - Biodiversity

10.1 We have serious concerns over the lack of certainty regarding water vole impacts associated with the scheme. Paragraph 7.8.61 of the Ecology and Nature Conservation chapter (Document 6.7) states that potentially up to 3.5km of ditch habitat may be temporarily lost through dewatering activities at Paull and Goxhill (please also see our detailed comments regarding groundwater impacts). Presently the local hydrogeological conditions are not fully understood, which is accepted by the applicant. Therefore, there is no certainty that dewatering activities will only impact upon 3.5km of watercourse. The mitigation for this loss outlined in paragraph 7.8.62 is to allow water voles to disperse into neighbouring watercourses. Given the likely groundwater connectivity between watercourses in the area, there is no certainty that dewatering will not impact upon neighbouring watercourses, therefore eliminating their potential as water vole refuges. Furthermore, as has been detailed elsewhere in our response, there exists a level of uncertainty over the timescales for dewatering and construction of the drive and reception pits, which could seriously extend the periods of low flow in nearby watercourses.

10.2 In order to address this, the applicant should provide a more comprehensive water vole mitigation plan (informed by the additional hydrogeological information requested above), incorporating implementable actions to mitigate for habitat loss, especially given that works proposed to take place over times of peak water vole activity. In addition, the project's biodiversity impacts generally will need to be re-visited in light of any updated hydrogeological information, reflecting any revised understanding of the nature and extent of the project's predicted impacts.

10.3 Paragraph 7.7.8 of the Ecology and Nature Conservation chapter states that there will be some habitat improvement in Field 26 at Paull. However, there is no confirmation of the amount of habitat improvement to be provided, or timescales for the work. More fundamentally, there appears to have been no investigation of potential opportunities to provide ecological enhancement through the scheme. The requirement to provide enhancements is enshrined within national and local policy. 5.3.4 of EN-1 states that *"the applicant should show how the project has taken advantage of opportunities to conserve and enhance biodiversity and geological conservation interests"*. Furthermore, ENV4 of the emerging ERYC Local Plan Strategy states: *"To optimise opportunities to enhance biodiversity, proposals should seek to achieve a net gain in biodiversity where possible"*.

10.4 We would expect the applicant to have produced an assessment of all potential opportunities to contribute to ecological enhancement, and reasoned justification provided as to whether or not the scheme could deliver this enhancement. This should accompany a detailed schedule of enhancements to enable the ExA to determine whether or not the scheme is compliant with 5.3.4 of EN-1 and relevant local policies.

10.5 Opportunities for enhancement are likely to grow with the scale of schemes. Therefore we would suggest that the level of ecological enhancement should be commensurate with the scale of the proposed development. Given the location of the proposed pipeline, and the scale of the project, we would expect to see significant enhancement delivered through the scheme, and would strongly urge National Grid to investigate all reasonable opportunities to achieve this, to provide detail on this in the ES, and to provide commitments to delivery through suitable DCO requirements.

10.6 We note that there have been relevant submissions on this matter at deadline 1. We will review these and provide comments at deadline 3.

11.0 Appendix 4 - Pollution Prevention

11.1 We are generally content that the pollution mitigation measures proposed in relation to surface water are sufficiently robust to ensure that any potential impacts can be minimised, or that a response to contain any emerging issues can be put in place, via the proposed requirements.

11.2 We would however ask that following minor additional contingencies/clarifications are included within an amended CEMP:

- 1) Con D17: Any contaminants produced using wet cleaning methods should be contained. Dispersant chemicals must not be used in conjunction with any washdown of the affected areas to disperse any residue, unless **all contaminants and contaminated materials** are to be contained in readiness for correct offsite disposal;
- 2) We also ask that in relation to section 6.1.3 of the Initial CEMP, namely the reporting of accidental releases to watercourse to the Environment Agency, our 24 hour Incident Hotline Number 0800 807060 is incorporated into the CEMP to facilitate this.

12.0 Appendix 5 - Waste

12.1 The application states that some material (tunnel arisings) would be left on site for possible reuse in infilling etc, around the laid pipe. This would be acceptable in most circumstances, however further information would be required as to what the material would consist of, how long it would be stored and how it is intended to be stored, before determining the need for regulation under the Environmental Permitting Regulations. Lengthy and or incorrect storage of these materials could pose an environmental risk and hence may require regulation.

12.2 To remove any waste, specifically tunnel arisings, from the scope of regulation, consideration should be given to the implementation of the relevant "Codes of Practice" (CL:AIRE) or Quality Protocols ("WRAP"). This would include soils and subsoils being used on site or being removed from site and used elsewhere.

12.3 Tunnel arisings not classed as soils or subsoils are likely to be excluded from the Definition of Waste Code of Practice so further investigation into the possible reuse of these arisings would be needed.

12.4 It is likely that any material removed from site and stored elsewhere would require an Environmental Permit or Exemption.

12.5 If any controlled waste is to be removed off site, then the site operator must ensure a registered waste carrier is used to convey the waste material off site to a suitably permitted facility.

13.0 Appendix 6 – Land Interest

13.1 Yorkshire Wildlife Trust became the tenants of most of the Environment Agency's land at Paull Holme Strays as of Friday 25 September 2015. Their leasehold interest will need to be added to the book of reference against plots 21, 22, 23, 24, 25, 26, 28, 29, 53 and 54.

13.2 The book of reference currently lists the Environment Agency as owner and occupier of plots 17 and 44. We have no interest as owner or occupier in either of these plots as shown on the Land Maps. However, the description of plot 44 in the book of reference does not correspond with the location shown on the Land Map. We need National Grid to clarify this apparent anomaly.

13.3 The Environment Agency has a right-of-way over the track crossing plots 30 and 19. These rights need adding to the book of reference.

13.4 "Flood defence" needs adding to the description of plot 20.

13.5 "Flood defence and intertidal nature reserve" needs adding to the description of plot 54.

13.6 The Land Map (sheets 3 and 4) state that a leasehold interest is required over plots 53 and 54. We would like to query the accuracy of this statement, as we understand that an easement or deed of grant is required. We would have no objection in principle to the granting of an easement or deed of grant, subject to the details being agreed and provided they relate solely to below-ground works.

13.7 In relation to the temporary works affecting plots 19 to 30 (inc), National Grid must ensure that the Environment Agency has full, free and uninterrupted vehicular access to Thorngumbald Pumping Station at all times. We ask that this be reflected in the DCO.

13.8 We currently have access along the sea defences from East Halton Skitter North and along the access track from East Halton Skitter northerly. We will need to retain a degree of access from East Halton Skitter to the North which should be appropriately referenced within the DCO.

13.9 In relation to plots 23, 25 and 26, the latest plan we have received from the applicant's agent shows that these plots are required for a right of way to the land for the proposed kiosk adjacent to the gas compound at Paull. We have recently received details from the applicant/agent relating to acquisition of the kiosk land and associated right of way, and it does not appear to be a major concern. However, we would like the applicant to clarify the need for permanent rights of way over plots 23, 25 and 26 rather than taking access to the kiosk through the existing gas compound.

13.10 We have also provided an answer to the ExA's questions 15.2 and 15.4 in relation to whether the minimum necessary rights have been sought. We would like to seek clarification as to why the tunnel diameter is proposed at around 4 metres. The proposed diameter appears to be significantly larger than the pipeline it is designed to accommodate yet we can find no explanation of why this is the case in the supporting documentation. Given that the tunnel diameter may have a bearing on the necessary size of such other features as the drive and reception pits, about which we have concerns, it would be useful to receive clarification on this point. This matter may have a bearing on our land negotiations with the applicant, as the applicant appears to be seeking rights to sublet surplus space within the tunnel, to which we would object.

13.11 In relation to Articles 21, 25 and 26 we would be concerned if the undertaker took temporary “possession” of the surface of any land on plot 54 (wildlife habitat and operational flood defences where the undertaker is seeking an easement to bore and maintain an underground pipeline tunnel). Similarly, we would be concerned if they took “possession” of any land comprised in plots 20, 21, 22, 24, 28 or 29 (operational flood defence land, where the undertaker is seeking rights to lay hoses to discharge surplus water. We have made clear in our negotiations that we will only be willing to grant such rights by way of a licence. However, on 2 October 2015, National Grid’s agents sent us the heads-of-terms for a temporary (3 year) easement of the land, as an alternative to a lease. Despite this, we remain unsatisfied with the restrictions they propose to place on our use of these operational flood defences. We therefore object to the granting of a lease or easement affecting the above plots, and request that the rights to their “possession” in the draft DCO are removed.

13.12 Our understanding from discussions to date is that National grid simply require rights to lay a hose or hoses over the surface of the land at plots 20, 21, 22, 24, 28 and 29, and that these hoses can be moved from time to time within the abstraction area, so as not to compromise our use and operation of the flood defences. Based on this information, our position is that a *licence* to lay hoses over the land would be the most appropriate form of agreement in this case.

13.13 Articles 11/12 describes the stopping up of footpaths (A-B and B-C shown on rights of way map 7). The Environment Agency uses these tracks to gain access to Thorngumbald pumping station. We request that the provision for these stopping up orders should either be removed, or protective provisions added to ensure that the EA’s access is retained, or appropriate alternative access provided - at all times. We are currently awaiting comments from the applicant on the draft protective provisions we have provided them.

13.14 Part 2 Works Provisions, Article 13 appears to allow the provision of new access routes (or the alteration of existing access routes), including along the tidal flood defences if approved by the LPA. We wish to see a restriction included in the DCO through the addition of protective provisions to ensure that new accesses affecting the tidal flood defences cannot be delivered under this clause.

14.0 Appendix 7 – Disapplication

14.1 Our approach to this matter is that where a DCO seeks to disapply our regulating legislation (as is the case in this instance – Yorkshire Land Drainage Byelaws) for managing flood risk, we will only agree to this disapplication where appropriate protective provisions can be agreed within the DCO. Protective provisions will be needed to ensure that works which would have previously been consentable, will require our prior approval and be subject to reasonable conditions. No such protective provisions are currently included so we will need to enter negotiations with the applicant.

14.2 We have provided some draft Protective Provisions to the applicant to assist with this matter. We are awaiting the applicant’s comments and will continue to liaise with them to agree the final wording.

14.3 We note that the current request for disapplication applies solely to the north bank byelaws. No formal request has been made to disapply the equivalent byelaws on the south bank, although the applicant has indicated verbally that they may now be considering the disapplication of all the byelaws for both north and south bank, and that protective provisions will be inserted as a consequence. The equivalent byelaws are the Anglian Region Land Drainage and Sea Defence Byelaws. The most relevant sections

are likely to be 6C and 6H. The applicant should be asked to confirm their intentions in this respect.

Infrastructure Planning Directorate
Planning Inspectorate
Temple Quay House
Temple Quay
Bristol
BS1 6PN

Our ref: RA/2015/132060/03-L05
Your ref: EN060004
Our ID: 10031562
Date: 12 October 2015

WRITTEN REPRESENTATION SUMMARY

Dear Sir/Madam

A REPLACEMENT HIGH-PRESSURE GAS PIPELINE WITHIN A BORED TUNNEL BENEATH THE HUMBER ESTUARY AND ASSOCIATED DEVELOPMENT, INCLUDING A CONNECTING PIPELINE, MINOR MODIFICATIONS TO PAULL ABOVE GROUND INSTALLATION AND ASSOCIATED TEMPORARY LAY DOWN, WORKING AND MITIGATION AREAS. FROM PAULL, EAST RIDING OF YORKSHIRE TO GOXHILL, NORTH LINCOLNSHIRE.

We would like to provide the following summary of our Written Representation.

1.0 Groundwater

1.1 We have very serious concerns that the project is not currently supported by adequate information about its impacts on groundwater.

1.2 In order to construct the proposed drive-pit, groundwater management will be needed to draw-down the water table. The Hydrogeological Impacts Assessment is not currently supported by adequate site investigation and therefore does not form a suitable basis on which to assess the proposed design, its environmental effects or the mitigation proposed.

1.3 A full pump test must be undertaken to provide accurate characterisation of the aquifer and, following that, the Hydrogeological Impact Assessment (and any other related chapters) updated. Without this information, predictions made about the extent and length of dewatering necessary, the resultant impacts and the suitability of mitigation, cannot reasonably be relied upon.

1.4 Depending on the spatial and temporal extent of dewatering needed, this will result in a zone of influence. Of key interest within this zone of influence will be understanding the impacts on:

- 1) Other users of water in the area, including local food-related industry, public drinking water supplies and small-scale private abstractors;
- 2) Flows within East Halton Beck and other surface watercourses – including their related ecology; and
- 3) The intrusion of saline water from the estuary into the otherwise freshwater aquifers.

1.5 The groundwater management is likely to need an abstraction licence from the Environment Agency if either:

- 1) Dewatering becomes a licensable activity between now and the project being constructed (this is currently due to be implemented in October 2015); or
- 2) Any abstracted water is utilised for other uses, e.g. for hydrostatic testing or cement production.

Even if the proposed activities would not fall under the abstraction licensing regime, we will still seek to apply the spirit of the licensing regime through the DCO process.

1.6 There is currently a limit on abstraction licences in the Humber South Bank area due to the chalk aquifer being over abstracted.

1.7 We will only be in a position to support the proposals, either through our role as a statutory planning consultee to the DCO or through our role as regulator under the Water Resources Act, if the application is supported by robust evidence demonstrating that, as a result of the proposed groundwater management:

- 1) Other licensed and lawful unlicensed water users (including small-scale, private abstractors) will not be unacceptably impacted;
- 2) Unacceptable saline intrusion will not occur; and
- 3) Flows in East Halton Beck and other surface watercourses (including their related ecology) will not be unacceptably impacted.

1.8 We feel it is essential that comprehensive pump-testing is undertaken at the earliest opportunity and that this informs an updated Hydro-geological Impact Assessment. In our view, this will provide the certainty needed to finalise the construction design, assess its environmental effects and demonstrate that the mitigation strategy will be effective and deliverable.

1.9 Outside the formal DCO process we have been provided, for our review, with:

- The results of mini pump tests undertaken in August 2015;
- A response to comments we made previously about a draft Hydrogeological Impact Assessment Addendum.
- A revised HIA Addendum.

To date, these documents don't appear to have been submitted to the ExA, including as part of the deadline 1 submissions. We will provide our formal comments to the ExA in due course, once these documents are finalised and submitted to the examination.

2.0 Flood Risk

2.1 The Flood Risk Assessment (FRA) is inadequate as it does not make use of the best available information and is unclear and inconsistent on certain matters. In particular:

- 1) It does not take account of the latest interim tidal levels for the Humber. Its assessment may substantially underestimate the risk;
- 2) There are inconsistencies in the FRA and other documentation regarding the the drive and reception pit flood bunds. These should be clarified;

- 3) We have concerns that in the event of tunnel collapse during construction, the tunnel would act as a conduit allowing water from the estuary to flow into the floodplain in which there is critical infrastructure;
- 4) We disagree with the applicant that climate change needs not be considered;
- 5) Insufficient minimum cover is proposed for Works 1A as these are in a location where the Environment Agency is proposing a managed realignment site which will involve land lowering to encourage tidal inundation;
- 6) There has been insufficient assessment of risk following a breach in the tidal defences. The information should be used to inform the Emergency Warning and Flood Incident Response Plan;
- 7) The FRA identifies that flood depths from fluvial flooding will be increased as a result of the development. However, insufficient assessment has been made of the potential receptors for this;
- 8) The 'Indicative Paull Site Layout' shows an area denoted as the 'water discharge work area' which appears to coincide with the existing flood defence and Thorngumbald Pumping Station outfall. More detail is requested;
- 9) Any mitigation measures deemed necessary in a suitably updated and approved FRA will need to be secured in the DCO.

2.2 We note that a FRA Addendum was submitted by the applicant at Deadline 1. We have not yet had the opportunity to review the document, but will provide our comments at Deadline 3.

3.0 Biodiversity

3.1 Further to the concerns we have raised regarding groundwater, a potential receptor for these impacts is water voles and their habitat within various ditches and watercourses which may be affected by groundwater dewatering. The lack of certainty over these groundwater impacts, therefore extends to the project's predicted impacts on water voles.

3.2 The project's biodiversity impacts generally will need to be re-visited in light of an updated Hydrogeological Impact Assessment, reflecting any revised understanding of the nature and extent of the project's predicted impacts on groundwater.

3.3 There also appears to have been no investigation of potential opportunities to provide ecological enhancement through the scheme, as is required by EN-1 and other local policies. We request that the applicant provides an assessment of all potential opportunities to contribute to ecological enhancement, and reasoned justification as to whether or not the scheme could assist with the delivery of this enhancement. This should be accompanied by a detailed schedule of committed enhancements which are secured through the DCO. We note that there have been relevant submissions on this matter at deadline 1. We will review these and provide comments at deadline 3.

3.4 We would also like to highlight that we have recently delivered a flood defence managed realignment site at Paull Holme Strays which was necessary compensation to ensure that our flood risk management activities in the estuary are compliant with the Habitats Regulations (as set out in our Humber Flood Risk Management Strategy and its associated Habitat Regulations Assessment). The function of this site must be safeguarded from the proposed development, particularly in relation to the disturbance of birds (but may also include vegetation, benthic invertebrates, topography etc). It is therefore essential that there is appropriate mitigation and monitoring. We propose to defer to Natural England on this matter, who will be providing more detailed comments.

4.0 Pollution Prevention

4.1 We are generally content that the pollution mitigation measures proposed in relation to surface water are sufficiently robust to ensure that any potential impacts can be minimised. However, we would like to see some minor amendments to the CEMP.

5.0 Waste

5.1 The application states that some material (tunnel arisings) would be left on site for possible reuse in infilling etc, around the laid pipe. This would be acceptable in most circumstances, however further information would be needed as to what the material would consist of, how long it would be stored and how it is intended to be stored, before determining whether the activity would require an Environmental Permit.

6.0 Land Interest

6.1 We have land interests that may be affected by the project. We object to the interference with certain of these. These objections are set out in Appendix 6 of our Written Representation, along with various points of clarification and requests for minor amendments to the book of reference.

7.0 Disapplication & Draft DCO

7.1 We note that the draft DCO includes disapplication of various aspects of the Yorkshire Land Drainage Byelaws 1980. Whilst we do not object in principle to this, we will need to enter into negotiations regarding the inclusion of protective provisions. Only when appropriate protective provisions have been agreed will we be able to confirm our acceptance of the proposed disapplication.

7.2 We note that the above byelaws apply solely to the north bank of the Humber and that no equivalent request for the south bank byelaws has been made. The applicant has indicated verbally that they may seek to disapply all the byelaws for both north and south bank, although we await formal confirmation of this.

7.3 We have provided the applicant with a copy of some draft Protective Provisions. We are awaiting their comments and will continue to work with them to agree the final wording.

Should you require any additional information or clarification, please don't hesitate to contact me on the details below.

Yours faithfully

Mr Sam Kipling
Sustainable Places Planning Specialist
Direct dial 0113 819 6386
Direct fax 0113 819 6299
Direct e-mail sam.kipling@environment-agency.gov.uk