HyNet North West

ENVIRONMENTAL STATEMENT (VOLUME III)

Appendix 18.6 Record of Engagement

HyNet Carbon Dioxide Pipeline

Planning Act 2008

Document Reference Number D.6.3.18.6

Applicant: Liverpool Bay CCS Limited

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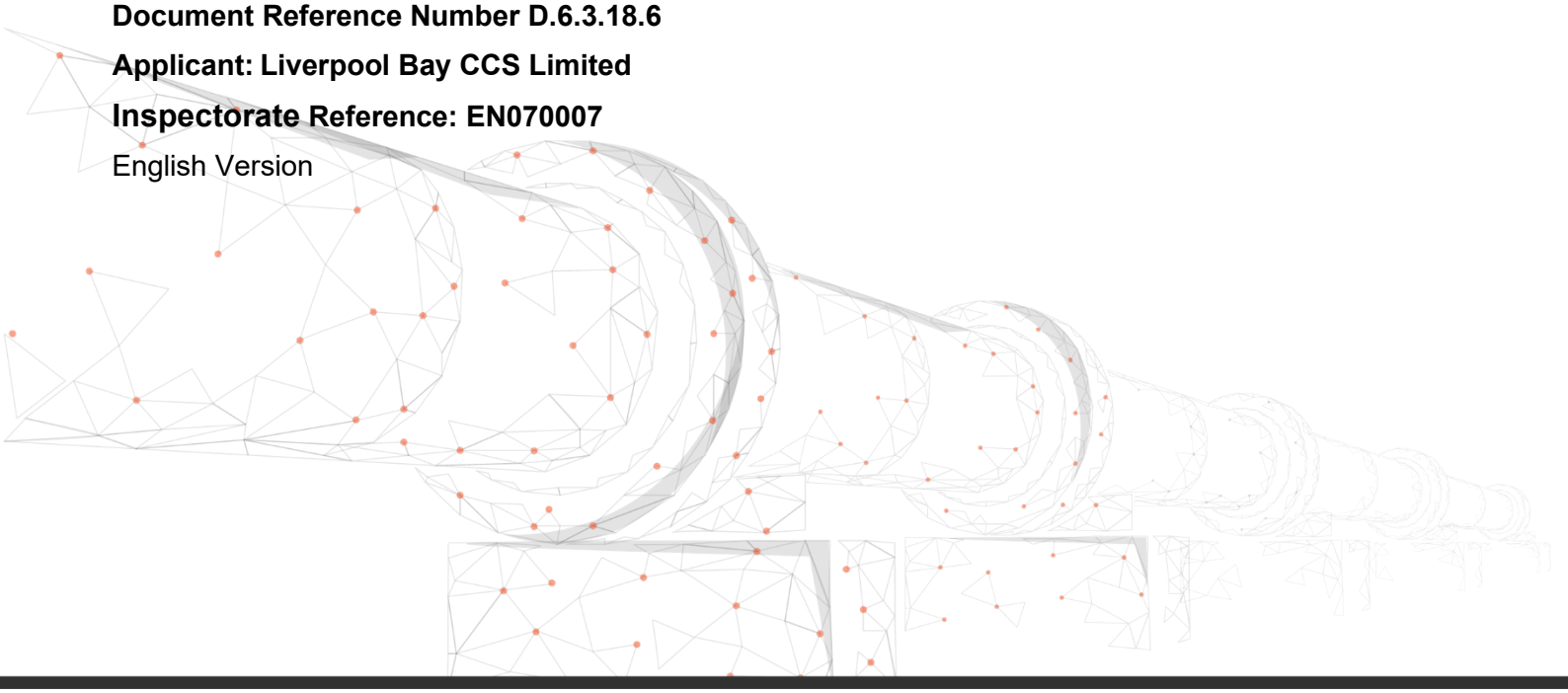
English Version



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Approver Name and Sign	EI			
Document Owner	WSP			

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1. INTRODUCTION

1.1. ENVIRONMENT AGENCY

PROJECT NUMBER	70070865	**MEETING DATE**	02 March 2022
Project name	HyNet Carbon Dioxide Pipeline - DCO	**VENUE**	Teams
CLIENT	Progressive Energy	**RECORDED BY**	GK
Meeting subject	WFD and FRA – EA Consultation		

Present	Frances Marlow (FM) (WSP), Georgie Kleinschmidt (WSP), Helena Parsons (WSP), Gabriel Solis (WSP), Vic Mohun (WSP), Luke Mitchell (WSP), Trevor Croft (PEL), Stephen Sayce (EA), Graham Todd (EA), Duncan Revell (EA)
Apologies	Apologies
Distribution	As above plus:
CONFIDENTIALITY	**Restricted**

ITEM	SUBJECT	ACTION	DUE
1	Introductions.		
2	Agenda.		
3	GK provided summary of the Project and DCO.		
3.1	Stephen: currently reviewing the PEIR. EA required to provide statutory response. Will charge for information beyond initial consultation as part of the PEIR. Will fall outside the statutory process. FM: Screening and scoping of WFD elements has not been included within the PEIR.		

4	FM provided list of Main Rivers and WFD waterbodies and WFD Groundwater bodies in the vicinity of the Order Limits. See slides attached to these minutes.		
5	FM: Presented the screening of waterbodies (see attached slides). FM explained works to smaller watercourses within the wider WFD water body will be assessed. Tributaries of the Mersey transitional waterbody will be assessed using surface water quality elements and summarised within the transitional water body section of the assessment. DR agreed with this approach. DR: Generally agree with the screening conclusion. Main Rivers don't match with WFD waterbodies. Stanney Main Drain also need to be assessed. FM: all Main Rivers and relevant ordinary watercourses will be assessed within each WFD catchment. SS to confirm is Garden City Drain is in Wales or England. FM explained that the tributary of Garden City Drain, which is crossed by a trenched crossing, is located in England. FM: groundwater team unable to conclude on screening whether groundwater bodies should be included. May be requesting further meeting about whether they should be screened in. DR and SS need to speak to EA groundwater team before providing comment. FM: Propose to do one WFD assessment for whole scheme, including England and Wales. HP: are EA happy with the approach to undertake one WFD assessment and send to both NRW and EA? DR: Yes happy with this approach.	SS SS/DR	
6	FM: Outlined activities involved in the DCO (See information on attached slides). FM: still awaiting final design freeze information which may provide more detail about the temporary crossings.		
7	FM: Presented the screening exercise for the proposed activities. (See attached slides). HP: Asked for mitigation measures for all watercourses. Specifically asked for those proposed on the River Gowy and		

	whether there are any plans to re-naturalise the floodplain and set the embankment further back. DR: Will send the mitigation measures for all relevant water bodies. There are plans on the Gowy to move the left bank embankment further back from the channel. The proposed scheme would need to make sure it did not prevent this from occurring. DR to confirm plans for the Gowy. DR: Asked what the temporary crossings would be. FM: Unsure what the crossing type will be yet. Expecting Bailey Bridge for larger watercourses and culverts for smaller watercourses. SS: Only concern on the screening is excluding River Continuity for temporary watercourse crossings. Could be seeking to hold flow, so need to consider this too. Depends on final design. The EA also retains the no culvert policy but understands that temporary ones may be required for construction. Where possible, temporary crossings that span the watercourse without affecting the channel should be used. If culverts are required for temporary crossings, an assessment of effects would be needed. GT stated that modelling of temporary effects of culverts would not be required but the structures would need to be of appropriate capacity. A design process and optioneering would need to be presented along with justification for using culverts and not just due to cost. FM: Screening conclusion will be included in minutes as slide pack and EA can formally responded to scoping opinion. DR: Ince marshes drain towards the Ince pumping station operated by the EA. This pumps water into the Manchester Ship Canal. Therefore, this may need to be screened in for assessment, but water quality elements only (not morphological or biological). DR: Necessary to consider screens on pumps for temporary diversions so that fish are not in danger. Size of screen will depend on species in the watercourse. There may be eels in the River Gowy. Small mesh size would therefore be required if eels are present and screens will then need monitoring for debris and its effect on efficiency throughout construction.	DR DR FM	
7.1	HP: regarding biodiversity calculations and river condition, do the EA consider the reinstatement of the watercourse after the		

	pipeline is laid as reinstatement, despite the bed having been disturbed? DR: If the pipe is laid and the bed is returned to as it was with no bed reinforcement then this is considered as reinstatement. TC: pipeline to be 2m minimum below bed level for trenchless crossings. Part of current FEED activity. Design standards are deeper than 2m.		
8	FM presented the proposed methodology for the WFD assessment (see attached slides). SS: sediment sampling may be needed for land contamination risks. FM: this will be picked up by the land contamination team but is not proposed for WFD.		
9	FM presented the proposed approach to mitigation (see attached slides). DR: Why is the project not aiming for Biodiversity Net Gain(BNG)? TC: BNG is still under consideration, however no net loss is the minimum position currently. HP: Is providing WFD mitigation to neutralise impacts acceptable or does the EA expect us to provide any improvements? DR: Ensure no deterioration to waterbodies and that mitigation measures aren't impacted. The government announced that projects like this would be considered for providing BNG. HP: Design team will need to know the mitigation measures proposed in the area as this may affect the pipeline depths. HP to inform wider project team of implications to design.	HP	
10	FM provided an overview of the flood risk areas near the proposed scheme (see attached slides). Ince AGI is in the tidal floodplain according to the Mersey Tidal model received from the EA. Area is also benefitting from flood defences. Stanlow AGIs shown on map at partly flood zone 3. Model for Stanlow Refinery (based on River Gowy model) shows that it is not actually within FZ2 outline. Central compound has been located outside the floodplain at the River Gowy. Temporary compounds will be for the unguided auger boring works.		

	VM: Which model should we rely on for Stanlow AGI, given the EA website and the previous FRA report on the Stanlow AGI show different levels of flood risk? GT: Unsure of details around this. Needs to be examined in FRA. Usually latest and up to date info best to go with, but there may be a caveat surrounding why the model hasn't been published yet. Just need to make sure that it's been done correctly. WSP to request the latest Gale Brook model from the EA. VM: Lots of modelling info requests put to EA, have been sent some files but can't work with a lot of them. Request some more refined data requests for those which we can't open/haven't received. Should this be redirected within the EA? SS: send to normal address but cc SS in.	VM/GS VM/GS	
10.1	VM: What is the expectation for presentation or format of FRA given linear nature of scheme, i.e would it be suitable to assess all the trenchless crossing within a similar section and the AGIs and BVs separately? GT: as long as all covered, format less important. VM: propose to capture main pipeline in one section, as impacts likely to be the same. The AGIs and BVS will be assessed individually in the same FRA. GT: Is a FCA being completed for Wales? Vic: Separate FCA is being completed for the Welsh leg of the DCO application. Currently undertaking separate consultation with NRW. GT: Ensure whatever format adopted complies with each separate country's legislation.		
10.2	VM: Drainage design and strategy prepared by another consultant, would normally include in same report. Would it be sufficient to make reference to a separate document by the other designer? SS: This would appear reasonable, but also need to consult with the LLFA for their individual requirements. EA's principal interest is fluvial flood maps and tidal. SS: Areas known as having groundwater table – could be creating pathway, need to ensure that the design does not create pathways for flooding.		

	VM: Anti-buoyancy measures will be included in the report. The detail design will need to ensure that groundwater information along the pipeline is taken into consideration to prevent groundwater flooding.		
10.3	VM: Regarding flood risk activity permits (FRAPs), are the EA expecting one application for each watercourse or one application covering them all? GT: programming and sequencing needs to be considered. Think about how to progress it. EA don't have a preference. If there are elements which aren't going to change but want the certainty up front, could apply for those. Hold back on applications for less certain elements to avoid abortive work.		
10.4	VM: Is it acceptable to submit an FRA limited to permanent works not temporary measures? GT: make reference to temporary works, but detail of methodology is better covered off as part of FRAPs, due to later engagement with contractors. Planning and pre-planning doesn't necessarily need the temporary works. VM: Don't want to prescribe the temporary process without engaging with the contractor. SS: will still need to make reference to construction impacts. VM: construction impacts will still be included in ES chapter which the FRA will make reference to.		
10.5	VM: The design life of AGIs and BVs is 25 years so what is the correct approach for climate change allowances? GT: won't be much modelling done since last July when the climate change allowances updated. Existing models might encompass 25 year climate allowance. If not, might need some adaptation in modelling, e.g. manipulation of a stage/discharge graph. SS: Operational life might exceed that, so worth considering extension for safeguarding the design and ensuring future resilience.		
10.6	VM: What would the flood risk vulnerability category for the scheme be?		

	SS: Vulnerability of pipeline to be water compatible but if AGIs need hazardous substance consent it would be highly vulnerable.		
10.7	FM: When applying for FRAP for temporary crossings, what will the EA need to see? GT: If there is a clear span structure, then everything is beyond limits of channel. The EA retain a no culverting policy in the construction phase. Want to ensure short term impacts are as minimal as possible. No dig methods may not necessarily require FRAPs and the guidance regarding this needs to be consulted by the designer/applicant. FM: Does the EA expect hydraulic modelling of temporary pipes? GT: No, but would consult Duncan's team (WFD/biodiversity) as well. EA would want to ensure that the capacity of any structure is commensurate with the watercourse. The EA would want assurance that the capacity is correct. An optioneering exercise for why clear span crossings are not adopted would be appreciated. LM: Pipes / culverts will have aquatic ecology/mammal crossing implications.		
10.8	FM: Does the EA have concerns about boring under earth embankments on River Gowy? GT: these are likely to be privately owned but maintained and inspected by EA. If going with the FRAP exemption for this activity there are specific criteria around no-dig techniques. If work can't meet standard then need to apply for a permit. EA would look at proximity of the excavated work areas to the embankments and ensure any construction in close proximity to defences has been well considered.		
11	SS: if there is any change in personnel, will let WSP know.		

1.2. NATURAL RESOURCES WALES

PROJECT NUMBER	70070865	**MEETING DATE**	07 February 2022
PROJECT NAME	HyNet CO2 Pipeline	**VENUE**	MS Teams
CLIENT	Eni / PEL	**RECORDED BY**	HP
MEETING SUBJECT	HyNet CO2 Pipeline Water Framework Directive (WFD) Consultation		

PRESENT	Trevor Croft (TC)- Progressive Energy - Client Frances Marlow (FM) – WSP - WFD technical Helen Parsons (HP) –WSP - WFD Technical Lead Georgie Kleinschmidt (GK) – WSP – EIA Coordination Matt Harris (MH)- WSP - Aquatic Ecology Chris Jones (CJ) - NRW - Senior Advisor - Planning Helen Millband (HM)- NRW - WFD Oliver Lowe (OL) - NRW - Fluvial Geomorphology George Nuttall (GN) – NRW - Fisheries
APOLOGIES	Luke Mitchell – Aquatic Ecology WFD Technical Lead
DISTRIBUTION	As above plus: Declan Franklin-Losardo, Daniel Patterson, Nic Macmillan, Mike Greslow
CONFIDENTIALITY	**Restricted**

ITEM	SUBJECT	ACTION	DUE
12	**Introductions** HP introduced the meeting and attendees introduced themselves and their role.	N/A	N/A

12.1	**Overview of the Project** GK gave an overview of the HyNet North West CO_2 project: - DCO – building of CO2 pipeline, above ground infrastructure including block valves and conversion of existing gas pipeline for CO2. - TCPA – changes to the Point of Ayr Gas Terminal and new cables to MLWS point. FM gave overview of DCO and TCPA and watercourses & WFD water bodies and groundwater WFD water bodies.	FM to send NRW the presentation and a plot of the watercourse crossing points.	11 Feb 22
13	**WFD screening & scoping** FM described screening and scoping of WFD water bodies and justification. HM stated that consideration should be given to smaller watercourses within the WFD assessment and they should be included. These are referred to as small non-reportable water bodies in OGN72. This also applies to small tributaries drainage directly to the Dee transitional water body. HP confirmed consideration is given to these small watercourses as they form part of the WFD water body catchment. CJ asked to see the WFD screening and scoping slides after the meeting so that NRW could have time to review them and provide any further feedback. FM confirmed the slides would be shared. NRW to review screening and scoping and provide feedback within 2 weeks of receipt of the presentation. FM described the proposed activities and watercourse crossing methods. FM to check depth below bed for trenched crossings. OL asked about the diameter of the pipe likely to be used and are any depths below watercourses known yet? FM explained pipe diameters (one 20” diameter pipeline between Ince and Stanlow, and the main CO_2 pipeline from Stanlow to Flint is 36” diameter) and they would be installed ~2m below the bed for	NRW FM NRW	25 Feb 22 (2 weeks of receipt of the WFD consultation presentation pack) 11 Feb 22 25 Feb 22

	trenchless crossings. [note since meeting: pipeline is at least 1.2m below all watercourse crossings. A minimum of 2m below bed of watercourses crossed by trenchless methods]. HP asked NRW about any potential river restoration projects or aspirations on the potentially impacted watercourses. NRW will check to see if there are any restoration plans on these watercourses. NRW stated that the scheme cannot hinder future restoration and the installation of the pipeline needs to allow capacity for watercourse restoration or for watercourses to naturally recover from modification. These principles should be used in the design of the scheme. CJ suggested we speak with LLFA to discuss ordinary watercourses and potential restoration. FM confirmed speaking with LLFA. FM will also send info on location of proposed crossing locations and crossing types (i.e. trenchless crossings or trenched crossings). FM explained no new outfalls proposed. Block valves are not to be located near watercourses and drainage will be to ground – therefore no new outfalls are required. FM ran through screening of activities. Works below mean high water spring levels- CJ stated that NRW's marine team would need to be included. MH confirmed WSP is consulting on marine aspects including WFD related matters. OL stated NRW's Coastal Physical Scientists are likely to need to be involved. FM outlined scoping of quality elements for those water bodies and activities screened in.		
14	**Methodology** FM outlined WFD method approach. MH confirmed aquatic surveys being undertaken. FM stated no sediment sampling is proposed. FM stated a CEMP would be in place for construction impacts.		

	Mitigation Operational phase – no net loss is the target and assuming no mitigation for the trenchless crossings. FM asked NRW to send us the WFD mitigation measures for water bodies. HM stated that WFD Cycle 3 2021 classification data is now available in spreadsheet form on Water Watch Wales. The data is in Excel format but the maps have not yet been updated. FM to request the classification data that NRW use to inform the 2021 classifications e.g. water quality data. HM stated that the River Basin Management Plans (RBMP) Cycle 3 documents are due to be published in summer 2022. The Dee & Western Wales RBMPs are relevant to this scheme. HM stated that we will need to use Cycle 2 RBMPs but 2021 classification data should be used including a comparison to Cycle 2 data. HM also stated that the water quality data that sits behind the classification data is available upon request from NRW. FM stated WSP Biodiversity Net Gain (BNG) lead will prepare a Technical Note on our BNG approach. WSP to provide NRW with BNG Technical Note once completed and signed off internally (BNG Team). CJ mentioned NRW's internal OGN72 guidance document on WFD which NRW has approved to release externally for large schemes. CJ stated that he will send FM a copy of this document.	FM WSP CJ	11 Feb 22 18 Feb 22 8 Feb 22 (now completed)

DATE:	08 April 2022	**CONFIDENTIALITY:**	Restricted
SUBJECT:	Technical response to NRW's comments following WFD presentation		
PROJECT:	Hynet CO2 Pipeline North West	**AUTHOR:**	Frances Marlow
CHECKED:	Helena Parsons	**APPROVED:**	Helena Parsons

Introduction

A teleconference was held with Natural Resources Wales (NRW) 7 February 2022 to discuss the Water Framework Directive (WFD) screening and scoping exercise. Following the meeting, NRW provided a response with several comments which are addressed in this technical note.

Note that NRW's comments are in **bold** whilst WSP's response is in *itallics*.

Comments on the presentation slides

Regarding fisheries, based on the proposed crossing points (and methods) we are content that the relevant waterbodies have been screened in to the assessment.

Noted

Slide 6 - There are 2 block valve sites to south of the A55 that fall within the Clwyd carboniferous limestone groundwater body. These sites are also within a river surface water catchment - GB110066059940: Pant-gwyn (Wheeler), which is not shown or mentioned in any of the tables. Clarification should be provided as to whether this is because of the distance of the river line to the block valve site.

This water body was originally listed in Slide 7 (Screening and groundwater bodies). However we then screened out the assessment of block valves (Screening of activities) so therefore we would not assess impacts to this waterbody. This process can be made clear in the screening section of the WFD assessment.

The map on the slide (and slide 5) does not distinguish between the order limits for the respective TCPA and DCO submissions – it would be useful if any future updates could show this distinction.

The order limits of both planning applications will be made clear in the reporting. For reference, the TCPA is the polygon at the point of Ayr as well as the four block valves at Cornist Lane, Coed-y-Cra, Babell and Halkyn. The TCPA and the DCO will have separate WFD assessments.

Also some of the names on the map *e.g.* Lead Brook are not consistent with the water body table (slide 7).

This inconsistency will be corrected in our reporting. In the WFD assessment, only official WFD water body names will be used.

Slide 8 – Clwyd Carboniferous Limestone groundwater body is shown on slide 6 but not featured in the table on slide 8.

This water body was originally listed in slide 8 (Screening of groundwater bodies). However we then screened out the assessment of block valves (Screening of activities) so therefore we would not assess impacts to this waterbody. This process can be made clear in the screening section of the WFD assessment.

For any water bodies designated as Heavily Modified, further information on the mitigation measures assessment is available to download from [redacted] (HMWB uses and mitigation measures June 2019.xlsx). NRW is in the process of reviewing the mitigation measures assessment for Sandycroft drain water body. We may be able to provide more information in due course.

Noted. The impact of the proposed development on the delivery of identified mitigation measures will be assessed in the WFD assessment.

Dee Carboniferous Coal Measures water body. Please explain the decision to screen this out at this stage. There is a groundwater dependent terrestrial ecosystem in this groundwater body - Gronant Dunes and Talacre Warren located near the Point of Ayr terminal.

The assessment for the preparation of the Environmental Statement (ES), which is being undertaken concurrently with the WFD assessment, is being undertaken currently. The decision to screen out the Dee Carboniferous Coal Measures water body was based on what was known about the proposed construction activities and design at the time of the meeting, in that what was proposed was not expected to have any significant impact. This decision was made before any detailed assessment was undertaken. However, the Dee Carboniferous Coal Measures water body has now been scoped in to the ES, as more progress with the EIA has been made and a more detailed assessment has been carried out. Therefore the water body is screened into the WFD assessment which will be an appendix to the ES Water chapter which considers the potential impacts to the GWDTE.

Slide 17 – we note that there is no mention of groundwater bodies in this table (they've been screened out). Information should be provided on the decision for screening these out and whether the trenched and trenchless works and other pipeline work would affect groundwater.

Assessment of potential impacts from activities is currently ongoing. If impacts for certain activities to groundwater are screened out, a suitable justification will be provided. We will seek further consultation with NRW to agree this screening conclusion at a later date.

<u>General WFd comments</u>

The WFD Regulations 2017 compliance assessment should consider WFD protected areas (as described in section 5.5, OGN 72). We advise that each groundwater body in Wales is considered as a Drinking Water Protected area (DrWPA) under the WFD Regulations 2017 (2.1 Western Wales River Bain Management Plan. [redacted]

Noted. The impact of the proposed development on nearby protected sites will be assessed in the WFD assessment.

Local WFD measures for the Dee will be published in the updated river basin plan in July 2022. The HyNet proposed scheme lies within the Dee Opportunity Catchment. The background to the opportunity catchment approach taken by NRW for the third cycle of River Basin Planning is outlined in the draft consultation from Dec 2020 [redacted] (Section 3.6). Through this approach NRW is looking for collaborative opportunities within the Dee Opportunity Catchment to benefit water and the wider environment.

Noted, the principal theme for the Dee Opportunity Catchment and the Identified opportunities for the Dee Opportunity Catchment will be considered within the WFD assessment.

Please can you confirm if there will be one WFD compliance assessment addressing both the TCPA and DCO submissions and covering Wales and England, or will there be separate assessments?

There will be one WFD assessment for the TCPA and one WFD assessment for the DCO Application. The latter will cover England and Wales in the same report. We consulted with the EA who was happy for the report to cover both countries. Please let us know if you object to this approach.

NRW comments on flood risk at the proposed watercourse crossings

It appears that there is only one Open Cut crossing on a main river (Talacre New Drain). We don't have any major concerns from a flood risk perspective with this, but this work would be subject to a bespoke Flood Risk Activity Permit (FRAP). The FRAP application would need to demonstrate, through a suitable method statement, that flood risk can be managed adequately during the construction phase when temporary works are in place. The Lead Local Flood Authority will need to advise on the open cut crossings on ordinary watercourses.

The rest of the crossings on any main rivers appear to be trenchless. These crossings can be covered by [redacted] as long as they are able to meet the design and spatial conditions of the Exemption, including having suitable proximity away from any main rivers or flood defences/embankments for the launch and reception pits. If, for any of the proposed trenchless crossings, you are unable to meet the conditions on the Exemption, a bespoke FRAP application would need to be made. You may need to apply for a Marine Licence for the River Dee crossing, given that the Dee is tidally influenced at this location. You should contact our Marine Licensing team for further information regarding this (marinelicensing@cyfoethnaturiolcymru.gov.uk).

It's difficult for us to provide more detailed advice at this stage without further information on the specifics of each crossing, but you can seek FRAP pre-app advice on any specific proposals by contacting: developmentandfloodrisk.northmid@cyfoethnaturiolcymru.gov.uk.

Since these comments have been received, a separate consultation meeting has taken place 14 March 2022 to discuss flood risk requirements relating to the TCPA and the DCO applications. Minutes from this meeting will be issued separately.

PROJECT NUMBER	70070865	**MEETING DATE**	25 May 2022
PROJECT NAME	CO2 Pipeline – DCO	**VENUE**	Teams
CLIENT	Eni / PEL	**RECORDED BY**	GK
MEETING SUBJECT	Meeting subject		

PRESENT	Frances Marlow, Helena Parsons, Raffaela Cislaghi (Eni), Chiara Caserotti (NRW – Wrexham and Flintshire Env Team), Chris Jones (NRW)
APOLOGIES	Brendan O'flyn (Eni) and Helen Millband (NRW – Geomorphology)
DISTRIBUTION	As above plus: Declan Franklin-Losardo (WSP)
CONFIDENTIALITY	**Restricted**

ITEM	SUBJECT	ACTION	DUE
1	Introductions		
2	Brief summary of the HyNet Project		
3	Brief summary of the DCO Proposed Development and how it fits into the wider Project		
4	Alltami Brook (See accompanying slides) - Ordinary watercourse (at the point where the pipeline crosses it). - Part of Wepre Brook WFD waterbody - South of Connah's Quay. - Deep ravine – area has Made Ground which was put in place possibly as part of A55 construction - Areas of bedrock in channel, cobbles, exposed boulders, dense woodland on left bank, trees on right bank before steep escarpment to right (area of Made Ground). - Upstream of RLB is a culvert with a step down from the apron to the natural channel bed. Gabion baskets line the bank (some of which are starting to fail). - Immediately downstream is a bedrock section, leaning trees and woody debris. - PRoW on left bank.		

	- Pipeline could be anywhere in 50m width across the channel.		
5	Alltami Brook located in a complex area - Several crossing options have been considered. - Pros and cons of each discussed with the design team. Trenchless crossings not possible due to the deep valley, meaning HDD can't work at that depth. Also mining tunnels on right bank, means that issues associated with loss of fluid or control of directional drilling. Also potential risk of creating a pathway for contamination if come across old mine water during drilling. Auger boring would require a 15m deep excavation pit through bedrock. Culvert the brook, and bury pipe above the culvert. Advised not to be a suitable option (NRW has a 'no culvert' policy) + WFD and ecological concerns Pipeline as a bridge but operational and inspection and maintenance requirements. Visual implications. Alternative pipeline crossing location / route realignment. Alltami brook is similar for quite a distance. More risks with mines in other locations, and A55 constraint to the south (would have to be crossed twice, plus Ancient Woodland and quarries).	NRW request more detail about why alternative locations were not feasible. NRW seek further justification of why a pipe bridge is not feasible	1/6/22
6	Proposed crossing technique = open cut crossing - Excavate 6-8m below ground level. Lay pipe and replace. - Temporary culverting OR temporary dams and pumping before and after and then reinstatement. - Cut bedrock, and replace with concrete and scour protection (designed at detailed design). - Concerns around BNG (loss of river units and natural bedrock). Looking to enhance watercourses elsewhere within the catchment. Less intrusive than other possible methods such as the culverted watercourse option. - WFD compliance – option complies with no-culvert policy. Scour protection would have to be implemented to avoid geomorphic impact – determined at detailed design.	NRW request more detail about why methods were chosen	1/6/22

	- WFD compliance – need to show we won't prevent watercourse becoming natural in the future. Before the A55 was constructed, the river meandered but now it's been culverted and straightened. Pipeline only expected to last for 25 years – propose that in the lifetime, this brook is not going to be reaching natural conditions due to A55.		
7	Mitigation - The Alltami Brook is in Fairly Good condition, so enhancement to good might be difficult given constraints. - Are there any NRW schemes locally which could benefit from additional funding as a means to offset WFD/BNG impacts?	CJ – to discuss with colleagues. Management of scour? Ful response to WSP by week commencing 13 June.	13/6/22
8	CC – The Alltami Brook is unlikely to have been straightened as a result of the A55. (Noted although historical mapping does indicate the made ground and channel straightening has occurred within the past 40 years and likely to have been at a similar time to the road construction). Also, 25 years is a long time – still need to be mindful of improvement within these timescales given that there is increasing pressure to be improving the condition of rivers and streams.		
9	CJ – Has WSP been in discussion with FCC as LLFA? FM – FCC have been struggling with staff availability. Still not managed to have a meeting.		
10	CJ – Why was a pipeline bridge ruled out? FM – regular inspections and maintenance and safety risk. Preference not to have exposed section of pipeline.		
11	FM – improvements on other watercourses within BNG? Would that satisfy for WFD mitigation? CJ - NRW don't tend to use BNG metrics. CJ would need to check this with colleague as well. HP – Stepwise approach – does work alongside BNG process. Eliminate issues within the design where	CJ to check with colleagues around suitability of BNG metric	13/6/22

	possible. Where issues can't be designed out, then we provide mitigation.	for WFD mitigation	
12	CC – Outline the feasibility of different locations? E.g. crossing agricultural land? FM – very similar upstream and have to avoid residential areas by a certain distance. Can cross south but would need to cross A55 twice and restricted by quarries and ancient woodland.		
13	Other scheme design elements - Wepre Brook. Was trenchless but that will now be open cut. Less concerned about quality at this point. Not bedrock, so easier to reinstate bed at this location. Ordinary watercourse. - Little Lead Brook – outfall from AGI. Hopefully set back from watercourse. Ordinary watercourse. - Broughton Brook and Sandycroft Drain = Main Rivers. Both trenchless crossings. Both fairly poor condition. CC pointed out that the Sandycroft pipeline location appears to be close to residential properties so does this mean crossing at Alltami Brook could be moved closer to residential properties?	Why was this changed to trenched? RC to find out.	1/6/22
14	NRW aiming for WC 13th June for responses.	WSP to confirm DCO Application date.	1/6/22

PROJECT [redacted]	70070865	**MEETING DATE**	19 July 2022
PROJECT NAME	HyNet CO2 Pipeline DCO	**VENUE**	MS Teams
CLIENT	EPUK	**RECORDED BY**	FM

MEETING **SUBJECT**	Meeting subject

PRESENT	NRW: Chris Jones (Planning Lead), Oliver Lowe (Geomorphology), Chiara Caserotti (Wrexham/Flints Environment Officer), Stefan Le Roy (Hydrogeology), Matthew Ellis (Ecology) Eni UK, together with EPUK: Dan Hooley, Axel Tanty, Raffaella Cislaghi PEL: James Glass WSP: Rachael Chambers, Declan Franklin-Losardo, Helena Parsons, Frances Marlow, David Chatterton, Luke Mitchell, Akshat Vipin
APOLOGIES	Apologies: George Nuttall (NRW)
DISTRIBUTION	As above
CONFIDENTIALITY	**Restricted**

	SUBJECT	**ACTION**	**DUE**
1	JG set out the background to this meeting. Provided context with previous NRW meeting, comments and suggestions.		
2	JG explained why the A55 culvert cannot be used. JG explained that CO2 pipeline is more significant than a 'traditional' pipeline/utility diversion. An image showed that the working width typically used for pipelines of a similar diameter to what is proposed (36inch). The pipeline would be approximately 8 tonnes per lifted pipe length, buried approx. 1.2m below ground level. The working width is therefore up to 32m so that these logistics can be accommodated.		

	The approximate distance between the A55 and the existing Alltami Brook culvert is only approx. 12m. This would therefore require a closure of the Eastbound carriageway for 5-6months. This also assumes that it can be built within the artificial embankment of the road. The material of this embankment is unlikely to be suitable for a buried pipeline. Works to the A55 embankment would also risk compromising its function of supporting the road. Discounted due to scale and space but it would also be a difficult operation to ensure operation and safety of the road. Another constraint to this option is a high voltage overhead cable in this area which would be an expensive and complicated option to reroute.		
2.1	CC asked if the working width would therefore mean that a 32m length of the Alltami Brook would be affected. JG explained that during construction phase, up to 32m width would likely be temporarily culverted with vegetation removed. However, this would be kept to the minimum practicable and only the width of the pipeline + 1m either side would be permanently affected. The temporary working width could potentially be reduced from up to 32m as there would not need to be top soil stored within the watercourse section. (post meeting note: WSP are assessing a 32m working width in the ES).		
2.2	JG explained why a pipeline bridge is not a suitable option. Health and safety concerns regarding public climbing on the pipeline and falling. Pipe bridges have typically not been built for this size of pipe in the UK for a number of years. It is general best practise to keep the pipeline buried to prevent health and safety incidents. Duty		

	under CDM Regs to design-out known risks where there is a viable alternative. OL challenged that other utility providers still install pipeline bridges and this is the first case that OL has heard of this safety requirement being a reason to discount this approach. JG pointed out that this area is next to a wedding venue, residential area, PRoW and there are no manned facilities nearby. OL pointed out that the location was surrounded by field, houses are a distance away and the closest building was the wedding venue (not its sole use), which may only be used every other weekend and is a few hundred metres away, across fields from the site. OL would like to see further information to justify discounting pipe bridge due to public safety risk. If HSE can confirm this reason, then NRW will not be likely to object. JG explained that in the very rare event of a leak, pressurised CO_2 gas of -30ºC would leave pipe and sit in the valley and cause a noxious atmosphere, impacting biodiversity and human health risk. For context, if a pipe was buried and it leaked, it would be contained below ground until it would blow a localised crater, land above would bowl and send CO2 upwards. JG stressed that this was a very rare event. JG confirmed that the pipe is delivered in 12m sections which are then welded together on site.	JG to provide H&S guidance / standards used.	29/07/22
2.2.1	JG explained why HDD cannot be used to install the pipeline under the watercourse below ground level. Pipeline diameter and width can only bend a certain amount due to elastic radius of a steel pipe, so in this case the HDD crossing would be 450m in length to give 7m cover between pipeline and bed of the brook. JG showed the likely extent of this on the map and a photograph to provide context from another project in Canada.		

	HDD was considered at feasibility stage and was discounted due to physical constraints. HDD would also route the works through shallow coal measures (there have been extensive past coal mining works in the area with some historical records shown on the presentation), where the ground conditions are fractured and the rock is weak. In order to accommodate the 36” diameter pipe, the hole made by the HDD rig would need to be 48” diameter. The hole would need to be 7m below bed level to prevent this impacting on the watercourse. In order to make the hole, high density, high pressure mud is forced through the gap and backreamed. If the drill meets a void, there is a risk that the drilling mud fluid would breakout, causing unknown environmental consequences. There is also a risk that a breakout could happen in the watercourse itself causing pollution. It is currently considered that the pipeline would go through two areas of coal mining works. However, Coal Mining Authority Records don’t exactly match the geophysical surveys, so there is a risk that these could be encountered elsewhere. Furthermore, the landowner also states that approximately three times more coal was removed than declared. Works in areas of coal mining have stability and pollution risk, including bentonite fracking polluting a wide area. OL thanks JG for the context provided for the HDD option.		
2.3	CC asked if HDD could be done under the A55. JG explained that the pipeline cannot run parallel / under the road due to maintenance and H&S issues. This would also not avoid the coal mining risk. The A55 cannot be crossed twice (to bring the pipeline south). JG explained there were more coal mining areas as well as an active quarry south of the A55.		

	HDD causes long term settlement so if this is put under a road it could cause problems of settlement and impact the existing road for years into the future and cause further road closures. Highways Authority would not allow this.		
3	JG explained cathodic protection to protect any scratched section of the pipeline from rust (by impressing free electrons into the pipeline). HDD method would likely scratch the coating on the pipe during installation, by virtue of the works involved. Through areas of historic coal mines, there is high ground conductivity, therefore the cathodic protection system would likely 'short-circuit' and may not be able to effectively protect the whole length of the crossing. As a result, within 5-10 years the pipeline may be non-operational and need replacing.		
4	JG explained why auger-boring has been discounted. Boring would involve digging a trench as long as the pipe length to be buried (this needs to cover existing brook width and the historic meanders), at the required depth to be >1.2m below bed level. The trench would be as wide as necessary to be a safe excavation. Therefore, this would require significant earthworks. This is made more difficult through made ground (right bank) with potential for contaminated land and the risk of encountering historic coal mines.		
5	OL pointed out that the auger boring pit would still be reasonably close to the river channel. OL asked how deep under the river bed is the bedrock. JG explained that the river bed is bedrock. OL stated that, in WFD terms, a high risk activity is anything with hard engineering of the river bed. OL provided an example: replacing gravel bed river with a concrete ford.		

	There have been some applications to modify bedrock on natural falls to enable fish passage, but they have all been refused as they would have set a dangerous precedent. OL noted that this project would be replacing bedrock with similar density (concrete) and elevation. OL asked about the bank side material. DH confirmed that the right bank has soft soils due to infill from the A55 construction. The left bank has less infilled material but had a historic railway line. The infill material has resulted in the straightening of the watercourse. OL asked if the project could look to restore some of the original sinuosity in the channel. JG recognised that a lot of the material would be removed anyway but it would have to be taken away with poor road infrastructure nearby. JG to look into this further.	JG to look at feasibility to increase sinuosity through this reach	29/07/22
6	JG questioned if NRW would allow open cut method at all? If not allowed then auger boring could be adopted. However it is important to consider that due to the location and existing conditions, auger bore method would have other environmental impacts. There would also be a notable difference in construction duration between the methods - Open cut would be approximately 3 weeks work, whereas auger boring would take approximately 5-6 months. OL commented that the difference of environmental impact on the riparian zone between open cut and auger bore is not that significant. OL to discuss within NRW and confirm if open cut crossing would be acceptable. JG confirmed there would be up to approximately 3m depth of bedrock removal to install the pipeline through an open cut method. OL commented that the best option for NRW (i.e. from an environmental perspective) is likely to be the open span pipeline. NRW request more	NRW to advise on the options presented.	29/07/22

	information on why this is not an acceptable method. Post-meeting note from NRW: in its advisory role as a statutory consultee to the DCO process, it is not for NRW to 'allow' proposals or otherwise – this decision would be for the Examining Authority, in consideration of NRW's advice along with the views of the applicant and other interested parties. Post-meeting note from NRW: NRW is unable to determine this with the information currently available and is not in a position to pre-determine the assessment. When consulted on the DCO submission by the Examining Authority we would review the full information submitted and provide our advice accordingly.		
7	CC asked if other route options for the crossing have been considered. JG confirmed a feasibility study has considered many route alignments. The longer the pipeline becomes there are more stakeholders and the DCO process has compulsory purchase powers – therefore longer routes would impact more landowners, as well as other potential constraints. AV confirmed that the DCO application will include an options assessment to be presented in the ES, which considers the alternative routes including a route south of A55. CC asked if the optioneering considered routing the pipeline along the road north of this location (through Northop Hall). JG explained that this would require the road (north of this location) to be closed for approximately 1 year and would be difficult to justify when there are other viable options that are away from residential dwellings and do not impact them, in fields and are shorter. There is also limited working width along the road. DH added that the Brook is still incised at this location. Bridge is masonry arched.		

8	ME advised to minimize impact on woodland communities (particularly Annex 1 woodland and protected species). ME also enquired whether adjoining areas of Annex I woodland could be legally secured and appropriately managed as an enhancement measure. It was suggested that this may be worth pursuing with the Local Planning Authority's ecologist. JG confirmed that avoiding and/or minimising impact on woodland has been integral to the design development.		
9	HP clarified that permanent easement is 24m which would have restrictions on vegetation replanting, to avoid impacting the pipe and any requirement for maintenance/repair access. If the brook is crossed via open cut, there would be loss of trees on the bank of the brook for a 32m section. Trees cannot be replanted within 24m around the pipe (only hedgerows and scrub) but can be replanted outside of this easement. HP asked ME to consider this in his advice. OL asked if pipe was bridged could trees be planted nearer? JG clarified that clear span and the embankment required would likely lead to more vegetation loss. For auger boring option, trees on banks would be retained. But trees further away may be lost as this would require more earthworks on the south bank (closing Pinfold Lane).	ME	
10	HP asked if project team could get an opinion on WFD compliance from NRW. CJ to take information away and provide NRW's response outside of the meeting. Asked JG provide information on which standards/regulations pertain to limiting the use of the open span crossing option.	CJ to respond to queries regarding Alltami Brook crossing method	29/07/22

11	FM asked if flood modelling would be required for the clear span option. CJ will speak to flood colleagues to confirm outside of the meeting. OL commented it will need to be considered but not likely to be a constraint due to the upstream constriction at the existing A55 culvert.	CJ to discuss constraints with flood risk colleagues	29/07/22
12	SLR asked if any options appraisals have been prepared on the various construction methods for this with more detail. JG confirmed only internal options review paper has been completed for Alltami Brook. More detail has not been completed because of the involvement needed from contractors. Design development has been collaborative between engineering and environmental factors – a detailed options appraisal considering all temporary and permanent works for every crossing has not been undertaken. SLR asked how long it would take to complete? JG confirmed several months as there are a limited number of contractors with the capability/equipment to appraise all methods. It could be done by the main works contractor at a later stage. Contractor information would be useful but not possible within the intended submission programme. CC commented that NRW could be criticised if it didn't ask about other options. SLR commented that options to be reviewed based on time/cost vs regulatory constraints. HP commented that WSP need to understand chosen method to assess effectively in the ES. RC/AV explained that the EIA is assessing the worst case of the trenchless methods. But each crossing is assessed as either open cut or trenchless (and not assessed for both options). HP stated that project team need to know NRW's opinion regarding WFD compliance and mitigation requirements.		

13	AV confirmed the DCO submission is planned for late Q3 2022.		