DATE:	04 February 2025	CONFIDENTIALITY:	Public
SUBJECT:	TECHNICAL NOTE: Realignment of Electrical Cable Landfall		
PROJECT:	Liverpool Bay CCS Project	AUTHOR:	AB
CHECKED:	GL	APPROVED:	DS

INTRODUCTION

A Marine Licence (ML) application CML2365 was submitted by Liverpool Bay CCS Limited (Liverpool Bay CCS) to Natural Resources Wales Marine Licencing Team (NRW-MLT) in February 2024. This ML application proposed several marine licensable activities in Welsh Waters, including the installation of a new combined electrical and fibre-optic cable, from the Point of Ayr (PoA) gas terminal to a New Douglas offshore platform (OP) in Liverpool Bay, North Wales. These activities were assessed in the supporting Environmental Statement (ES).

Two route options were described in the ML application for the landfall and nearshore area. One route would follow the alignment parallel to the existing gas import pipeline and head northwest from Talacre Beach to traverse the Welsh Channel on the approach to the Port of Mostyn (Figure 1). The cable would then cross the West Hoyle Spit and onwards to the New Douglas OP. The second, Preferred Route, would head north from Talacre Beach and at the mean low water springs (MLWS) line, turn eastwards to traverse the Welsh Channel and pass to the east of the West Hoyle Spit via a gap between the sand bars (Figure 2).

Notices were placed in local newspapers, which invited representations from stakeholders, and the public in relation to the ML Application. The notices informed interested parties where the ES accompanying the ML application could be viewed for comment.

Feedback from stakeholders, notably Port of Mostyn, identified that crossing the Welsh Channel to lay the cable could have implications for vessel movements in and out of the port. Liverpool Bay CCS was therefore requested to explore options to modify the installation method and alignment.

Figure 1: Cable route option (Red Line) to cross West Hoyle Spit following parallel alignment to existing PoA to Douglas natural gas pipeline (Blue Line)

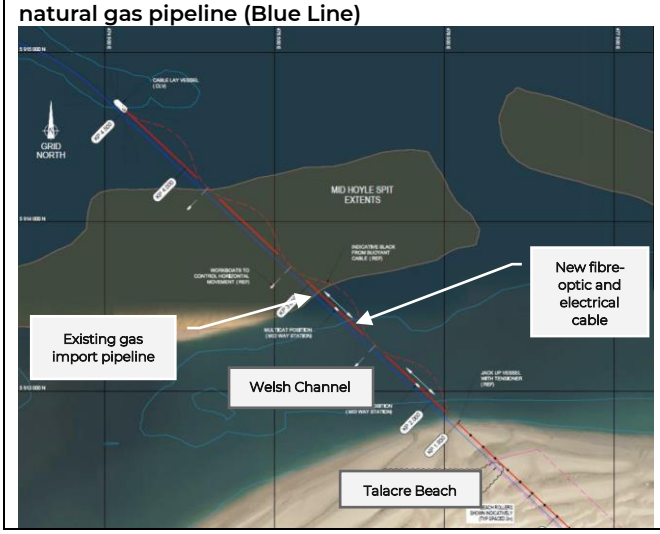
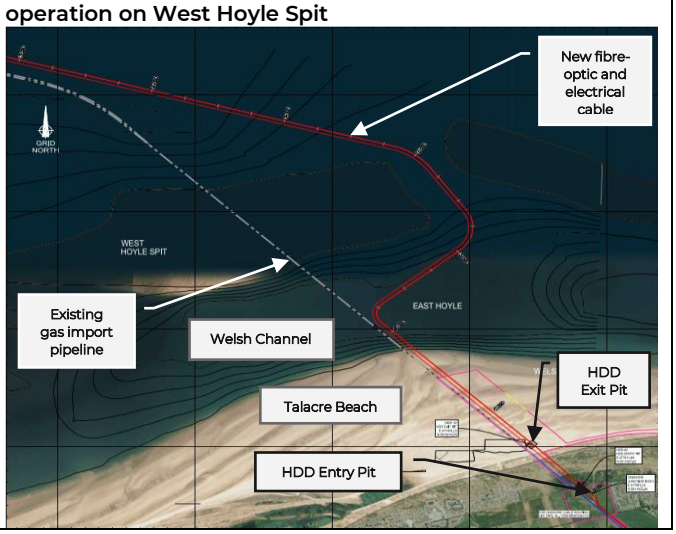


Figure 2: Cable route option (Red Line) to east of West Hoyle Spit to utilise gap between sand banks and avoid dredging operation on West Hoyle Spit



PURPOSE OF TECHNICAL NOTE

This Technical Note describes the proposed realignment of the route (the 'Realigned Route') to install the combined electrical and fibre-optic cable across Talacre Beach and the Welsh Channel in response to the consultation feedback. This Realigned Route would supersede the original route options as shown in Figure 1, and Figure 2.

Information is also provided on the revised programme for installation of the Realigned Route. This shows how the timing and sequencing of the works is being planned to avoid, as far as practicable, environmental sensitivities (i.e. little tern colony and breeding season), but also accounting for availability of the cable installation vessel.

The objective of the Technical Note is to therefore provide answers to the following questions:

- How has the alignment of the electrical cable landfall altered from that presented in the original application?
- What have been the drivers for the alterations to the alignment of the electrical cable landfall?
- What environmental advantages relative to the original Preferred Route (Figure 2) would arise from the realignment of the cable?
- How do these changes alter the conclusions of the topic-specific environmental assessments presented in the ES submitted with the ML application, including consideration of the Habitats Directive, and Water Framework Directive?
- Are any changes required to the proposed mitigation measures, and topic specific environmental management plans?

ELECTRICAL CABLE REALIGNED ROUTE

The original Preferred Route from PoA Terminal to Douglas OP, in its initial onshore segment, will head out of PoA Terminal, across Warren Farm. On the landward side of the dunes the cable will enter a conduit installed by a Horizontal Directional Drilling (HDD) trenchless crossing method to pass under the Talacre dune system. The HDD conduit will be aligned in an approximate north-westerly direction parallel to the existing gas import pipeline. The HDD conduit will emerge at an Exit Pit at around the mean high water springs (MHWS) (Figure 2). Planning permission from Flintshire County Council (FCC) for the Onshore segment, to MLWS, was granted on 10 January 2024 (application reference FUL/000246/23).

The proposed Realigned Route will start from the original HDD entry pit location consented through the planning application (FUL/000246/23). Figure 3 shows the cable route realignment (Green Line) from the HDD Entry Pit creating a more direct path, in an approximate north-northwesterly direction, under the dune system, and across Talacre Beach, and the Welsh Channel, to the gap between the sand banks to the east of West Hoyle Spit and onwards to the New Douglas OP.

The black hatched area on Figure 3 shows the area bounded by the red line that encloses the route options presented in the ML application.

The red line represents the amended boundary proposed for the Marine Licence application that would replace the black hatched area. This red line boundary also accounts for the additional area required on Talacre Beach and under the dunes demarcated by the yellow line.

A Town and Country Planning Act (TCPA) application is currently in preparation by Liverpool Bay CCS for the additional area represented by the yellow line and will be submitted to FCC in due course.

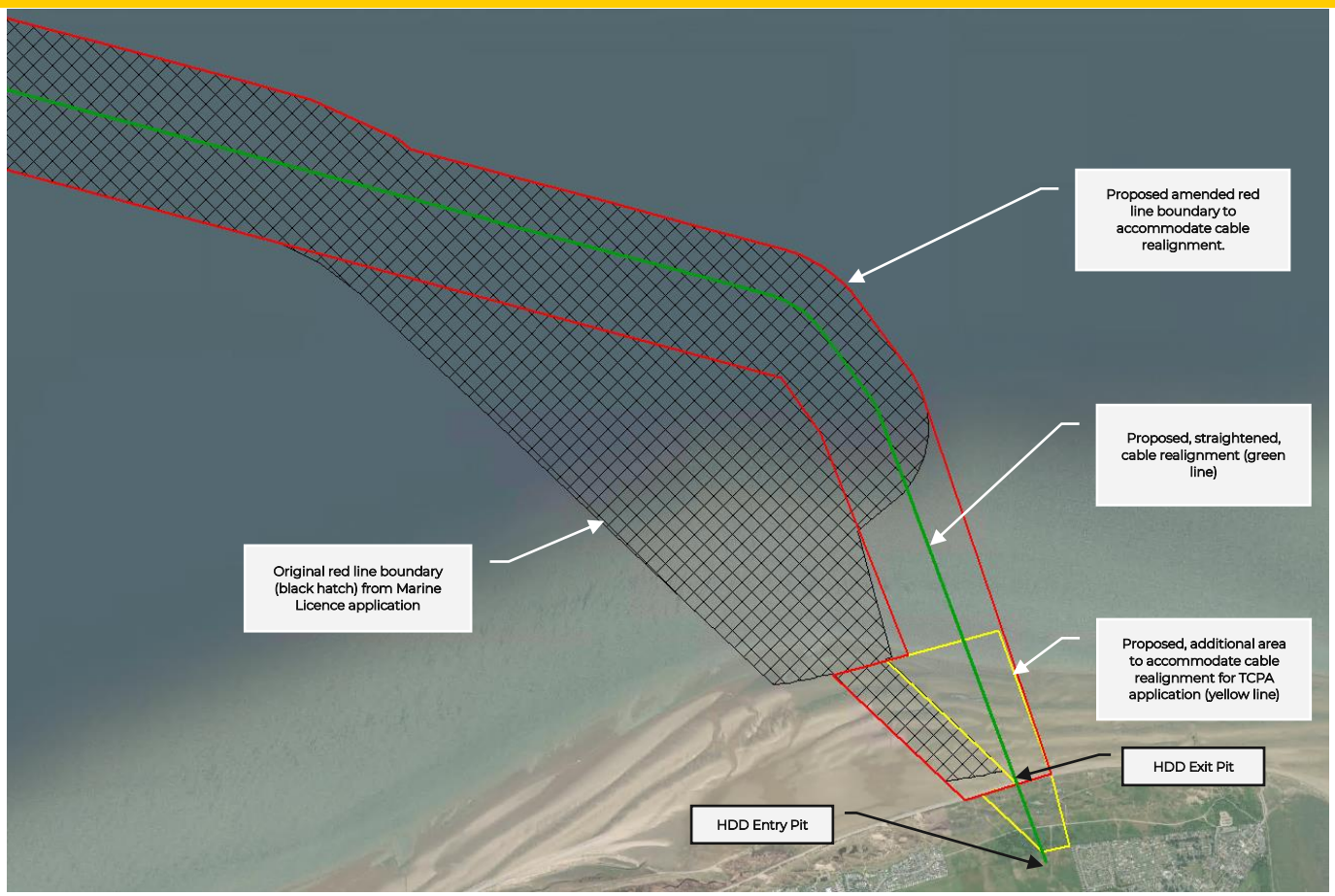


Figure 3: Cable route realignment (Green Line) in response to stakeholder feedback to create a direct path from the HDD entry pit under the dunes and across Talacre Beach and the Welsh Channel to the gap between sand banks to the east of West Hoyle Spit

The Realigned Route will include the same components and activities as the original Preferred Route within a similar location, albeit on a modified alignment. The HDD Exit pit and the cable lay, and burial will still occur on and across Talacre Beach but with the advantage of within a slightly smaller footprint, due to a more direct route. The changes, and advantages presented by the Realigned Route are summarised in Table 1. Table 1 also confirms the environmental sensitivities encountered remain as for the original Preferred Alignment, such as inter-tidal, and subtidal benthic habitats. Also highlighted is the additional distance between the proposed works and the Little Tern colony at Gronant Dunes.

Table 1 – Changes to the Liverpool Bay CCS electrical cable landfall at Talacre Beach

Component	Change	Advantages of Realigned Route
HDD conduit under dune system	Realigned to a north northwest direction	The HDD conduit will be installed underground. No new or different environmental effects will arise from its realignment. The realignment has the consequential benefit of facilitating the repositioning of the HDD Exit Pit and cable laying and installation activities on Talacre Beach an additional ~250m away from the Little Tern colony at Gronant Dunes (2,250m in total), as shown in Figure 4. This facilitates a more direct crossing of Talacre Beach and the Welsh Channel.

Component	Change	Advantages of Realigned Route
HDD Exit Pit	Repositioned ~250m eastwards	The relocated HDD Exit Pit will be located on the same inter-tidal, habitat types (*LS.LSa.MuSa Polycheate_bivalve-dominated muddy sandy shores,* and *Mosaic: 85% LS.LSa.MoSa Barren or amphipod-dominated mobile sandy shores, 15% LS,LSa.MuSa Polycheate bivalve dominated muddy sandy shores*) as the original Preferred Route, as shown in **Figure 5** The HDD Exit Pit will be located an additional ~250m away from the Little Tern colony at Gronant Dunes (2,250m in total). No new or different environmental effects will arise from its repositioning.
Cable laying and burial on Talacre Beach and across nearshore	Repositioned ~250m eastwards	Cable laying and burial will be located on the same inter-tidal (*LS.LSa.MuSa Polycheate_bivalve-dominated muddy sandy shores,* and *Mosaic: 85% LS.LSa.MoSa Barren or amphipod-dominated mobile sandy shores, 15% LS,LSa.MuSa Polycheate bivalve dominated muddy sandy shores*), and nearshore habitat (*EUNIS A5.35, and A5.45*) covering slightly smaller footprint than the original Preferred Route. Cable laying and burial an additional 250m away from the Little Tern colony at Gronant Dunes (2,250m in total) as shown in **Figure 4**, and will be routed through area of lower foraging distribution (<1.5%), as shown in **Figure 6.** No new or different environmental effects will arise from its realignment.
Rollers for cable shore pull	Repositioned ~250m eastwards	The rollers will be placed on the same inter-tidal habitat covering a slightly smaller footprint, with fewer rollers, than original Preferred Route. Installation of rollers will be an additional ~250m away from the Little Tern colony at Gronant Dunes (2,250m in total). No new or different environmental effects will arise from their repositioning and realignment.
Cable Lay Vessel (CLV)	Repositioned ~250m eastwards	The CLV will be beached on the same inter-tidal habitat (*LS.LSa.MuSa.MacAre Macoma balthica and Arenicola marina in littoral muddy sand* and *LS.LSa.MuSa Polycheate_bivalve-dominated muddy sandy shores,* and *Mosaic: 85% LS.LSa.MoSa Barren or amphipod-dominated mobile sandy shores, 15% LS,LSa.MuSa Polycheate bivalve dominated muddy sandy shores*) covering similar footprint as for original Preferred Route. Fewer support vessel movements will be required as the complexity of anchor movements is much reduced compared to the original Preferred Route. Beaching of CLV will be an additional ~250m away from the Little Tern colony at Gronant Dunes (2,250m in total). No new or different environmental effects will arise from its repositioning.
Construction plant and equipment	Repositioned ~250m eastwards	The same numbers and types of plant and equipment will be used on the same beach habitat, operating over similar area. The area where construction plant and equipment will be used to install the electrical cable will be an additional ~250m away from the Little Tern colony at Gronant Dunes (2,250m in total). No new or different environmental effects will arise from their use along the Realigned Route.

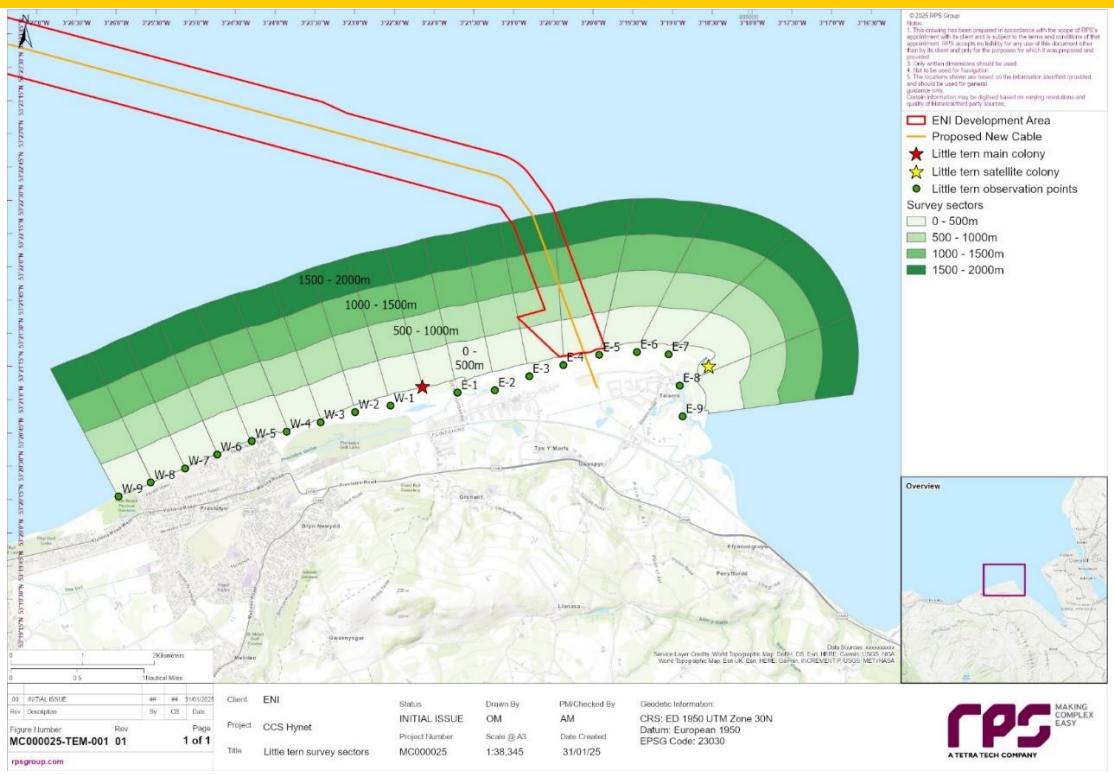


Figure 4: Little tern survey sectors showing location of colony and alignment of electrical cable

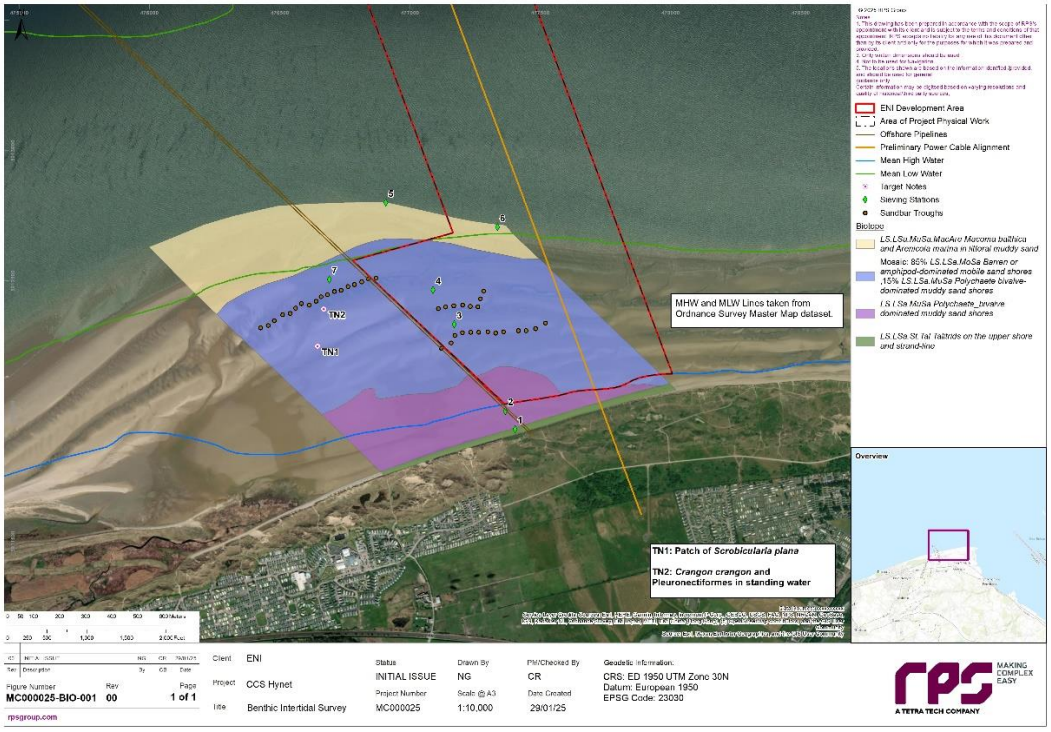


Figure 5: Inter-tidal habitat types in relation to the realignment of electrical cable

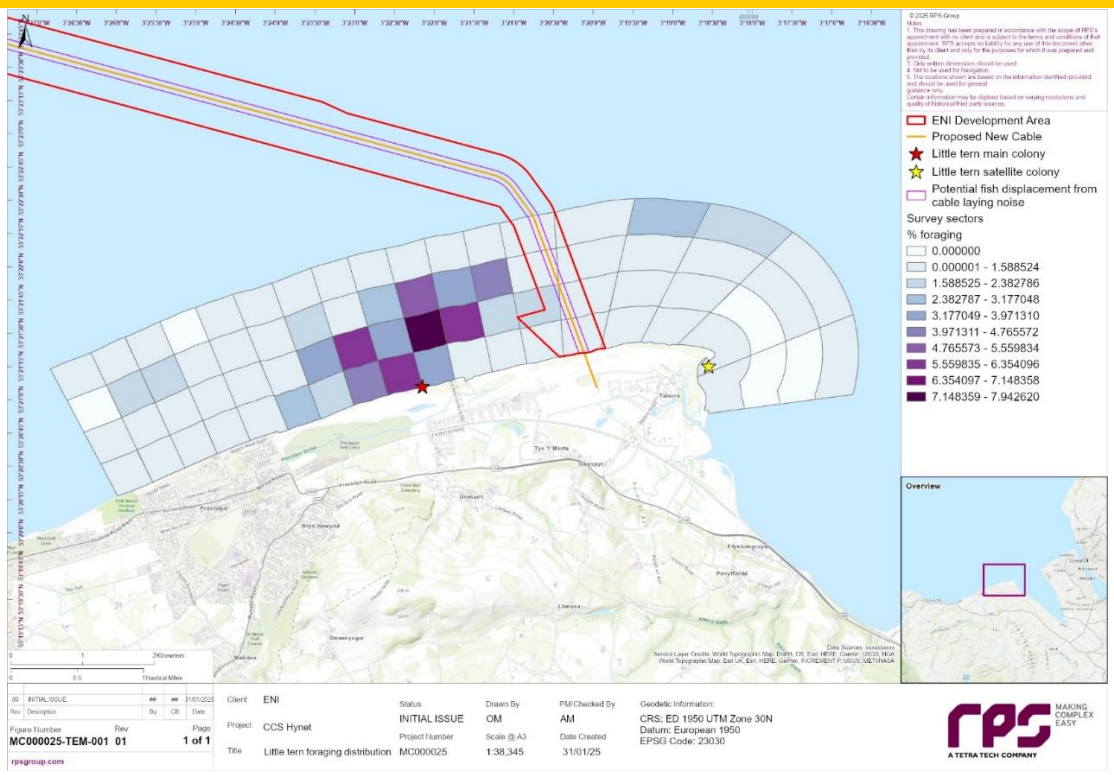


Figure 6: Little tern foraging distributions showing location of colony and alignment of electrical cable

TIMING AND DURATION OF WORKS

Feedback from Port of Mostyn and Statutory Nature Conservation Bodies (SNCB) requested Liverpool Bay CCS to investigate opportunities to optimise the timing and duration of the cable laying and installation works.

The cable laying activities across the Welsh Channel would impact access for vessels to the Port of Mostyn. Port of Mostyn therefore requested Liverpool Bay CCS to minimise the duration of the cable laying activities across the channel, and to coordinate the planning of these works with the Harbour Master. Liverpool Bay CCS has committed to do this and will continue to work with the Port of Mostyn once the cable laying contractor is appointed and the detailed planning of the works is carried out.

A draft Memorandum of Understanding (MoU) has been prepared by Liverpool Bay CCS and shared with Port of Mostyn for review and comment, which sets out the commitment to work collaboratively to:

"...define a mutually agreed approach for the laying of the cable across the Welsh Channel using a cable-laying vessel in such a manner that minimises disruption to the Port of Mostyn's daily vessel movements, while ensuring that the cable burial depth remains sufficient to allow for the ongoing and future maintenance dredging of the Port's approach channels."

The Realigned Route takes a more efficient, direct crossing of the Welsh Channel. The Realigned Route, as shown in Figure 3, achieves this aim and has the advantage over the original Preferred Route (Figure 2) in that it will avoid a complicated and time consuming, sinuous manoeuvre of the CLV on anchors within the Welsh Channel.

Liverpool Bay CCS will work with Port of Mostyn to ensure that the cable-laying vessel will be positioned in such a way as to allow safe and unobstructed passage for daily vessel movements, at agreed timings, into and out of the Port of Mostyn. The positioning of the CLV will be determined to allow a clear route around either the bow or the stern of the vessel, with adequate space for safe manoeuvring.

Liverpool Bay CCS will coordinate the cable-laying operations with the daily schedule of incoming and outgoing vessels from the Port of Mostyn. This will include advance planning with Port of Mostyn to avoid any major conflict between operational periods.

Continuous communication will be maintained between Liverpool Bay CCS Limited's cable-laying team and the Port of Mostyn's vessel traffic control to monitor real-time movements and adjust the cable-laying schedule as necessary. During execution of the cable lay operation around the Welsh Channel, Liverpool Bay CCS will issue daily reports to Port of Mostyn, highlighting schedule progress and current activities/restrictions.

Figure 7, and Figure 8 summarise the activities for the installation of the HDD Exit Pit on Talacre Beach and show that the programme is aiming to avoid the little tern breeding season by carrying out the HDD Conduit, and Exit Pit works during February and March 2026. Figure 7 also shows the assumptions, and environmental considerations factored into the planning of the works.

The anticipated duration of each activity required for the installation of the HDD Exit Pit are shown in Figure 8. Similar types and numbers of plant and equipment, as reported in the ES, would be used to carry out these activities.

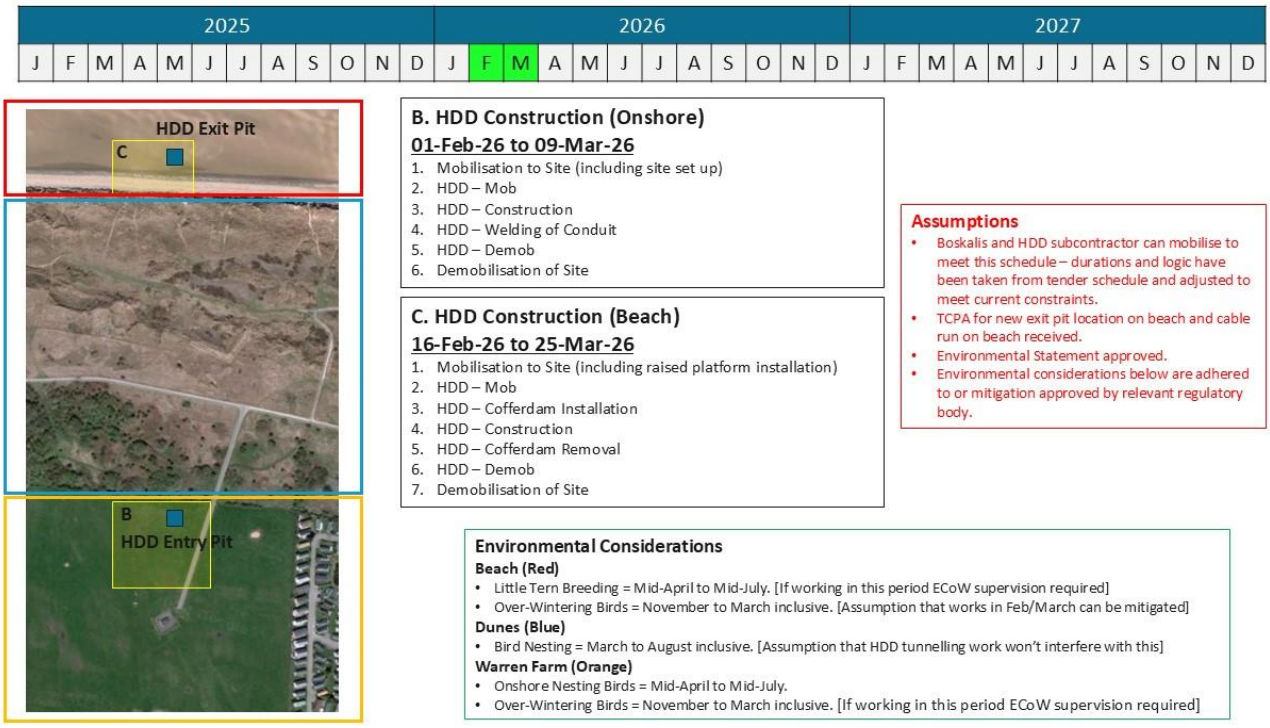


Figure 7: Indicative summary activities and programme for installation of HDD Exit Pit on Talacre Beach recognising environmental sensitivities

2025												2026												2027											
J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D

A. HDD Construction (Onshore)				
ID	Activity	Duration	Start	Finish
1	Mobilisation to Site (inc. Site set up)	18d	01-Feb-26	19-Feb-26
2	HDD – Mobilisation	8d	19-Feb-26	27-Feb-26
3	HDD – Construction	19d	27-Feb-26	17-Mar-26
4	HDD – Welding of Conduit	10d	27-Feb-26	09-Mar-26
5	HDD – Demobilisation	7d	18-Mar-26	24-Mar-26
6	Demobilisation of Site	7d	24-Mar-26	29-Mar-26

B. HDD Construction (Beach)				
ID	Activity	Duration	Start	Finish
1	Mobilisation to Site (inc. Raised Platform Installation)	12d	16-Feb-26	28-Feb-26
2	HDD – Mobilisation	8d	28-Feb-26	07-Mar-26
3	HDD – Cofferdam Installation	5d	28-Feb-26	04-Mar-26
4	HDD – Construction	5d	11-Mar-26	16-Mar-26
5	HDD – Cofferdam Removal	5d	16-Mar-26	20-Mar-26
6	HDD – Demobilisation	7d	16-Mar-26	22-Mar-26
7	Demobilisation of Site	3d	22-Mar-26	25-Mar-26

Figure 8: Indicative summary programme showing timing and duration of activities for installation of HDD Exit Pit on Talacre Beach

Figure 9, and Figure 10 summarise the activities for the installation of the electrical cable on Talacre Beach and show that the indicative programme is seeking to carry out the activities towards the end of the little tern breeding season from early July 2026. Figure 7 also shows the assumptions, and environmental considerations factored into the planning of the works.

The anticipated duration of each activity required for the cable installation works is shown in Figure 10. Similar types and numbers of plant and equipment, as reported in the ES, would be used to carry out these activities.

The Realigned Route makes for a simpler cable installation to that which would have been required for the original Preferred Route. This is because the cable shore pull and subsequent lay and burial of the cable, would be along a straight, rather than sinuous alignment, which can be carried out over a shorter timeframe.

For the installation of the Realigned Route, the types and numbers of plant and equipment required to carry out the works would remain as reported in the ES submitted with the ML application.

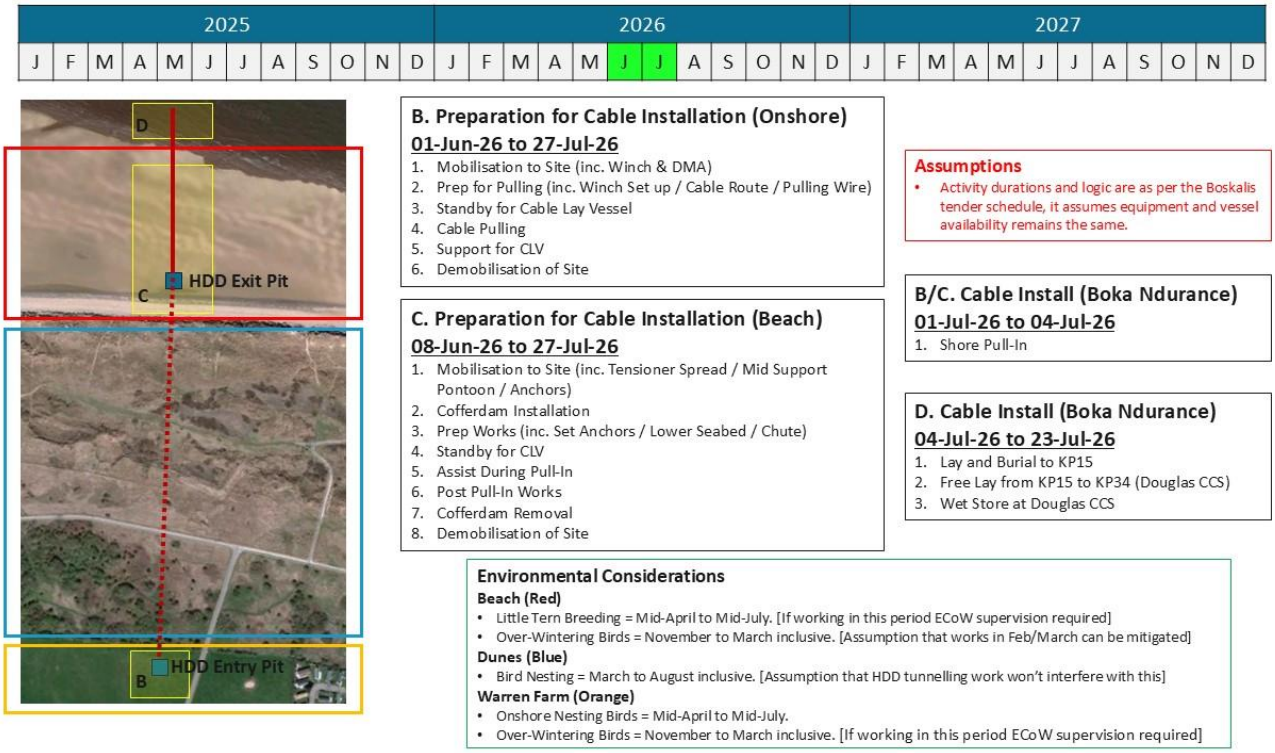
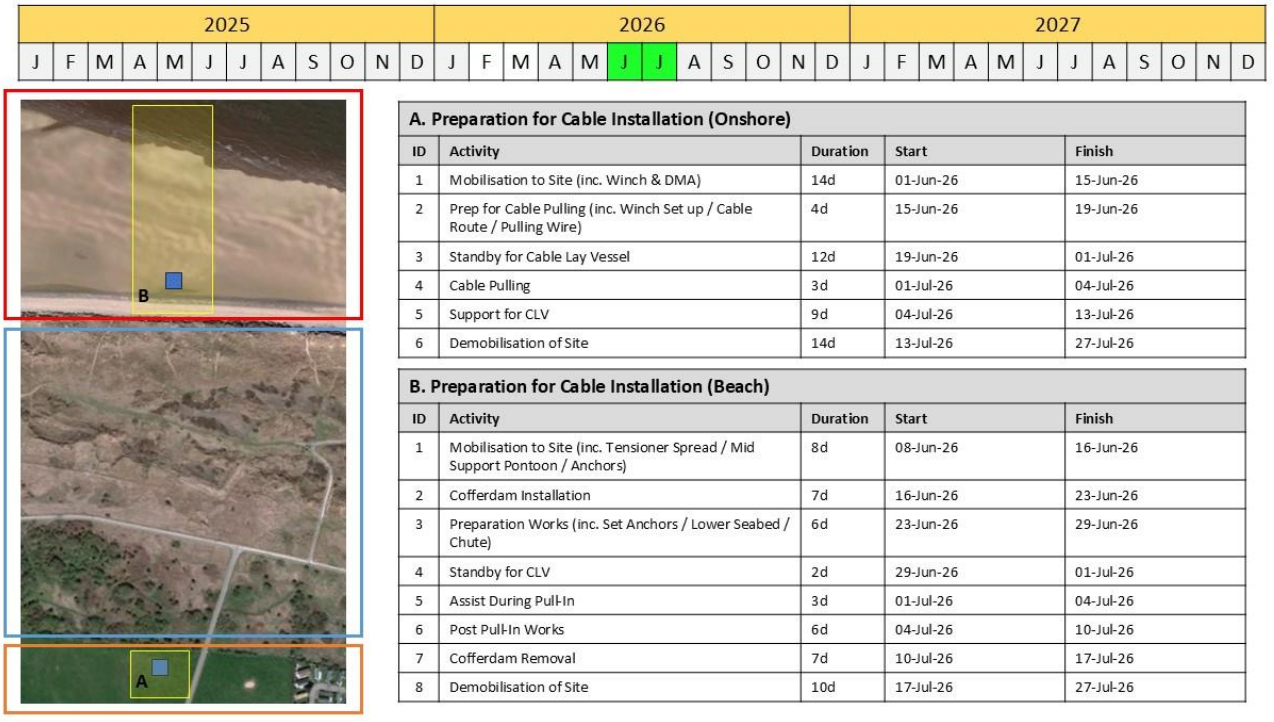


Figure 9: Indicative summary activities and programme for preparatory works and installation of cable on Talacre Beach recognising environmental sensitivities



A. Preparation for Cable Installation (Onshore)

ID	Activity	Duration	Start	Finish
1	Mobilisation to Site (inc. Winch & DMA)	14d	01-Jun-26	15-Jun-26
2	Prep for Cable Pulling (inc. Winch Set up / Cable Route / Pulling Wire)	4d	15-Jun-26	19-Jun-26
3	Standby for Cable Lay Vessel	12d	19-Jun-26	01-Jul-26
4	Cable Pulling	3d	01-Jul-26	04-Jul-26
5	Support for CLV	9d	04-Jul-26	13-Jul-26
6	Demobilisation of Site	14d	13-Jul-26	27-Jul-26

B. Preparation for Cable Installation (Beach)

ID	Activity	Duration	Start	Finish
1	Mobilisation to Site (inc. Tensioner Spread / Mid Support Pontoon / Anchors)	8d	08-Jun-26	16-Jun-26
2	Cofferdam Installation	7d	16-Jun-26	23-Jun-26
3	Preparation Works (inc. Set Anchors / Lower Seabed / Chute)	6d	23-Jun-26	29-Jun-26
4	Standby for CLV	2d	29-Jun-26	01-Jul-26
5	Assist During Pull-In	3d	01-Jul-26	04-Jul-26
6	Post Pull-In Works	6d	04-Jul-26	10-Jul-26
7	Cofferdam Removal	7d	10-Jul-26	17-Jul-26
8	Demobilisation of Site	10d	17-Jul-26	27-Jul-26

Figure 10: Indicative summary programme showing timing and duration of activities for installation of cable on Talacre Beach

ENVIRONMENTAL IMPACT ASSESSMENT

In response to the feedback received during the statutory consultation processes, work has been done to avoid or lessen effects by optimising the route alignment, and the timing and duration of the works regarding environmental sensitivities.

Table 2 presents a summary of the EIA outcomes for these works as presented in the ES submitted with the ML application. The first column of the table lists the receptors that were included in the topic-specific assessments reported in the ES. The second column provides an updated conclusion regarding the environmental effects for each topic arising from the Realigned Route.

For the construction, operation, and decommissioning phases of the Realigned Route across Talacre Beach, and the Welsh Channel, none of the assessed environmental effects reported in the ES will have any additional significant adverse or residual effects. No new or different environmental effects will arise from the realignment. The Realigned Route does, however, have the consequential benefit of facilitating the repositioning of the HDD Exit Pit, and cable laying and installation activities, an additional ~250m away from the Little Tern colony at Gronant Dunes (~2,250m in total).

Notwithstanding, the relocated HDD Exit Pit, and cable laying and burial on Talacre Beach will be on the same inter-tidal, habitat types as the original Preferred Route, as presented in Table 1. The summary of modifications in Table 1, also confirms that the cable will be buried within the same nearshore habitat, albeit covering a slightly smaller footprint than the original Preferred Route.

Further optimisation regarding the timing of the works will be carried out in collaboration with Port of Mostyn, and the cable installation contractor.

Table 2 – Update to ES conclusions arising from realigning the Liverpool Bay CCS electrical cable landfall at Talacre Beach

Receptor	Updated conclusion following realignment
Marine Ornithology	The ES concluded that there will be moderate adverse significant effects arising during the construction and decommissioning phases on Little Tern, due to indirect impacts upon prey availability. However, there is an additional ~250m shift away from the foraging and nesting areas of the identified sensitive little tern colony (~2,250m in total) arising from the Realigned Route across Talacre Beach and Welsh Channel. Figure 6 shows that cable routing will be through an area of lower foraging distribution (<1.5%), Liverpool Bay CCS will continue to engage with NRW and FCC on the protection of sensitive species during the construction period. Pre-commencement ecological surveys will be used as a basis for planning of specific activities. Activities will be timed to reduce impacts on ecological receptors where practicable. A detailed Method Statement will be produced by the contractor for approval prior to commencement of work in collaboration with NRW-MLT to outline how impacts on birds will be avoided during the works. This is likely to include planning of the time and duration of activities, toolbox talks for site contractors, and appropriate selection of plant machinery to minimise disturbance. For all other species it is concluded that there will be no significant effects from the Realigned Route during the construction, operation, and decommissioning phases.
Shipping and Navigation	The Realigned Route of the combined electrical and fibre optic cable across the Welsh Channel is proposed to lessen the impact on the Port of Mostyn. Liverpool Bay CCS will continue to work with Port of Mostyn, under the MoU to ensure that the cable-laying vessel will be positioned in such a way as to allow safe and unobstructed passage for daily vessel movements, at agreed timings, into and out of the Port of Mostyn.

Receptor	Updated conclusion following realignment
	Liverpool Bay CCS will coordinate the cable-laying operations with the daily schedule of incoming and outgoing vessels from the Port of Mostyn. This will include advance planning with Port of Mostyn to avoid any major conflict between operational periods. During installation, continuous communication will be maintained between Liverpool Bay CCS Limited's cable-laying team, and the Port of Mostyn's vessel traffic control to monitor real-time movements and adjust the cable-laying schedule as necessary. Liverpool Bay CCS will issue daily reports to Port of Mostyn, highlighting schedule progress and current activities/restrictions. The implementation of these additional measures will result in minor adverse effects that are not significant in EIA terms.
Infrastructure and other Users	There are no additional measures in relation to Infrastructure and Other Sea Users required from the Realigned Route. As was the case for the original Preferred Route, following implementation of the Realigned Route and mitigation measures (e.g. commercial crossing agreements, and marine coordination to manage project vessel agreements), the overall impact will result in minor adverse effects which are not significant in EIA terms.
Physical processes	There are minor advantages to Physical Processes from the Realigned Route, as it will have a smaller seabed footprint in the inter-tidal, and sub-tidal areas. As was the case for the original Preferred Route, following implementation of the Realigned Route, the overall impact will result in minor adverse effects which are not significant in EIA terms.
Marine Biodiversity: **Fish and shellfish ecology; and** **Marine Mammals and Marine Turtles**	There are minor advantages to Marine Biodiversity from the Realigned Route, as it will have a smaller seabed footprint in the inter-tidal, and sub-tidal areas, and installed over a shorter timeframe. As was the case for the original Preferred Route, following implementation of the Realigned Route and mitigation measures (e.g. cable burial), the overall impacts result in negligible or minor adverse effects, which are not significant in EIA terms. There is no further mitigation required in addition to the measures adopted as part of the original Preferred Route (e.g. implementation of piling soft-start and ramp-up measures). As was the case for the original Preferred Route, all the impacts in all project phases result in either negligible or minor adverse effects, which are not significant in EIA terms.
Commercial fisheries	There is no further mitigation required in addition to the measures adopted as part of the original Preferred Route (e.g. appointment of a FLO). As was the case for the original Preferred Route, all the impacts in all project phases result in either negligible or minor adverse effects, which are not significant in EIA terms.
Marine Archaeology	There is no further mitigation required in addition to the measures adopted as part of the original Preferred Route. All impacts, in all project phases, result in either negligible or minor adverse effects, which are not significant in EIA terms.
Climate Change	There is no further mitigation required in addition to the measures adopted as part of the original Preferred Route. As was the case for the original Preferred Route, following the implementation of mitigation, no significant adverse or beneficial residual effects on GHG emissions are likely to occur in relation to the Realigned Route.
Inter-Related effects	There is no further mitigation required in addition to the measures adopted as part of the original Preferred Route. As was the case for the original Preferred Route, following the implementation of mitigation, no significant adverse effects above those assessed for each individual topic are likely to occur in relation to the Realigned Route.

HABITATS REGULATIONS ASSESSMENT

The Realigned Route will be located within the same part of the same European Sites (Dee Estuary SPA and Ramsar, and Liverpool Bay/Bae Lerpwl SPA) as the original Preferred Route. The Realigned Route, will, however, occupy a smaller footprint by taking a shorter, more direct route from the HDD Exit Pit,

and across the inter-tidal area to the pass through the gap between the sand banks to the east of West Hoyle Spit.

The conclusions to the HRA submitted with the ML application would remain valid. The assessments concluded no Adverse Effect on Integrity (AEoI) for the sites that overlap with the cable works, apart from the Dee Estuary SPA and Ramsar that was assessed to have "Without mitigation, moderate adverse effect on integrity" on Little Tern. This was because the offshore electrical cable installation, planned at the foreshore, would be approximately 2,000m from the little tern colony at Gronant Dunes, and if the works coincided with the nesting and breeding period, would overlap with their foraging area (Figure 6.).

The Realigned Route has the potential to have a positive contribution to reducing the impact on this site for the following reasons:

- The realignment of the electrical cable landfall would move the works an additional 250m away from the Little Tern colony at Gronant Dunes (~2,250m in total).
- Should the cable installation coincide with the breeding season for Little Tern, the realignment would enable the cable to be installed through an area of low activity for foraging, as shown in Figure 6.
- The revised timing of the HDD Exit Pit works has been scheduled for February and March 2026, which is outside of the Little Tern breeding season.
- The cable shore pull, and simultaneous lay and burial by the cable lay vessel, are scheduled for July 2026 at the end of the Little Tern breeding season, close to their migratory departure. Liverpool Bay CCS will continue to work with its cable installation contractor to, as far as is reasonably practicable, sequence these works to occur either later in, or after, the breeding season.

The HRA submitted with the ML application identified that there are 30 European Sites within the zone of influence of the original Preferred Route red line boundary. This would remain the case even with the realigned cable installation works at Talacre Beach and nearshore approaches. Some of these European Sites are crossed by the electrical cable, and others are either in the direct zone of influence or contain mobile species that could potentially travel into the application areas.

Therefore, for completeness, Table 3 presents a summary of the HRA process outcomes for these sites from the ML application and explains the changes resulting from the Realigned Route. The first column of the table lists all the European Sites that have been included in the assessments. The second and third columns summarise the overall conclusion of the HRA carried out for the ML Application activities, including the Talacre Beach Works, and those for the onshore TCPA, respectively.

Table 3 summarises the changes to the HRA outcomes arising from the Realigned Route.

Table 3 – Summary of the changes to the HRA outcomes arising from the proposed realignment of the Liverpool Bay CCS electrical cable landfall at Talacre Beach

European Site	Marine Licence application activities, including Talacre Beach works	PoA Terminal and Talacre Beach works	Changes following cable re-alignment
Liverpool Bay/Bae Lerpwl SPA.	✓ No adverse effects on integrity	✓ No adverse effects on integrity	No change to HRA conclusions
Dee Estuary/Aber Dyfrdwy SAC.	✓ No adverse effects on integrity	✓ No adverse effects on integrity	No change to HRA conclusions
Dee Estuary SPA and Ramsar	✓ Without mitigation, moderate adverse effect on integrity for Little Tern	✓ No adverse effects on integrity	✓ Without mitigation, moderate adverse effect on integrity for Little Tern

European Site	Marine Licence application activities, including Talacre Beach works	PoA Terminal and Talacre Beach works	Changes following cable re-alignment
River Dee and Bala Lake/Afon Dyfrdwy a Llyn Tegid SAC	✓ No adverse effects on integrity	✓ No adverse effects on integrity	No change to HRA conclusions
The Mersey Narrows and North Wirral Foreshore SPA and Ramsar	No interactions	✓ No adverse effects on integrity	No change to HRA conclusions
Ribble and Alt Estuaries SPA.	✓ No adverse effects on integrity	No interactions	No change to HRA conclusions
Anglesey Terns/Morwenoliaid Ynys Môn SPA.	✓ No adverse effects on integrity	No interactions	No change to HRA conclusions
Morecambe Bay and Duddon Estuary SPA.	✓ No adverse effects on integrity	No interactions	No change to HRA conclusions
Aberdaron Coast and Bardsey Island/Glannau Aberdaron ac Ynys Enlli SPA.	✓ No adverse effects on integrity	No interactions	No change to HRA conclusions
Ailsa Craig SPA.	✓ No adverse effects on integrity	No interactions	No change to HRA conclusions
Skomer, Skokholm and the Seas off Pembrokeshire/Sgomer, Sgogwm a Moroedd Penfro SPA.	✓ No adverse effects on integrity	No interactions	No change to HRA conclusions
Grassholm SPA.	✓ No adverse effects on integrity	No interactions	No change to HRA conclusions
Saltee Islands SPA and SAC.	✓ No adverse effects on integrity	No interactions	No change to HRA conclusions
Rockabill to Dalkey Island SAC.	✓ No adverse effects on integrity	No interactions	No change to HRA conclusions
Roaringwater Bay and Islands SAC.	✓ No adverse effects on integrity	No interactions	No change to HRA conclusions
Afon Gwyrfai a Llyn Cwellyn SAC.	✓ No adverse effects on integrity	No interactions	No change to HRA conclusions
Afon Eden - Cors Goch Trawsfynydd SAC.	✓ No adverse effects on integrity	No interactions	No change to HRA conclusions
River Teifi/Afon Teifi SAC.	✓ No adverse effects on integrity	No interactions	No change to HRA conclusions
Cardigan Bay/Bae Ceredigion SAC.	✓ No adverse effects on integrity	No interactions	No change to HRA conclusions
North Anglesey Marine/Gogledd Môn Forol SAC.	✓ No adverse effects on integrity	No interactions	No change to HRA conclusions
North Channel SAC.	✓ No adverse effects on integrity	No interactions	No change to HRA conclusions
Lleyn Peninsula and the Sarnau SAC.	✓ No adverse effects on integrity	No interactions	No change to HRA conclusions
West Wales Marine SAC.	✓ No adverse effects on integrity	No interactions	No change to HRA conclusions
Strangford Lough SAC.	✓ No adverse effects on integrity	No interactions	No change to HRA conclusions
Murlough SAC.	✓ No adverse effects on integrity	No interactions	No change to HRA conclusions

European Site	Marine Licence application activities, including Talacre Beach works	PoA Terminal and Talacre Beach works	Changes following cable re-alignment
The Maidens SAC.	✓ No adverse effects on integrity	No interactions	No change to HRA conclusions
Pembrokeshire Marine/Sir Benfro Forol SAC.	✓ No adverse effects on integrity	No interactions	No change to HRA conclusions
Bristol Channel Approaches/Dynesfeydd Môr Hafren SAC.	✓ No adverse effects on integrity	No interactions	No change to HRA conclusions
Channel Approaches SAC).	✓ No adverse effects on integrity	No interactions	No change to HRA conclusions
Lundy SAC.	✓ No adverse effects on integrity	No interactions	No change to HRA conclusions

WATER FRAMEWORK DIRECTIVE ASSESSMENT

The Realigned Route will be located within the same part of the same Transitional Waterbody (North Wales) as the original Preferred Route. The Realigned Route, will, however, occupy a smaller footprint by taking a shorter, more direct route from the HDD Exit Pit, and across the inter-tidal area to pass through the gap between the sand banks to the east of West Hoyle Spit.

The realignment of the integrated offshore power and FO cable will result in no significant change to the proposed activities in the North Wales, and Dee water bodies. Therefore, there remains no potential for deterioration of the North Wales or Dee water bodies. The cable installation works will also still be carried out within the timeframe of the current Western Wales River Basin Management Plan 2021-2027.

The relevant activities for the construction, operation and maintenance and decommissioning of the integrated offshore power and FO cables associated with the Proposed Development can remain scoped out of the assessment as they are below the thresholds set by the 'Clearing the Waters for All' guidance.

In the context of water quality, one criterion was met by the activity for scoping impacts into the assessment: the activity "*is in a waterbody with a phytoplankton status of moderate, poor or bad*". The originally reported worst-case increased SSC from installation and decommissioning of the realigned power and FO cables is expected to disperse rapidly (i.e. within four days) at distances of hundreds of metres from cable installation works, and phytoplankton is not expected to bloom in response to nutrient availability. The shorter distance of the Realigned Route will ensure that likely effects will remain within those previously assessed.

The potential reduced volume of SSC from installation of the Realigned Route, means sediment-bound contaminants are considered unlikely to increase in bioavailability or create eco-toxicological effects, within the 1 nm WFD assessment boundary described in the 'Clearing the Waters for All' guidance, within the WFD Assessment Area, or within 12 nm of MHWS for 'chemical status'.

The effects of the activity do not represent a deterioration in either the biological or chemical status of this WFD element of the North Wales water body. The Dee water body was not scoped in for assessment as no water quality elements were considered likely to be at risk of deterioration.

The Realigned Route still means that the Eni Development Area lies "within 2 km of any WFD protected area", as defined by the 'Clearing the Waters for All' guidance, namely: Liverpool Bay SPA, The Dee Estuary SPA, Dee Estuary SAC, Prestatyn bathing water; and Dee (West) shellfish water. The qualifying

features of the SPA and SAC, and the parameters for classification of the bathing water and shellfish, were considered to have the potential to be impacted by the activities, during the construction and decommissioning phases. AS was the case for the original Preferred Route, the construction, operation and maintenance and decommissioning of the Realigned Route is not predicted to jeopardise the conservation objectives or status of the scoped-in WFD protected areas. As previously reported, the effects of the realigned activity are therefore not predicted to represent a deterioration in the status of this WFD element of the North Wales or Dee water bodies.

Based on the assessment of effects related to the realignment of the integrated offshore power and FO cable, there is no potential for significant impacts on the habitats - biology, water quality or WFD protected areas associated with the North Wales or Dee water bodies. The activity is not anticipated to significantly impact any element within these water bodies and the ability of these water bodies to achieve good status in the future is likely to be secure. The construction, operation and maintenance and decommissioning of the Realigned Route is therefore considered to be compliant with the requirements of the WFD.

CONCLUSION

The realignment of the electrical and fibre-optic cable landfall for the Liverpool Bay CCS Project was undertaken in response to stakeholder feedback, particularly from the Port of Mostyn. The revised route offers a more direct path, reducing the complexity of installation and minimizing disruptions to vessel movements while ensuring environmental sensitivities are considered.

Key outcomes of the realignment include:

- Improved Stakeholder Coordination: The new route minimises the impact on vessel access to the Port of Mostyn, with collaborative planning in place to avoid conflicts with port operations. A Memorandum of Understanding (MoU) ensures ongoing communication between Liverpool Bay CCS and the port.
- Environmental Advantages: The new alignment moves cable installation activities approximately 250m further from the Little Tern colony at Gronant Dunes, reducing potential disturbance during the breeding season. The cable will also be routed through an area with lower tern foraging activity. Timetabling if the works is avoiding as much of the sensitive seasons for birds as is reasonably practicable.
- Minimised Ecological Impact: The information in this technical note confirms that the realignment does not introduce new or additional significant environmental effects. The footprint of the installation is slightly reduced, and all identified effects remain within acceptable limits.
- Regulatory Compliance: The realigned route remains compliant with the Habitats Regulations Assessment (HRA) and Water Framework Directive (WFD), with no additional adverse effects on designated sites or water quality.
- Operational Efficiencies: The revised route simplifies the cable-laying process, reducing the installation timeframe and requiring fewer vessel movements.

Overall, the realignment provides logistical and environmental benefits while maintaining regulatory compliance. The proposed mitigation measures remain effective, and no additional significant adverse effects are expected.

ANNEX A

Table A1 presents a summary of the EIA outcomes for these works as presented in the ES submitted with the ML application. The first column of the table lists the receptors that were included in the topic-specific assessments reported in the ES. The second column summarises the environmental effects of the works. The mitigation proposed to address the identified environmental effects are presented in the third columns. Column four describes the changes to the environmental effects and mitigation measures due to the proposed realignment of the combined the electrical and fibre-optic cable.

Table A1 – Changes in environmental effects arising from realigning the Liverpool Bay CCS electrical cable landfall at Talacre Beach

Receptor	Environmental effects presented in ES	Mitigation presented in ES	Updated conclusion following realignment
Physical processes • **Increased SSCs and sediment deposition** • **Changes to seabed morphology; and** • **Activities affecting surrounding water quality**	The impacts are generally localised, short-term, and of low magnitude, affecting areas like the Dee Estuary SAC/SPA/SSSI and West Hoyle Spit. Despite temporary increases in suspended sediment levels and sedimentation, the sensitivity of these areas to changes remains low due to their recoverable nature. There would be a short-term change in seabed morphology due to altered bed levels. The changes will fall within the natural range of variability due to the highly mobile nature of the sand waves and would not interfere with their eastern migration. Additionally, any excavated material is expected to remain within the sediment cell and settle in the direct vicinity Consequently, the overall impact is deemed of minor adverse significance for the construction, operational and maintenance, and decommissioning phase, which is not significant in EIA terms. No additional mitigation beyond existing designed measures was considered necessary for these effects. During the construction phase of the project, activities such as trenching for cable routes could lead to increased SSC near the coastline, potentially affecting local tidal patterns and wave climate. These heightened SSC levels might release contaminants from disturbed harming marine life. sediments, impacting water quality and potentially. However, sediment contamination assessments suggest that significant releases of sediment-bound	Development and adherence to a Cable Specification and Installation Plan which will include cable burial where possible and cable protection. To minimise potential impact from the cables and removal of cables a commitment to bury cables where possible has been made in accordance with the specific policies set out in the Northwest Inshore and North West Offshore Coast Marine Plans (MMO, 2021). Development and adherence to a Cable Specification and Installation Plan which will include cable burial where possible and cable protection. To minimise potential impact from the cables and removal of cables a commitment to bury cables where possible has been made in accordance with the specific policies set out in the Northwest Inshore and North West Offshore Coast Marine Plans (MMO, 2021). Scour protection limited to use as third-party cable crossings and monitored in line with Cable Specification and Installation Plan. No external cable protection in the intertidal area to minimise potential impacts on intertidal habitats within the Dee Estuary SAC and SPA. Cable protection to have a profiled cross section and height mitigated to < 1 m to minimise changes to seabed morphology and physical processes such as tidal current, wave regime and sediment transport pathways, particularly if located in shallow water. Material arising from drilling and/or sand waves and wave clearance will be deposited near the works to retain material within sediment cell, reduce changes	There are minor advantages to Physical Processes from the Realigned Route, as it will have a smaller seabed footprint in the inter-tidal, and sub-tidal areas. Following implementation of the mitigation measures identified, the overall impact is deemed of minor adverse significance for the construction, operational and maintenance, and decommissioning phase, which is not significant in EIA terms. As was the case for the original Preferred Route, following implementation of the Realigned Route, the overall impact will result in minor adverse effects

Receptor	Environmental effects presented in ES	Mitigation presented in ES	Updated conclusion following realignment
	contaminants are unlikely due to construction activities. These impacts are projected to be of low to negligible magnitude, with sensitivity generally considered high. The significance of effects was evaluated to be minor or moderate, which is not significant in EIA terms. There is also Low potential for contaminant retention in beach sediments. ▪ No pathway from historical sources of anthropogenic contamination. ▪ Low potential for local disturbance of naturally present contaminants; and ▪ Small absolute and relative volumes of material disturbed. These reasons apply individually and in combination, leading to a low overall potential for measurable effect. The HDD borehole will be at a shallower depth than the coal seams which are present in this region. Accordingly, any drilling arisings are expected to comprise beach and underlying Quaternary material as well as drilling fluid, rather than coal. The release of drilling fluid (typically a suspension of natural bentonite clay (or similar) in water) into the coastal waters at the punch-out location may cause a sediment plume in the nearshore area. The drilling fluid typically consists of a low concentration bentonite – water mixture. Depending on the formation to be drilled through, the concentration is typically between 13 litres (30 kg) and 35 litres (80 kg) of	to seabed morphology and main Development of and adherence to an Environmental Management Plan (EMP) that will be prepared and implemented during the construction, operational and maintenance and decommissioning phases of the proposed development. The EMP will include appendices detailing actions to minimise INNS (the INNSMP), and a MPCP will be developed which will include planning for accidental spills, address all potential contaminant releases and include key emergency contact details in sediment transport regimes.	which are not significant in EIA terms.

Receptor	Environmental effects presented in ES	Mitigation presented in ES	Updated conclusion following realignment
	dry bentonite clay per m^3 of water (30,000 to 80,000 mg/l). The use of bentonite has several benefits: ▪ It is a natural material. ▪ It is recyclable. ▪ It is on the PLONOR list, so its discharge is not a danger to the environment. The bentonite in the drilling fluid is expected to remain in suspension for at least hours or days and will be widely dispersed to very low concentrations before settling. There will be no risk to nearby receptors – notably bathing waters located circa 7 km away (at Prestatyn and West Kirby). Cumulative effects are assessed in full in the ES. The magnitude of these cumulative effects is deemed to be low for all phases and effects to be of local spatial extent effecting receptors of low sensitivity for designated sites and West Hoyle Bank, and high for water quality. The significance of effects was therefore evaluated to be minor, which is not significant in EIA terms. No significant transboundary effects regarding physical processes from the Proposed Development were predicted on the interests of other states.		
Marine Biodiversity **1-Benthic subtidal and intertidal ecology** • **temporary subtidal habitat**	Temporary and long-term habitat loss/disturbance was deemed to be of negligible (Ross worm IEF) to minor adverse significance (all other IEFs; not significant in EIA terms). This conclusion was reached, based on the small proportion of habitat loss predicted in the context of available habitats in the Proposed Development and, as most of the disturbed	Development of, and adherence to, a Cable Specification and Installation Plan (CSIP) which will include cable burial where possible (in accordance with the specific policies set out in the North West Inshore and North West Offshore Marine Plan (MMO, 2021)) and cable protection, as necessary.	There are minor advantages to Marine Biodiversity from the Realigned Route, as it will have a smaller seabed footprint in the inter-tidal, and sub-tidal

Receptor	Environmental effects presented in ES	Mitigation presented in ES	Updated conclusion following realignment
loss and/or disturbance. • **increased SSCs and associated deposition.** • **long-term subtidal habitat loss.** • **introduction of artificial habitat and colonisation of hard structures.** • **increased temperature impacting benthic communities.** • **impacts resulting from the release of sediment bound contaminants.** • **accidental pollution to the surrounding area; and,**	habitat is sedimentary, the habitat is likely to recover following disturbance/loss. Additionally, no significant effects were predicted on protected potential reef habitats, on the assumption that measures to avoid direct impacts to these features will be implemented. Increases in suspended sediment concentrations and associated deposition were deemed to be of minor adverse significance (not significant in EIA terms) for all IEFs. This conclusion was reached due to the short-term nature of the impact with sediments quickly dispersing and most of the IEFs being of low sensitivity to this type of impact. Again, no significant effects were predicted on protected potential reef habitats, on the assumption that measures to avoid direct impacts to these features will be implemented. Long-term habitat loss was deemed to be of negligible to minor adverse significance (not significant in EIA terms) for all IEFs (no long-term habitat loss in the intertidal is predicted). This conclusion was reached due to the small area affected in relation to the benthic subtidal and intertidal ecology study area. Again, no significant effects were predicted on protected potential reef habitats, on the assumption that measures to avoid direct impacts to these features will be implemented. Introduction of artificial habitat and colonisation of hard structures was deemed to be of minor adverse significance (not significant in EIA terms) for all IEFs.	Implementation of piling initiation, soft-start, and ramp-up measures within the Marine Mammal Mitigation Protocol. An initiation stage and soft starts will be used during the installation of pin piles. This involves the implementation of an initial low hammer energy with a low number of strikes, followed by lower hammer energies at a higher strike rate at the beginning of the piling sequence before energy input is 'ramped up' (increased) over time to required higher levels. Inclusion of low order techniques as a UXO clearance option noting, however, that it is not possible to fully commit to this measure at this stage. Low order techniques are not always possible and are dependent upon the individual situations surrounding each UXO. Given that high order detonation may be required, the MMMP will also include mitigation to reduce the risk of injury from UXO clearance. Development of and adherence to an EMP that will be prepared and implemented during the construction, operational and maintenance and decommissioning phases of the Proposed Development. The EMP will include appendices detailing actions to minimise INNS (the INNS Management Plan (INNSMP)), and a MPCP will be developed which will include planning for accidental spills, address all potential contaminant releases and include key emergency contact details. Development of and adherence to a MMMP, based on a draft MMMP submitted alongside the ES. The MMMP will present appropriate mitigation for activities that could potentially lead to injurious effects on marine mammals including piling, UXO	areas, and installed over a shorter timeframe. As was the case for the original Preferred Route, following implementation of the Realigned Route and mitigation measures (e.g. cable burial), the overall impacts result in negligible or minor adverse effects, which are not significant in EIA terms. With the measures adopted as part of the Proposed Development (e.g. cable burial where possible) in place. All of these impacts result in effects of either negligible or minor adverse significance, which is not significant in EIA terms.

Receptor	Environmental effects presented in ES	Mitigation presented in ES	Updated conclusion following realignment
• **increased risk of introduction and spread of Invasive Non-Native Species (INNS).**	A minor adverse significance has been concluded as this impact will only affect a small proportion of the Eni Development Area (0.01%) in which these IEFs occupy. Introduction of artificial habitat and colonisation of hard structures was deemed to be of minor adverse significance (not significant in EIA terms) for all IEFs. A minor adverse significance has been concluded as this impact will only affect a small proportion of the Eni Development Area (0.01%) in which these IEFs occupy. Increased temperature impacting benthic communities was deemed to be of negligible adverse significance (not significant in EIA terms) for all IEFs. Although temperature increases are unlikely to occur in the first place, it is likely that only deep burrowing species or sessile benthic species within centimetres from the pipelines could be impacted. Due to the natural fluctuations in temperature throughout the year, it is also likely that benthic subtidal and intertidal receptors will be tolerant to small temperature increases associated with this impact. Impacts resulting from the release of sediment bound contaminants was deemed to be of minor adverse significance (not significant in EIA terms) for subtidal habitats and species IEFs and the Fylde MCZ IEF. No MarESA available for the relevant pressures for this impact for any IEFs. The potential intolerance of many benthic species to contamination (bivalves and echinoderms in particular), the sensitivity of	clearance and some types of geophysical activities. The MMMP will be developed based on the most recent published statutory guidance and in consultation with key stakeholders.	

Receptor	Environmental effects presented in ES	Mitigation presented in ES	Updated conclusion following realignment
	these receptors has been assessed on a precautionary basis. Accidental pollution to the surrounding area was deemed to be of minor adverse significance (not significant in EIA terms) for all IEFs. The assessment has been undertaken on the same reasoning as the above impact and on a precautionary basis. Increased risk of introduction and spread of INNS was deemed to be of minor adverse significance (not significant in EIA terms) for subtidal habitats and species IEFs and the Fylde MCZ IEF. This is due to the small proportion of the Eni Development Area that may be colonised by INNS and due to the precautionary high sensitivity of the receptor. However, embedded mitigation listed on the right of this table , such as the INNS Management Plan, will ensure that the risk of introduction is controlled as far as reasonably practicable. Cumulative effects from, cables and pipelines, remedial works and other offshore renewable developments were assessed for their impact in relation to temporary habitat loss and/or disturbance; increased SSC and associated deposition; long-term habitat loss; introduction of artificial habitat and colonisation of hard structures; and increased risk of introduction or spread of INNS. The cumulative effects assessment predicted that there were no plans, projects, or activities identified within the CEA for the construction, operation and maintenance, and decommissioning phases.		

Receptor	Environmental effects presented in ES	Mitigation presented in ES	Updated conclusion following realignment
	No transboundary effects with regard to benthic subtidal and intertidal ecology from the Proposed Development were predicted on the interests of other states.		
Marine Biodiversity **2-Fish and shellfish ecology:** • **temporary subtidal habitat loss and/or disturbance.** • **long-term subtidal habitat loss.** • **underwater noise impacting fish and shellfish receptors; and** • **increased SSCs and associated deposition.**	Temporary and long-term subtidal habitat loss and/or disturbance were both deemed to be of negligible (diadromous IEF) to minor adverse significance (all other IEFs; not significant in EIA terms) to fish and shellfish receptors, as the proportion of habitat lost within the Proposed Development was predicted to be small in the context of other similar available habitats in the wider fish and shellfish ecology study area. The impact of underwater sound was deemed to be of minor adverse significance (all other IEFs; not significant in EIA terms) to both moving and static fish, and shellfish receptors, due to the limited piling activities (800 minutes) to be undertaken on an intermittent basis. Increased SSCs and associated deposition was assessed as negligible adverse (all IEFs) and minor adverse (Herring IEF; not significant in EIA terms) to fish and shellfish receptors, due to the low sensitivity to smothering events, except for herring whereby the sensitivity to smoothing is increase at spawning sites. Cumulative effects from cables and pipelines, remedial works and other offshore renewable developments were assessed for their impact in relation to: Temporary subtidal habitat loss and/or disturbance, long-term subtidal habitat loss, underwater noise impacting fish and shellfish receptors, and increased SSCs and		There are minor advantages to Marine Biodiversity from the Realigned Route, as it will have a smaller seabed footprint in the inter-tidal, and sub-tidal areas, and installed over a shorter timeframe. As was the case for the original Preferred Route, following implementation of the Realigned Route and mitigation measures (e.g. cable burial), the overall impacts result in negligible or minor adverse effects, which are not significant in EIA terms. With the measures adopted as part of the Proposed Development (e.g.

Receptor	Environmental effects presented in ES	Mitigation presented in ES	Updated conclusion following realignment
	associated deposition. The cumulative effects assessment predicted that there were no plans, projects, or activities identified within the CEA for the construction, operation and maintenance, and decommissioning phases. No transboundary effects on the interests of other states are predicted for fish and shellfish ecology from the Proposed Development.		implementation of piling soft-start and ramp-up measures). all these impacts in All project phases result in effects of either negligible or minor adverse significance, which are not significant in EIA terms
Marine Biodiversity **3-Marine Mammals and Marine Turtles:** • **injury, Disturbance, and Displacement from Underwater Noise Generated during Piling.** • **injury, Disturbance, and Displacement from Underwater Noise Generated during UXO Clearance;**	Injury and disturbance from elevated underwater sound during the five listed impacts listed on the receptors was deemed to be of negligible to minor adverse significance (not significant in EIA terms) to marine mammals; whilst underwater sound modelling predicted ranges of impact which had the potential to result in injury and disturbance to a small number of animals. For the assessment of injury, with measures adopted as part of the Proposed Development in place in the form of a draft Marine Mammal Mitigation Protocol (MMMP), the impact would result in a very small risk of injury, as animals will be deterred beyond the predicted injury range. For the assessment of disturbance, it was considered that whilst a small number of animals could experience mild disturbance, this was unlikely to lead to population level effects. In addition, population modelling was carried out to explore the potential of disturbance during piling to affect the population trajectory over time for harbour porpoise, bottlenose dolphin, minke whale and		There are minor advantages to Marine Biodiversity from the Realigned Route, as it will have a smaller seabed footprint in the inter-tidal, and sub-tidal areas, and installed over a shorter timeframe. As was the case for the original Preferred Route, following implementation of the Realigned Route and mitigation measures (e.g. cable burial), the overall impacts result in negligible or minor adverse effects,

Receptor	Environmental effects presented in ES	Mitigation presented in ES	Updated conclusion following realignment
• **injury, Disturbance, and Displacement from Underwater Noise Generated during Geophysical and Seismic Site Investigation Surveys.** • **injury, Disturbance, and Displacement from Vessel Activity and other Noise Producing Activities.** • **injury due to Collision with Marine Vessels; and** • **effects on Marine Mammals and Marine Turtles due to changes in Prey Availability.**	grey seal, which confirmed the assessment that this impact was unlikely to lead to population level effects. Injury due to collision with marine vessels was deemed to be of minor adverse significance (not significant in EIA terms). An increase in vessel movements could lead to an increase in interactions between marine mammals and vessels, resulting in fatal and non-fatal injuries. Vessels travelling at 7m/s or faster are those most likely to cause death or serious injury to marine mammals. Largely, vessels involved in the construction phase are likely to be travelling considerably slower than this, and all vessels will be required to follow the provisions set out in the offshore EMP. With adherence to this EMP, in combination with the likelihood that animals will be deterred by the noise of moving vessels, the risk of collision is reduced. Effects on marine mammals and marine turtles due to changes in prey availability was assessed as minor adverse significance (not significant in EIA terms). This was due to the ability of the receptor to be tolerant to changes in prey availability. Cumulative effects were assessed for the following: injury, disturbance, and displacement from underwater noise generated during piling; injury, disturbance, and displacement from underwater noise generated during UXO clearance; injury, disturbance, and displacement from underwater noise generated during geophysical and seismic site investigation surveys; injury, disturbance, and		which are not significant in EIA terms. With the measures adopted as part of the Proposed Development (e.g. implementation of piling soft-start and ramp-up measures). All these impacts in all project phases result in effects of either negligible or minor adverse significance, which are not significant in EIA terms.

Receptor	Environmental effects presented in ES	Mitigation presented in ES	Updated conclusion following realignment
	displacement from vessel activity and other noise producing activities; and injury due to collision with marine vessels. Overall, in the CEA there were no significant cumulative effects identified for any plans, projects, or activities on marine mammals and marine turtles. No transboundary effects with regard to marine mammals from the Proposed Development were predicted on the interests of other states.		
Marine Ornithology • **temporary habitat loss leading to displacement/disturbance of birds.** • **disturbance and displacement from airborne sound and presence of vessels and infrastructure.** • **collision with static offshore infrastructure.** • **indirect impacts to birds from changes in prey availability.**	Temporary habitat loss leading to displacement/disturbance of birds was deemed to be negligible to minor adverse significance (not significant in EIA terms) to the seabird species within the Proposed Development. This is due to the limited impact on habitat, and displacement found to be below to 1% mortality threshold. Disturbance and displacement from airborne noise and presence of vessels and infrastructure was deemed to be of negligible to minor adverse significance (not significant in EIA terms) to the seabird species within the Proposed Development. This is due to the short-term nature of the impact during the construction, operation and maintenance, and decommissioning phases. Collision with static offshore infrastructure was deemed to be of no change (not significant in EIA terms) to the seabird species within the Proposed Development. This is due to limited infrastructure present and species ability to avoid non-moving structures. Indirect impacts to most birds from changes in prey availability was deemed to be of negligible	Liverpool Bay CCS is aware of two periods during the year when birds associated with the Dee Estuary SPA and Ramsar site are potentially at their most sensitive to disturbance from cable installation works. The two periods are as follows: • The two hours either site of a high tide during the overwintering period (September to March inclusive); and • The little tern breeding season, which runs from mid-April to mid-July. Liverpool Bay CCS is cognisant of the need to accommodate the seasonal/timing constraints as part of the construction schedule, including balancing conflicting constraints, to avoid/minimise any adverse effects arising from construction. Where avoidance of a recommended seasonal window is not achievable, appropriate alternative mitigation and licensing (where required) will be realised to ensure protection of species and facilitate construction. Work will be carried out to define the sensitive egg laying and chick rearing period for the Gronant Dunes little tern colony, during which time impacts upon prey availability may lead to a reduction in productivity. This will be used to inform any seasonal	The ES concluded that there will be moderate adverse significant effects arising during the construction and decommissioning phases on Little Tern, due to indirect impacts upon prey availability. However, there is an additional ~250m shift away from the foraging and nesting areas of the identified sensitive little tern colony (~2,250m in total) arising from the Realigned Route across Talacre Beach and Welsh Channel. Figure 6 shows that cable routing will be through an area of

Receptor	Environmental effects presented in ES	Mitigation presented in ES	Updated conclusion following realignment
• **accidental pollution in the surrounding area; and** • **Creation of roosting and nesting habitats among project infrastructure.**	to moderate adverse significance (not significant in EIA terms) to the seabird species within the Proposed Development. This is due to the changes in prey availability found to be below to 1% mortality threshold. The exception is for breeding terns, which would experience a significant effect should the cable installation works be carried out during the breeding period. Avoidance of the breeding period for cable installation will prevent adverse effects on little tern from occurring. Accidental pollution in the surrounding area was deemed to be of negligible adverse significance (not significant in EIA terms) to the seabird species within the Proposed Development. This is due to regulations in place that manage vessels and their hazardous products onboard, such as fuels. Creation of roosting and nesting habitats among project infrastructure was deemed to be of minor beneficial significance (not significant in EIA terms) to the seabird species within the Proposed Development. This is due to the creation of suitable roosting habitat within the Proposed Development Cumulative effects were assessed for temporary habitat loss leading to displacement/disturbance of birds, disturbance and displacement from airborne sound and presence of vessels and infrastructure and indirect impacts to birds from changes in prey availability. Overall, there were no significant cumulative effects identified for any plans, projects, or activities in the CEA for ornithology.	limitations that need to be placed upon certain work activities.	lower foraging distribution (<1.5%), Liverpool Bay CCS will continue to engage with NRW and FCC on the protection of sensitive species during the construction period. Pre-commencement ecological surveys will be used as a basis for planning of specific activities. Activities will be timed to reduce impacts on ecological receptors where practicable. A detailed Method Statement will be produced by the contractor for approval prior to commencement of work in collaboration with NRW-MLT to outline how impacts on birds will be avoided during the works. This is likely to include planning of

Receptor	Environmental effects presented in ES	Mitigation presented in ES	Updated conclusion following realignment
	No transboundary effects regarding offshore ornithology from the Proposed Development were predicted on the interests of other states.		the time and duration of activities, toolbox talks for site contractors, and appropriate selection of plant machinery to minimise disturbance. For all other species it is concluded that there will be no significant effects from the Realigned Route during the construction, operation, and decommissioning phases.
Shipping and Navigation • **vessel displacement leading to increased vessel to vessel collision risk between third-party vessels.** • **increased vessel to vessel collision risk between a third-party vessel and a project vessel.**	Vessel displacement leading to increased vessel to vessel collision risk between third-party vessels was deemed to be of broadly acceptable adverse significance (not significant in EIA terms) to the shipping and navigation receptors within the Proposed Development. In the event of a collision incident between third-party vessels, the most likely consequences are minor contact between the vessels resulting in minor damage to property and minor reputational effects on business but no perceptible effect on people. However, regulations are in place to ensure that the likelihood of collisions are reduced.	Promulgation of information advising on the nature, timing and location of activities, Safety Zones and advisory safe passing distances, including through: • Notices to Mariners • Lighting and marking of project vessels. • Guard vessel and/or temporary Aid to Navigation (AtoN) • Use of guard vessels at cable exposures • Advisory safe passing distances and safety zones • Marine coordination to manage project vessel movements. • Vessel Management Plan Development of and adherence to an Environmental Management Plan (EMP) that will be prepared and	The Realigned Route of the combined electrical and fibre optic cable across the Welsh Channel is proposed to lessen the impact on the Port of Mostyn. Liverpool Bay CCS will continue to work with Port of Mostyn, under the MoU to ensure that the cable-laying vessel will be positioned in

Receptor	Environmental effects presented in ES	Mitigation presented in ES	Updated conclusion following realignment
• **vessel to platform allision risk.** • **reduced access to local ports.** • **anchor interaction with subsea cable.** • **fishing gear interaction with subsea cable.** • **vessel grounding due to reduced under keel clearance;** • **interference with magnetic compasses; and**	Increased vessel to vessel collision risk between a third-party vessel and a project vessel was deemed to be of broadly acceptable adverse significance (not significant in EIA terms) to the shipping and navigation receptors within the Proposed Development. The reasoning is similar to that presented in the point above. Vessel to platform allision risk was deemed to be of broadly acceptable adverse significance (not significant in EIA terms) to the shipping and navigation receptors within the Proposed Development. A 500 m safety zone will be in place around infrastructure to reduce the potential for vessel to platform allision. Reduced access to local ports was deemed to be of Moderate adverse significance (not significant in EIA terms) to the shipping and navigation receptors within the Proposed Development. Cable installation and Landfall construction works may result in some disruption to vessels using the Port of Mostyn, however, due to the localised and temporary nature of cable installation works in the Welsh Channel, the disruption to port access is reduced. Anchor interaction with subsea cable was deemed to be of Moderate adverse significance (not significant in EIA terms) to the shipping and navigation receptors within the Proposed Development. While exposed any vessel anchor could interact with the cables. If an anchor becomes snagged on the cable, there could be a risk of injury in trying to free it. If the anchor cannot be freed the safest action is to slip it, and	implemented during the construction, operational and maintenance and decommissioning phases of the Proposed Development. The EMP will include appendices detailing actions to minimise Invasive Non-Native Species (INNS) (the INNSMP), and a Marine Pollution Contingency Plan (MPCP) will be developed which will include planning for accidental spills, address all potential contaminant releases and include key emergency contact details. Liverpool Bay CCS is committed to marking and lighting the project in accordance with relevant industry guidance and as advised by relevant stakeholders including the MCA, Civil Aviation Authority (CAA) and Trinity House. This will include appropriate lighting and marking of Offshore Platforms (OPs). Liverpool Bay CCS will also ensure the project is adequately marked on nautical charts. Development and adherence to a Cable Specification and Installation Plan (CSIP) post consent which will include cable burial where possible (in accordance with the specific policies set out in the Northwest Inshore and North West Offshore Coast Marine Plans (MMO, 2021)) and cable protection, as necessary. Where practicable any requirements for cable protection will be compliant with MGN 654	such a way as to allow safe and unobstructed passage for daily vessel movements, at agreed timings, into and out of the Port of Mostyn. Liverpool Bay CCS will coordinate the cable-laying operations with the daily schedule of incoming and outgoing vessels from the Port of Mostyn. This will include advance planning with Port of Mostyn to avoid any major conflict between operational periods. During installation, continuous communication will be maintained between Liverpool Bay CCS Limited's cable-laying team, and the Port of Mostyn's vessel traffic control to monitor real-time movements and

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	not attempt to raise or cut the cable. However, mitigation includes circulation of information to make mariners aware of the exposed cable and use of guard vessels where cable exposures are considered to present significant risk to navigation, will reduce the likeliness of this impact. Fishing gear interaction with subsea cable was deemed to be of broadly acceptable to tolerable adverse significance (not significant in EIA terms) to the shipping and navigation receptors within the Proposed Development. There is higher risk of snagging from demersal gear if the cable is exposed, however, having a Fisheries Liaison Officer (FLO) in place and circulation of information (e.g. via Kingfisher and local communications) will help ensure fishers are aware of the exposed cable and avoid fishing directly over it. In addition, guard vessels will be used in any areas where cable exposures are considered to present significant risk to fishing gear snagging. Vessel grounding due to reduced under keel clearance was deemed to be of tolerable adverse significance (not significant in EIA terms) to the shipping and navigation receptors within the Proposed Development. Should a vessel grounding occur, the most likely consequences are minor damage to property and minor reputational effects on business but no perceptible effect on people. However, the maximum height of cable protection will be 0.8 m. The average draught of vessels crossing the Physical Work Area was 5.1 m, with a maximum		adjust the cable-laying schedule as necessary. Liverpool Bay CCS will issue daily reports to Port of Mostyn, highlighting schedule progress and current activities/restrictions. The implementation of these additional measures will result in minor adverse effects that are not significant in EIA terms.

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	draught of 14 m, recorded crossing the cable route within the Liverpool Bay TSS in approximately 25 m of water depth, therefore this impact is unlikely. Interference with magnetic compasses was deemed to be of broadly acceptable adverse significance (not significant in EIA terms) to the shipping and navigation receptors within the Proposed Development. Most of the commercial vessel traffic uses non-magnetic gyrocompasses as the primary means of navigation, which are unaffected by Electro Magnetic Frequency (EMF). Therefore, in general it is considered unlikely that any EMF interference created by the proposed cables will have a significant impact on vessel navigation near the Proposed Development. Reduction of emergency response capability due to increased incident rates for SAR responders and increased demand on the available resources was deemed to be of broadly acceptable adverse significance (not significant in EIA terms) to the shipping and navigation receptors within the Proposed Development. Increased vessel activity during the construction phase may reduce emergency response capability by increasing the number of incidents or reducing access for the responders. However, Due to the limited number of vessels involved and temporary nature of the construction phase works and given that the proposed new Douglas CCS platform will be unmanned and within the existing Douglas Complex, this risk is reduced.		

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	Cumulative effects were assessed for vessel displacement leading to increased vessel to vessel collision risk between third-party vessels, increased vessel to vessel collision risk between a third-party vessel and a project vessel, vessel to platform allision risk, reduced access to local ports, anchor interaction with subsea cable, fishing gear interaction with subsea cable, vessel grounding due to reduced under keel clearance, interference with magnetic compasses, and reduction of emergency response capability due to increased incident rates for SAR responders and increased demand on the available resources. Overall, there were no significant cumulative effects identified for any plans, projects, or activities in the CEA for shipping and navigation. No transboundary effects regarding shipping and navigation from the Proposed Development were predicted on the interests of other states.		
Commercial fisheries • **Loss or restricted access to fishing grounds** • **Impacts on commercially valuable fish and shellfish species/resources;**	Loss or restricted access to fishing grounds was deemed to be of moderate adverse significance to the UK potting fishery (significant in EIA terms), and minor adverse significance (for all other receptors; not significant in EIA terms) to the shipping and navigation receptors within the Proposed Development. Additional mitigation is proposed to reduce the residual impact to minor adverse significance through the justifiable disturbance payment procedure as outlined in the FLOWW guidance documents (2014 and 2015).	Liverpool Bay CCS is committed to ongoing liaison with fishermen throughout all stages of the Proposed Development, including the following: • Appointment of a company FLO and/or Fishing Industry Representatives (FIRs) to maintain effective communications between Liverpool Bay CCS and fishermen. • Appropriate liaison with relevant fishing interests to ensure that they are fully informed of development planning and any offshore activities and works. • Timely issue of notifications including Notice to Mariners (NtMs), Kingfisher Bulletin	There is no further mitigation required in addition to the measures adopted as part of the original Preferred Route (e.g. appointment of a FLO). As was the case for the original Preferred Route, all the impacts in all project phases result in either negligible

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• **Interference with fishing activity;** • **Temporary increases in steaming distances to fishing grounds;** • **Supply chain opportunities for local fishing vessels; and** • **Loss or damage to fishing gear due to snagging gear on project infrastructure.**	Impacts on commercially valuable fish and shellfish species/resources was deemed to be of minor adverse significance (not significant in EIA terms) to the shipping and navigation receptors within the Proposed Development. Temporary noise and seabed disturbances during activities may displace commercially important fish and shellfish populations from the area, however, due to localised spatial extent this impact on important fisheries, this impact is lessened. Interference with fishing activity was deemed to be of minor adverse significance (not significant in EIA terms) to the shipping and navigation receptors within the Proposed Development. All fishing fleets are considered able to avoid vessel movements related to the Proposed Development activities. Temporary increases in steaming distances to fishing grounds was deemed to be of negligible to minor adverse significance (not significant in EIA terms) to the shipping and navigation receptors within the Proposed Development. In relation to ground within the area of project physical work, all commercial fisheries fleets are considered to have medium to high availability of alternative fishing grounds and an operational range that is not limited to this Eni Development area. Supply chain opportunities for local fishing vessels was deemed to be of minor beneficial significance (not significant in EIA terms) to the shipping and navigation receptors within the Proposed Development. The opportunity exists	notifications and other navigational warnings to the fishing community to provide advance warning of Proposed Development activities and associated Safety Zones and advisory safety distance • Development, prior to construction, of a Fisheries Liaison and Coexistence Plan (FLCP), setting out in detail the planned approach to fisheries liaison and means of delivering any other relevant mitigation measures. Marking and Lighting Liverpool Bay CCS is committed to marking and lighting the Proposed Development in accordance with relevant industry guidance and as advised by relevant stakeholders including the Maritime and Coastguard Agency (MCA), Civil Aviation Authority (CAA) and Trinity House. Liverpool Bay CCS will also ensure the Proposed Development is adequately marked on nautical charts. It is expected that a lighting and marking plan will be secured within a Marine Licence condition. Dropped Objects A dropped objects plan will be developed for reporting and recovery of dropped objects where they pose a potential hazard to other marine users and is anticipated to be secured within a Marine Licence condition.	or minor adverse effects, which are not significant in EIA terms.

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	for local fishing vessel owners to apply for specific roles or positions within the Proposed Development. Loss or damage to fishing gear due to snagging gear on project infrastructure was deemed to be of minor adverse significance (not significant in EIA terms) to the shipping and navigation receptors within the Proposed Development. It is considered likely that fishermen will operate appropriately (i.e. avoiding the indicated infrastructure and cable protection at the defined location) given adequate notification of the locations of any snagging hazards; and are highly likely to avoid the infrastructure and cable protection within safety zones. Embedded mitigation details that the target minimum burial depth of cables is to 2 m, where possible and detailed Cable Burial Risk Assessment, the results of which will be communicated to fisheries stakeholders. Cumulative effects were assessed for loss of access to fishing grounds as a result of activities associated with the Proposed Development and other plans and projects in the region. Overall, there were no significant cumulative effects identified for any plans, projects, or activities in the CEA for commercial fisheries. No transboundary effects with regard to commercial fisheries from the Proposed Development were predicted on the interests of other states.		
Marine Archaeology	Sediment disturbance and deposition leading to effects on known marine archaeology was deemed to be of minor adverse significance	Proposed to be secured through a condition in the marine licence:	There is no further mitigation required in addition to the

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• **sediment disturbance and deposition leading to indirect impacts on marine archaeology receptors (the exposure or burial of receptors);** • **direct damage to marine archaeology receptors (e.g. wrecks, debris, submerged prehistoric receptors (palaeolandscapes and associated archaeological receptors);** • **direct damage to coastal/intertidal archaeological remains through cable installation at the landfall site;** • **alteration of sediment transport regimes leading to potential erosion or**	which is not significant in EIA terms. The indirect impacts on marine archaeology receptors during the construction, operations and maintenance and decommissioning of the Proposed Development is predicted to be of local spatial extent, short term duration (though impacts from sediment deposition may be longer term), intermittent and medium reversibility. It is predicted that the impact will affect marine archaeology indirectly and may result in a benefit to sites, through additional burial, though this is likely to be limited in extent. Exposure of sites is mitigated through use of the protocol for reporting finds of archaeological interest. Direct damage to marine archaeology receptors was deemed to be of minor adverse significance which is not significant in EIA terms. This will be mitigated through the implementation of Archaeological Exclusion Zones (AEZs) around each known shipwreck site and potential site, and review of pre-construction surveys to inform the refined layout of infrastructure around any newly identified archaeological constraints. Provision will also be made for the recording of any new discoveries. Direct damage to deeply buried marine archaeology receptors was deemed to be of minor adverse significance which is not significant in EIA terms. The implementation of a WSI and Protocol for Archaeological Discoveries (PAD) will provide a system for the reporting of any prehistoric archaeological	• The identification and implementation of AEZs around those sites identified as having high and medium archaeological potential Further details provided in the Outline WSI. • Final cable routing, well drilling and platform construction to avoid any known archaeological constraints identified in pre-construction site investigation surveys through micro siting. • The identification and implementation of Temporary Archaeological Exclusion Zones (TAEZs) based on all available information including the stated positional accuracy, the recorded size of the target and the potential archaeological significance around those records for wrecks, obstructions, debris and other sites of archaeological potential outside of the survey data coverage but within the Project boundary and appropriate TAEZs are recommended. Further details provided in the Outline WSI. • Archaeological input into specifications for, and archaeological analysis of, any further pre-construction geophysical and geotechnical surveys. Further details provided in the Outline WSI. • Project archaeologists to be consulted in the preparation of any pre-construction Remotely Operated Vehicle (ROV)/diver surveys and, if appropriate, in monitoring/checking of data. Further details provided in the Outline WSI. • Operational awareness of the location of those archaeological anomalies identified as having a low potential. Reporting through	measures adopted as part of the original Preferred Route. All impacts, in all project phases, result in either negligible or minor adverse effects, which are not significant in EIA terms.

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burial of archaeological sites; and • **change of use: effects on Historic Seascape Character.**	material that may be uncovered during the lifetime of the Proposed Development. Alteration of sediment transport regimes which may affect archaeological features is of negligible adverse significance which is not significant in EIA terms. Additionally, while impacts from erosion would be adverse, burial may lead to a beneficial effect. Change of use effects on historic seascape character were deemed to be of no change significance and not taken forward for assessment. This was on the basis that the proposed development would be in line with the modern installations already present within the area, though would form a new type of development (CCS). Cumulative effects were assessed for direct damage to marine archaeology receptors (e.g. wrecks, debris, submerged prehistoric receptors (palaeolandscapes and associated archaeological receptors); direct damage to coastal/intertidal archaeological remains through cable installation at the landfall site; sediment disturbance and deposition leading to indirect impacts on marine archaeology receptors (the exposure or burial of receptors)l and alteration of sediment transport regimes leading to potential erosion or burial of archaeological sites. Overall, there were no significant cumulative effects identified for any plans, projects, or activities in the CEA for marine archaeology.	the agreed protocol (PAD) will be undertaken should material of potential archaeological interest be encountered. Further details provided in the Outline WSI. • Implementation of a protocol for recording finds of archaeological interest, following the guidance for the Protocol for Archaeological Discoveries (PAD). • Archaeologists to be consulted in the preparation of pre-construction cable route clearance or other pre-construction operations and, if appropriate, to carry out archaeological monitoring of such work. Further details provided in the Outline WSI. • Mitigation of unavoidable direct impacts on known sites of archaeological significance: Options include i) preservation by record; ii) stabilisation; iii) detailed analysis and safeguarding of otherwise comparable sites elsewhere. Further details provided in the Outline WSI. Commitment to implementation of the Offshore WSI prior to any post-consent works within the Eni Development Area and Area of Physical Project Works. The implementation of a Written Scheme of Investigation (WSI) will ensure that, where possible, known archaeological sites are avoided, any new observations are recorded, and sites are protected or preserved by record where required.	

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	No transboundary effects with regard to marine archaeology from the Proposed Development were predicted on the interests of other states.		
Infrastructures and other Users • **displacement of recreational activities.** • **increased SSCs and associated deposition affecting recreational diving and bathing sites;** • **impacts to existing cables or pipelines or restrictions on access to cables or pipelines;** • **increased SSCs and associated deposition affecting aggregate extraction areas; and** **reduction or restriction of oil and gas exploration**	Displacement of recreational activities was deemed to be of negligible adverse significance which is not significant in EIA terms. Recreational vessels are able to alter their route, dependent on the target destination. Notices to Mariners will be promulgated regularly during the construction phase, advising of the location and nature of construction works, and information and notices will be posted at the landfall location, ensuring that recreational activities can be planned accordingly. Increased SSCs and associated deposition affecting recreational diving and bathing sites was deemed to be of negligible to minor adverse significance which is not significant in EIA terms. Six identified recreational diving sites and nine recreational bathing sites (Southport, Ainsdale, Formby, West Kirby, Prestatyn, Rhyl, Rhyl East, Marine Lake (Rhyl) and Kinmel Bay (Sandy Cove)) are within the area within the infrastructure and other sea users regional study area. These sites may be impacted by an increase in SSCs in the short term, although as stated it is anticipated that any deposited fine sediments would be subject to redistribution under the prevailing coastal processes. Impacts to existing cables or pipelines or restrictions on access to cables or pipelines was deemed to be of minor adverse significance which is not significant in EIA terms. Restriction of access to an active cable for inspection and	Application for safety zones of up to 500m during construction and during periods of major maintenance. Where the Proposed Development cables/ pipelines will be required to cross an active cable, it is intended that a commercial 'crossing agreement' will be entered into with the cable operator. A crossing agreement based upon the ICPC Recommendation 3-10C 'Telecommunications Cable and Oil pipeline/Power Cables Crossing Criteria' (ICPC, 2014) will be used for any cable crossings. Where a cable is inactive, Liverpool Bay CCS will consult with the cable operator to ascertain if such a crossing agreement is required. Promulgation of information advising on the nature, timing and location of activities, including through Notices to Mariners. To ensure the Other users are aware of operations and associated structures. Development of and adherence to a Navigational Safety Plan (NSP). The NSP will describe measures put in place by the Project related to navigational safety, including information on Safety Zones, charting, construction buoyage, temporary lighting and marking, and means of notification of Project activity to other sea users (e.g., via Notice to Mariners). Consultation with oil and gas operators and other energy infrastructure operators to promote and maximise cooperation between parties and minimise both spatial and temporal interactions between conflicting activities.	There are no additional measures in relation to Infrastructure and Other Sea Users required from the Realigned Route. As was the case for the original Preferred Route, following implementation of the Realigned Route and mitigation measures (e.g. commercial crossing agreements, and marine coordination to manage project vessel agreements), the overall impact will result in minor adverse effects which are not significant in EIA terms.

Receptor	Environmental effects presented in ES	Mitigation presented in ES	Updated conclusion following realignment
activities (including surveys, drilling and the placement of infrastructure)	maintenance activities could be critical to the operator of that cable. However, crossing and proximity agreements are common across the UKCS and there are established mechanisms for controlling the level of impact to both parties, in the form of the ICPC Recommendation 3-10C guidance. No active pipelines other than those operated by Liverpool Bay CCS exist within the infrastructure and other sea users local study area. Increased SSCs and associated deposition affecting aggregate extraction areas was deemed to be of minor adverse significance which is not significant in EIA terms. Westminster Gravels Ltd dredge coarse sand deposits from the Liverpool Bay 457 dredging area and Mersey Sand Suppliers dredge coarse sand deposits from Hilbre Swash 393, a resource of value to the regional economy. Dredging operators are adaptable as they are able, to some extent, to screen out unwanted fine sediment load. Furthermore, it is known that the existing tidal currents and waves can carry fine grained sand across the area. Reduction or restriction of oil and gas exploration activities (including surveys, drilling and the placement of infrastructure) was deemed to be of minor adverse significance which is not significant in EIA terms. There are five currently licensed blocks overlapping with the infrastructure and other sea users local study area. These are blocks 110/13b, 11013a, 110/15a (all operated by Liverpool Bay CCS) and blocks 110/14a and 110/14c (both operated by	Development and adherence to a Cable Specification and Installation Plan (CSIP) post consent which will include cable burial where possible (in accordance with the specific policies set out in the North West Inshore and North West Offshore Coast Marine Plans (MMO, 2021)) and cable protection, as necessary. Development and adherence to a pipeline Specification and Installation Plan which will include pipeline burial where possible and pipeline protection as necessary. Installation of infrastructure over or adjacent to existing cables or pipelines will be subject to crossing or proximity agreements between the two parties, prior to the start of the construction phase.	

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	Chrysaor Resources (Irish Sea) Limited (part of Harbour Energy)). There is also potential for blocks to become licenced in future (i.e. through Oil and Gas Licensing Rounds), but the assessment of this potential impact is complicated by a degree of uncertainty. Cumulative effects were assessed for displacement of recreational activities and increased SSCs and associated deposition affecting aggregate extraction areas. Overall, there were no significant cumulative effects identified for any plans, projects, or activities in the CEA for infrastructure and other sea users. No transboundary effects with regard to infrastructure and other sea users from the Proposed Development were predicted on the interests of other states.		
Climate Change • **the impact of GHG emissions arising from the manufacturing and installation of the Proposed Development, including materials, transport and use of plant/offshore marine vessels;**	The construction-stage impact due to the extraction of raw materials, manufacturing and transportation of the proposed infrastructure has been assessed. The GHG impacts were calculated to be approximately 137,772 tCO2e, causing a moderate adverse effect that is significant. These impacts are immediate at the time of construction. The operational phase GHG effects arise due to the energy requirement from activities on the offshore platforms, material replacement, and vessel and helicopter movements. Such emissions total 81,661 tCO2e, and account for operation and maintenance emissions over the lifetime of the Proposed Development (25 years). The operational GHG impact of the Proposed Development has been determined	During the construction and operational phases vessel fuel consumption will be minimised by optimising vessel scheduling, with consideration given to the co-ordination of activities and material delivery. Activities will be limited on the speed of vessels, and fuel used will have a low sulphur component (0.1%). Vessels older than 20 years will not be used. During the operational phase, energy demand associated with the OPs will be reduced through energy efficiency opportunities. These include the use of efficient low loss transformers, variable frequency drives (VFDs) on CO2 compressors, LED light bulbs, low voltage electrical installations, compressor efficiency specification and optimisation, efficient air coolers, energy monitoring systems (to comply with ISO 50001 certification), and	There is no further mitigation required in addition to the measures adopted as part of the original Preferred Route. As was the case for the original Preferred Route, following the implementation of mitigation, no significant adverse or beneficial residual effects on GHG emissions are likely to occur in relation to the Realigned Route.

Receptor	Environmental effects presented in ES	Mitigation presented in ES	Updated conclusion following realignment
• **the impact of GHG emissions arising from materials and use of offshore marine vessels required for operation and maintenance;** • **the impact of GHG emissions associated with energy and fuel use during the operation phase;** • **the impact of GHG emissions from decommissioning works (plant, fuel, and vessel use) and recovery or disposal of materials; and** • **the impact of CO2 transportation, sequestration and long-term storage.**	to have a minor adverse effect that is not significant. The construction- and operational-stage GHG effects have been minimised through the reduction of emissions associated with vessel movements by specifying the use of lower sulphur-content fuel, ensuring an efficient and optimised vessel schedule, and avoiding the use of older vessels. Operational GHG effects have been further minimised through the implementation of energy efficiency measures to reduce operational energy consumption at the offshore platforms. The whole-life impact of the Proposed Development (considering the impact of the Proposed Development over its lifetime) has been determined to have a beneficial effect that is significant, in line with the definitions of IEMA's guidance for GHG impact assessment. Although a significant initial carbon cost of manufacturing and installation is incurred, the scale of CO2e that can be captured during the Proposed Development's lifetime ensures that the Proposed Development meets policy goals for the rate of carbon reduction in the context of UK carbon budgets. Cumulative effects were assessed for cumulative changes in GHG emissions from other energy generation sources and found to have a beneficial significance. No transboundary effects with regard to climate change from the Proposed Development were predicted on the interests of other states.	Real Time Monitoring and Advanced Process Control (a computer-based algorithm that automatically optimises the process parameters and promotes a reduction in energy consumption from approximately 3% to 7%). During the operational phase fugitive emissions will be monitored through a Leak Detection and Repair (LDAR) programme as part of the preventative maintenance activities, to avoid or minimise their presence as low as reasonably practicable. At the end of the Proposed Development's lifetime, materials removed during decommissioning will be recycled where practicable.	

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Inter-Related effects **Groups:** • **Physical environment.** • **Biological environment.** • **Human environment.**	For all receptor groups identified, following the implementation of measures adopted as part of the Proposed Development and further mitigation (if required), impacts arising during the construction, operations and maintenance and decommissioning phase are unlikely to result in significant project-lifetime effects. All the potential receptor-led effects identified during the construction, operations and maintenance and decommissioning phase of the Proposed Development have already been considered within the relevant chapters of the ES.		There is no further mitigation required in addition to the measures adopted as part of the original Preferred Route. As was the case for the original Preferred Route, following the implementation of mitigation, no significant adverse effects above those assessed for each individual topic are likely to occur in relation to the Realigned Route.