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BRAN SANDS LSO OFWAT SUBMISSION 2 REPORT



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1. EXECUTIVE SUMMARY

1. The Bran Sands Long Sea Outfall (LSO) Project will address Nutrient Neutrality issues for the Teesmouth and Cleveland Coast Special Protection Area. We described our optioneering process for addressing the need at Seal Sands in our business plan enhancement case [NES28](#). During the PR24 process, this resulted in the requirement for a long sea outfall under WINEP. This option was confirmed by Defra in 2024, and Ofwat confirmed funding as part of the PR24 final determinations – placing this into the Large Scheme Gated Process (LSGP).
2. The scheme, as set out at PR24, comprised a pumping station, located within the existing Bran Sands wastewater treatment works (WWTW), approximately 3 kilometres of onshore pipeline and 4.5 kilometres of offshore pipeline leading to a diffuser array discharge point. It is designed for a maximum flow of 6,197 l/s.
3. Since PR24, we have made significant progress with this project, and we are now ready to confirm our solution. This “Submission 2” under the LSGP asks Ofwat to confirm the remaining funding for this project, providing the evidence that we have explored further options in our decisions about the final design of the LSO and taken steps to ensure that our costs are efficient. It also explains how we have assessed and met compliance requirements and engaged with our stakeholders and customers, as well as setting out our delivery plan and risks. Our final solution is the least-cost, lowest risk and most deliverable option that fully satisfies the statutory need.
4. We have structured this document according to [Ofwat’s guidance](#) for this type of submission, and we have tested that we have met all of the requirements. In each section, we explain how we have met the Submission 2 requirements and respond to Ofwat’s feedback from Submission 1. Our independent assurance providers, PwC and Atkins, have also addressed these requirements and we include their independent report (see section 10).
5. Our final costs for this project are estimated at **£255.951m**, in 2022/23 prices (before frontier shift/RPEs). We explain this estimate further in section 5. We ask Ofwat to confirm this funding and separately, consider our case for an in-period revenue adjustment.
6. We note the following key points from this submission:
 - Our final solution costs are very similar to our PR24 estimate, and so we do not expect any difference in customer bill impacts from the original PR24 determination. Ofwat’s FD24 allowed a development allowance within the price controls it set, with a contingent allowance forecast in the last three years of AMP8. We note that our final costs of £255.951m includes the development allowance, and so Ofwat should adjust this accordingly when making its determination.
 - In this submission, we identify key risks around planning and consent. Planning permissions will be required through the Town and Country Planning Act route, and this is a risk to the delivery of this project by 31 March 2030. We explain our mitigation for this risk in this submission.
 - Our delivery strategy for this project acknowledges the scale and complexity of delivering the project within AMP8 and the challenging offshore and onshore environments – as well as constrained supply chain resources. However, we explain how we are mitigating these issues in this submission.

2. BACKGROUND AND OBJECTIVES

2.1. INVESTMENT NEED AND PROJECT OBJECTIVES

7. In 2022, Natural England stated that the [Tees management catchment](#) should be designated as a nutrient sensitive catchment due to excessive nutrient levels in the Teesmouth and Cleveland Coast SPA.
8. This designation meant that no development could proceed unless it was demonstrated to be nutrient neutral. Following this designation and advice to local authorities, development within this area has slowed significantly due to the requirement for nutrient offsetting. In October 2023, new legislation required water companies to upgrade all WwTWs over 2000p.e (by BOD load) to the technically achievable limit (TAL), for the relevant nutrient.
9. The implications of this legislation meant that for the Tees 12 STWs would need to be upgraded to meet the 10mg/l total nitrogen by 31st March 2030.

2.2. PR24 PROJECT BUSINESS CASE

10. Our PR24 [A3-14 WINEP Protected Areas and Bathing Waters](#) (NES28) enhancement case set out how we will deliver on our commitment to maintain bathing water quality, maintain our natural habitats, and restore our marine conservation zones. We referred to our Cycle 1 Drainage and Wastewater Management Plan (DWMP23), and our ambitious long-term environmental goals are to demonstrate leadership in catchment management to enhance natural capital and deliver net gain for biodiversity, and to have the best rivers and beaches in the country.
11. Under the Leveling Up and Regeneration Act LURA legislation, both catchment nutrient balancing and catchment permitting were acceptable options. As part of PR24, the NES28 business case set out the individual needs and options considered to address these needs of Teesmouth and Cleveland Coast SPA and the screening process followed. In accordance with the WINEP options assessment guidance, screening of each of the technology options was undertaken to ensure that the option is expected to meet the statutory obligation and is technically feasible to implement.
12. After the PR24 Business Plan was published in October 2023, we continued to have further discussions on the most appropriate option to take forward for Bran Sands with key stakeholders (that is, Natural England, Environment Agency and DEFRA). On 21 August 2024, the Secretary of State gave approval for a catchment permit which comprises of a long sea outfall at Bran Sands, which reduces the load into the Teesmouth and Cleveland coast SPA by 100%. This nutrient load is enough to offset the load reduction requirement of all 12 STWs. This option was then funded in Ofwat's PR24 Final Determination.
13. The preferred scheme was confirmed by DEFRA in 2024 ([NES28A](#)) and then funded by Ofwat in the PR24 Final Determination (Ofwat model [PR24-FD-CA58](#)). There have been no subsequent changes to the business case.

3. SOLUTION DESIGN

3.1. SUMMARY OF THE SELECTION OF THE LONG SEA OUTFALL AS PREFERRED OPTION

14. We provide a summary in this section of the previous work to arrive at a long sea outfall as the best solution to achieve nutrient neutrality at Seal Sands.
15. **Project Need:** As part of our PR24 business plan we produced a series of enhancement cases to meet Water Industry National Environment Plan (WINEP) needs. Our assessment for Protected Areas and Bathing Waters, including considering issues at Seal Sands, was included within '[A3-14 WINEP PROTECTED AREAS AND BATHING WATERS, NES 28](#)'. This described our process for assessing the catchment wide options to address the need at Seal Sands.
16. **Catchment wide options assessment and PR24 submission:** In our Bran Sands LSO submission one, we explained that each of these options followed a robust engineering design process allowing adequate scope to be identified and to allow estimating to be undertaken. Following cost and carbon assessments of these options, our enhancement case NES28 identified the preferred least cost and best value option as the 'catchment offsetting option'. We put forward this option as part of our PR24 business plan submission in October 2023. At the time, we [identified the risk](#) that this option would not be allowed – but also the strength of our Board's appetite to put forward these nature-based solutions. We provided some alternative data tables with costs for the other options alongside our business plan.
17. **Further assessment of catchment off-setting option:** We also explained that after October 2023, we worked with the EA and Natural England to provide further details about our modelling and how we would expect to meet the requirements through nature-based solutions. Our preferred solution was both the least cost and (significantly) best value option. In January 2024, we produced a more detailed report to support our submissions to the Secretary of State - 'Nature based solutions, Technologies and facilities consideration in Teesmouth and Cleveland Coast SPA', which examined these options in more detail. In June 2024, Defra confirmed that we are required to take forward our option for nature-based solutions and a long sea outfall. This decision was predominantly based upon a lack of confidence that there was sufficient long-term evidence of successful performance of NBS components for such a scheme.
18. In Ofwat's final determinations, its models separated the nature-based solutions (in model PR24-FD-CA61) and long sea outfall (included in model PR24-FD-CA58). Ofwat concluded that the long sea outfall should be placed in the large scheme gated process (LSGP) as this was uncertain. It included the nature-based solutions fully within the totex set at PR24.
19. **Single long sea outfall option:** [Appendix NES28a](#) of our response to Draft Determinations includes the further information we provided to Ofwat on options, customer support, costs and benefits, cost efficiency, and customer protection – reflecting the new preferred solution for the long sea outfall. We provided third party cost assurance (by Gardiner & Theobald) to supplement the benchmarking already done by Aqua Consultants.

20. In its Final Determination in December 2024, and following discussions with other regulators, Ofwat provided a £29.6m development allowance for the long sea outfall, with the remaining £217.3m assumed to be funded through the large scheme gated process in 2026.
21. **Design capacity for the long sea outfall:** the proposed design capacity of the long sea outfall was included in our PR24 business case (Appendix NES28a) and still remains the same. We note that this capacity goes beyond the strict regulatory need (that is, the legally required nitrogen load reduction set out in WINEP for AMP8) and so is beyond the “minimum necessary capacity”. However, this capacity enables the WINEP outcome still to be delivered whilst supporting future industrial as well as municipal growth; any further tightening of the Levelling Up and Regeneration obligation in AMP9 and beyond; and potential third-party use of the long sea outfall. As we explained in NES28A, if we were able to agree third party use of the long sea outfall we would treat these as capital contributions to reduce the cost of the LSO, so sharing these benefits with customers and reducing the impact on bills. To this end we have engaged local companies who have expressed interest in utilisation of the pipeline’s capacity.
22. We raised the question of design capacity with Ofwat and the EA in the quarterly engagement meeting on 5 January 2026, and Ofwat confirmed that:
- “we still consider the scheme size to be appropriate as we consider it is likely that a single, larger capacity long sea outfall is better value than having to build or upgrade one in the future due to the likely industrial growth in the area.”¹
23. We note that our rough estimate for comparison² (as discussed by our ELT in March 2026) is that reducing the design capacity from 6,197l/s to 3,500l/s would likely reduce the costs from £255m to £217m. This provides some evidence for the point that Ofwat was confirming – that is, reducing the capacity by 44% would save just 15% of the costs.
24. We have included the design capacity as a condition of meeting the proposed PCD (see section 7).
25. **Submission one feedback:** In its feedback from Submission 1 of the large scheme gated process, Ofwat raised concerns that the report did not provide sufficient line-of-sight between the PR24 submission and the current state of the option and solutions identified to address the needs, and noted that we signposted the optioneering, decision making and cost estimation to our PR24 business case. Further to this, Ofwat felt it was not clear how Bran Sands LSO was identified as part of the solution of the preferred option and the benefits associated with it.
26. Ofwat asked us to take two specific actions:
- Provide sufficient and convincing evidence to confirm that the original optioneering and solution selection is still valid against the identified need. All the evidence must be up to date. This should include further information which captures the up-to-date cost estimation to support the optioneering decision making and

¹ E-mail from Richard Cram (Ofwat), 8 January 2026

² This comparison is not in 2022/23 prices and is an estimate, so will not match the final conclusions on the cost of the preferred option – we include this as an indicative comparison.

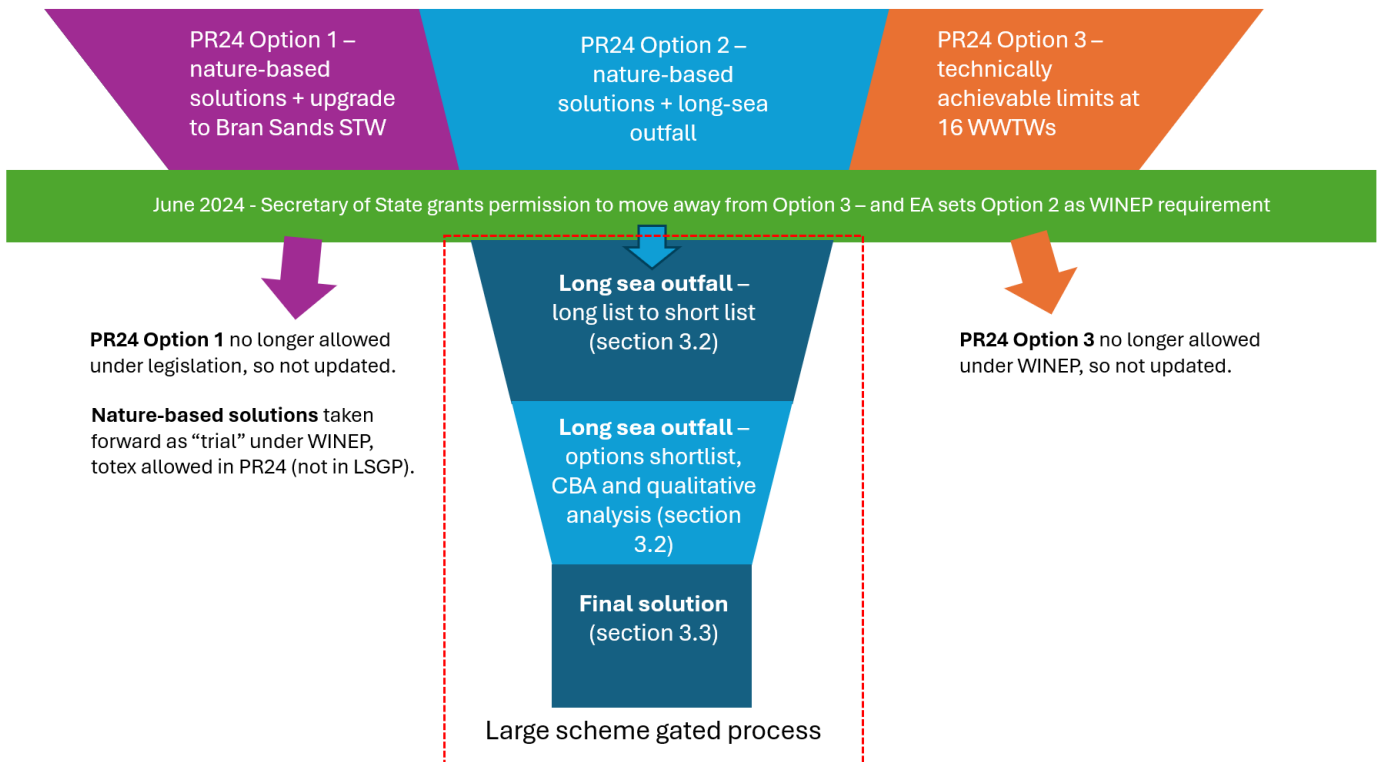
provides evidence that Bran Sands LSO is still the best option and identifies that the benefits it provides addresses the need.

- Provide further engineering and design details to support the optioneering and decision making to date, such as engineering rationale and supporting evidence.

27. We have not repeated our PR24 optioneering process for either the long list of options we identified in NES28, or the final three options (Figure 1). This is because **one** of these options has previously been agreed by all parties through WINEP – that is, changing the outfall location for Bran Sands WWTW through a long sea outfall. We are required to pursue this option through WINEP. There is no benefit to revisiting the costs and benefits for those original options, because these would no longer be identified as feasible options (that is, they would be removed in primary screening because they do not meet the requirement). Instead, we have focused on creating a wide list of possible options for delivering the long sea outfall and assessing these options – so that we can select an efficient, best value solution within the constraints of a long sea outfall. We illustrate this in Figure 1.

28. We note that the nature-based solutions elements are separate WINEP requirements and are out of scope for the large scheme gated process. Only the long sea outfall is included here.

FIGURE 1 – ILLUSTRATION OF OPTIONEERING PROCESS FROM PR24 TO LSGP



29. We provide a full explanation of this optioneering process during PR24 in Appendix 1 Summary of Sea Sands Optioneering. Following discussions with the Ofwat team, we have explained the reasoning behind this and agreed to provide a separate appendix to describe this process in full.

30. Instead, our work on Bran Sands LSO under the large scheme gated process has explored options on how to deliver the long sea outfall option. We have then assessed these in detail to select the most appropriate route

and specification for the long sea outfall. We summarise our options appraisal process and solution design details below. We have included this evidence in full in Appendix 2 Options Evaluation Report and Appendix 3 Design Report which we provide with this document.

3.2. LONG SEA OUTFALL OPTIONS APPRAISAL

31. **Key scheme requirements:** The key criteria that underpin assessment of the long sea outfall options are included in the Design Report and summarised in the following table (Figure 2) with reference to relevant sections. The key design criteria for the scheme are largely a function of a. current and expected future outflows from the main Bran Sands STW and b. the need to transport these flows to an offshore dispersion area which gives acceptable modeling results for water quality and marine impacts. This results in 3 main elements to the scheme:

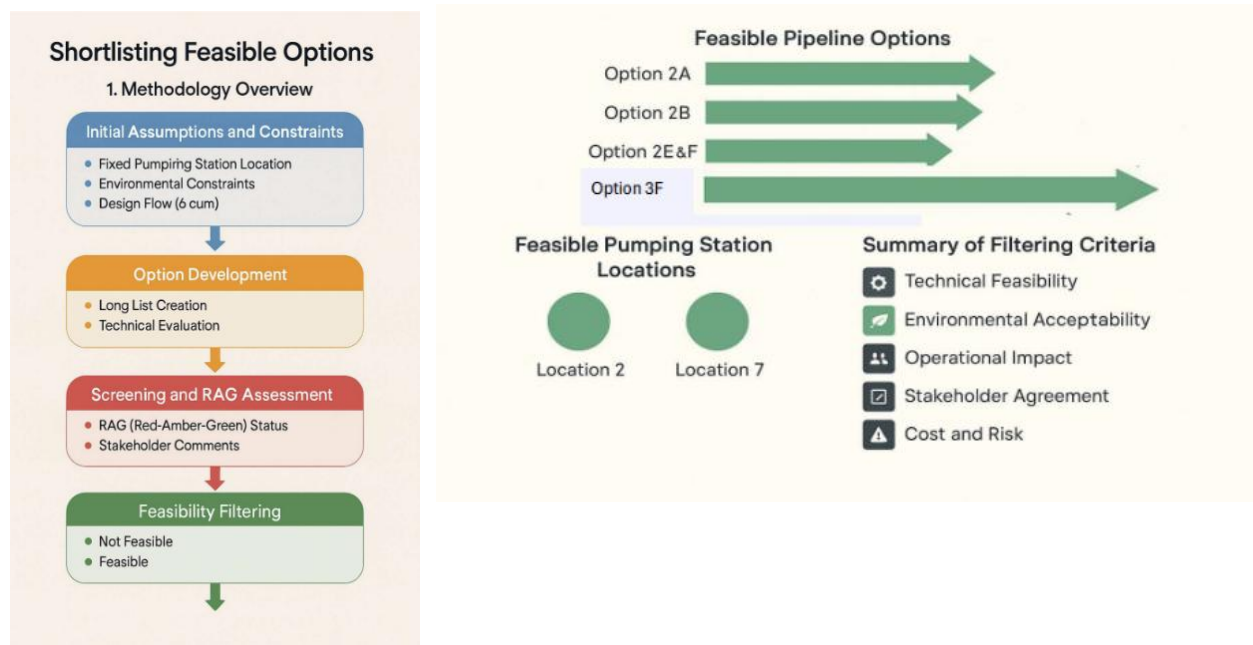
FIGURE 2 - LSO OPTIONS KEY ASSESSMENT CRITERIA

Element	Design Criteria
Offshore outfall pipe	The length of the pipe required follows from the need to meet dispersion requirements which comply with the results of the marine impact modelling on water quality on the Tees Estuary and adjacent Bathing Water. See 4.4.3 for offshore marine material selection.
Pumping Station	Sizing of pumping station has been set by the design flow is 6,197 l/s based on forecast STW outflows to 2100. Pump capacity and configuration determined by flow, length of overall pipe (~7.5km) and operating regime.
Onshore pipe	The proposed pipeline diameter for the design flow rate is 2m nominal bore (typically 2100mm OD) with pumping pressures below 6 bar rating, which follows from the design flow See 4.4.1 for material selection for pipe through landfill (land pipeline). See 4.4.2 for material selection for pipe jack section (SSSI / RAMSAR).

32. **LSO options appraisal longlist to shortlist:** Our Design Report explains that we carried out a structured optioneering process to review and refine the notional solution. This included an initial feasibility phase which established environmental, geotechnical, hydraulic and stakeholder constraints. Our “longlisting” process identified potential pumping station locations, pipeline routes, and offshore discharge areas – which we then progressively reduced through marine modelling, environmental screening, technical feasibility assessment and stakeholder engagement.

33. We explain this process in the Concept Stage Design Report included in Appendix 3, as follows.

FIGURE 3 - LONGLIST TO SHORTLIST PROCESS



34. **Shortlisting process:** Figure 3 shows our shortlisting process and filtering criteria. These diagrams are taken from the Concept Stage Design Report, which explains the following steps:

- **Initial Assumptions and Constraints** - we assumed that: all pipeline options have a set location for the pumping station; all pipeline routes are tunnelled through sensitive areas (SSSI and intertidal zone); onshore pipelines are above ground except where pipe-jacked beneath obstructions; and offshore outfall pipes are either trenched or tunnelled.
- **Option development** – we created multiple proposals for pipeline route permutations (48) and pumping station locations (10), each with detailed route descriptions, engineering methods, and discharge locations. We then assessed each option for feasibility based on technical, environmental, and operational criteria.
- **Screening and RAG assessment** – we assigned each option a RAG status for both onshore and offshore components, reflecting feasibility, risk and acceptability. We consulted subject matter experts to provide commentary, which we incorporated into the assessment.
- **Feasibility filtering** – we excluded options if they failed key criteria (such as dispersal modelling, unacceptable routes, lack of space, excessive cost, or operational constraints). We retained options if they met technical, environmental and operational requirements, and have workable solutions for challenges.

35. **Options shortlist:** This process identified five pipeline options and two pumping station locations to take forward to a short list of options. We explore these options in more detail in our Concept Stage Design Report included in Appendix 3, which explains how we evaluated the pipeline options and pumping station locations. We replicate below in Figure 4, Table 3.1 from the Design Report; lengths are correct at the time of shortlisting and prior to further optimisation of the preferred route following discussions with stakeholders and subsequent pipe route adjustments of Option 2A selected as the preferred option.

FIGURE 4 - SHORTLISTED PIPELINE ROUTE OPTIONS

Pipe Installation	2A	2B	2E	2F	3F
Open Cut 2m dia	1955m	1955m	3133m	3133m	2857m
Pipejacking 2m dia	1176m	N/A	1079m	N/A	N/A
Tunnel 4m dia	N/A	5539m	N/A	5214m	6762m
Trenched 2m dia	4375m	N/A	4375m	N/A	N/A
Overall Length m	7506m	7494m	8587m	8347m	9619m

36. It was noted that options 2E and 2F also had three railway crossings requiring tunnelling, a highway embankment requiring a tunnel, and also a body of water which would require crossing with a pipe bridge. By comparison, route Options 2A and 2B had only one railway crossing which could be open cut with a 48-hour railway closure as it was an industrial rail line (not an option for the 2E and 2F route options).
37. The project scope includes a new pumping station adjacent to Bran Sands WwTW, approximately 3km of onshore pipeline, trenchless crossing beneath the SSSI/Ramsar designation, and approximately 4.5km of offshore pipeline terminating in a multipoint diffuser. The design is based on a Concept Stage maximum flow of 6,197 l/s, a design horizon of 2100, and a 50-year design life. Effluent quality is unchanged; the project solely relocates the discharge point.
38. **Selection of Preferred Option:** Following detailed assessment, we selected Option 2A as the preferred solution. This option provides the shortest and most direct onshore route, avoids direct impact to designated sites through trenchless construction beneath the SSSI/Ramsar area, and adopts a trenched offshore pipeline rather than a tunnelled solution, reducing technical complexity and hydraulic risk. We have refined the route through engagement with key stakeholders, including Teesworks and Anglo American, and considered land ownership, utility interfaces and future development constraints. Maps showing environmental constraints defined during selection of the preferred options are included in Appendix 4
39. Option 2A is also the lowest whole life cost option and marginally second for whole life carbon. This option has broadly the same cost and benefits as our PR24 business plan (which customers supported).
40. **Preferred Option:** The main elements of the LSO scheme that we developed during PR24 are as shown in Figure 5 and follow directly from the design constraints and comprise:
- **Pumping Station** – sized to accommodate the maximum flow anticipated to be treated at Bran Sands which will be pumped to an appropriate location. The pumping station is located adjacent to the existing Bran Sands STW. The Concept Stage Options Evaluation Report included in Appendix 2 notes that location 2 is the most practical location and while location 7 is feasible, it is more complex and costly.
 - **Onshore Pipeline** – a preferred route has been identified to minimise impact on adjacent third-party commercial operations, while also avoiding as far as possible challenging construction conditions, such as highly contaminated ground.
 - **Long Sea Outfall** – the route for this pipeline has been developed through examining a number of environmental and commercial constraints to determine a suitable corridor. We considered a range of outfall lengths, using marine pollutant loading dispersal modelling to determine a suitable discharge point

that would ensure that discharge from the outfall would not impact on the Tees Estuary and bathing beaches.

41. The LSO scheme developed in the PR24 business case is shown in Figure 5 below.



FIGURE 5 - LOCATION PLAN – PUMPING STATION, PIPELINE AND OUTFALL

3.3. SOLUTION DESIGN DETAILS

3.3.1. Overview

42. **NWL Gateway 2 Approval:** We launched the project at Gateway 1 stage on 28 March 2025 and achieved Technical Gateway 2 approval on 2nd April 2026, with gateway 2 approval planned for 21st May 2026. During this period, we continued to develop and optimise the preferred Long Sea Outfall scheme through more detailed studies and gathering relevant data. We provide a summary of each element in this section. This does not change the overall option as presented in our Business Plan but instead reflects more detailed design and engagement.

43. Activities completed during the NWL’s project delivery stage Gateway 1-2 include:

- Evaluation of route corridors (through constraint mapping)
- Standards review (to inform extent of standards development required)
- Stakeholder mapping and engagement
- Sustainability strategy development and carbon baseline review

- Environmental Permitting strategy development
- Materials assessment
- Specification for offshore bathymetric and topographic surveys
- Preliminary ecological Assessment (including Biodiversity assessment)
- Coastal baseline assessment including assessment of navigation constraints
- EIA Technical Screening and environmental constraints mapping
- Geotechnical desk study and fieldwork schedule
- Modelling to inform flood risk assessment for route corridor assessment
- Development of a plan and long section to support technical assessments
- Schedule and risk workshops

44. **Risk assessment and register:** The project is subject to significant environmental, geotechnical and stakeholder constraints, including marine licensing, contaminated land, existing utilities, interfaces with the Net Zero Teesside project and specialist marine construction windows. These risks, together with opportunities to optimise layout and reduce footprint, are captured within the project Risk Register (Appendix 5) and Designers Risk Assessment.
45. **Northumbrian Water Governance Process:** Development of the scheme has continued in line with the gateway requirements of the NWL governance process and as set out in our Asset Investment Handbook. A copy of the governance map is included in Appendix 6. As part of this process the project successfully completed TGRM2 (Technical Gateway Review Meeting 2) on 2nd April 2026. The meeting presentation and minutes are included in Appendix 7.

3.3.2. Pumping Station

46. **Location:** A structured and evidenced based process was undertaken to identify a preferred location for the new pumping station. Early in the process, a series of key assumptions and constraints were defined, including the requirement for all pipeline options to connect to a single pumping station location accommodating a future design flow of 6, 197l/s. The assessment narrowed a long list of ten locations to a short list of two using technical, environmental, and operational evaluation; budget costs were determined for each option. Assessment included criteria such as:
- Accessibility
 - Potential to reuse the existing outfall as emergency overflow
 - Pipework connections relatively short
 - Potential for flexibility over incoming pipe routes (municipal and industrial)
 - Close to likely route for new incoming power supply and associated infrastructure
47. The two possible pumping station locations that emerged are the ones that provide sufficient space and access, meet engineering and environmental constraints, integrate effectively with the proposed pipeline and outfall routes, while minimising and high-risk or high impact siting conditions. These locations (those nearest to Bran Sands WwTW) – are likely to provide the strongest balance of deliverability, environmental compliance, minimum cost and best operational performance compared to the locations that were discounted.

48. The preferred location reference 2 is illustrated in Figure 6 below (the second possible location is adjacent), the other locations that were not taken forward are illustrated in the Options Evaluation Report (Appendix 2).
49. While the pumping station structure is predominantly below ground, with a section above ground, the elevation of the pumping station is not flexible. This is due to the need to maintain the existing outfall as an emergency overflow to Dabholm Gut and the preference to maintain gravity flows in the existing outfall pipeline.



FIGURE 6 - PUMPING STATION PREFERRED LOCATION 2

The proposed layout for the pumping station at Concept Stage is illustrated in Figure 7 below:

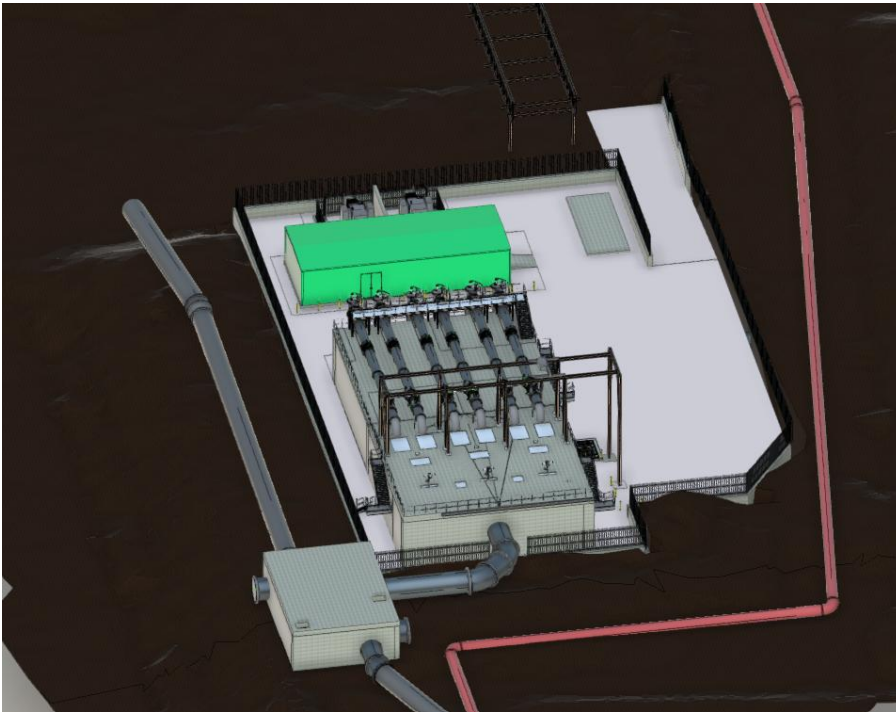


FIGURE 7 - PUMPING STATION PROPOSED LAYOUT

50. **Pump layout and sizing:** The proposed pumping station comprises a predominantly below ground wet well structure with external dimensions of approximately 18m × 16m × 17m deep, extending around 12m below finished ground level. It is proposed that the wet well is divided into three internal compartments, each housing two submersible pumps, providing a total of six pumps arranged as one duty pump, four assist and one standby pump. With this layout, the operational volume is around 1,350 m³, although it's anticipated that further design development will enable this volume to be reduced, while still ensuring operational resilience and efficient pump operation.
51. Concept Stage hydraulic assessment confirms that the system is likely to be able to operate across the expected range of tidal and flow conditions, with gravity operation dominating for much of the pipeline length. Key considerations for further development include air management, surge control and optimisation of pump operation to reflect long-term flow forecasts.
52. Our investigation suggests that there is sufficient power capacity available on site without increasing the grid connection (subject to further investigation). A dual-fed 11 kV supply with transformer redundancy is proposed to provide resilience, supported by PLC-based control integrated into the existing site SCADA network. Standby generation is not currently proposed, subject to confirmation of acceptable operational risk.
53. **Connection from WwTW:** A weir chamber will be constructed to divert final effluent flow from Bran Sands WwTW to the proposed pumping station. As an alternative to complex pipework, it is anticipated that the provision of this chamber will simplify commissioning while also providing a facility that retains the ability to use the existing final effluent pipeline as an emergency overflow.

54. Flows arriving at the pumping station will discharge into the well via an appropriate energy dissipation method (due to the large vertical drop) with baffles to distribute flows between the three separate wet well sections. Hydraulic behavior is uncertain at this stage, and the details of these arrangements will be developed during the Definition and Detailed Design Stages through hydraulic and CFD modelling.

3.3.3. Onshore (Terrestrial) Pipeline

55. **Route and pipe selection:** The Land pipeline section of Option 2A is 1955m in length. The proposed pipeline diameter recommended for the design flows is 2m Nominal Bore diameter. Pipelines of this size are large and pipe supports, including thrust blocks and restraints need to be carefully considered as at 2m they can become excessive structures. It is therefore proposed to keep the onshore pipeline as straight as possible and minimise the number of bends changing both vertical and horizontal alignments. Option 2A achieves this and is the straightest of all options considered onshore. This also makes it the shortest option considered and hence least in head loss across its length.
56. The land occupied by Bran Sands WwTW is leased by Northumbrian Water from Anglo American Ltd - the land required for the proposed pumping station and the first part of the route for Option 2A is also owned by Anglo American and includes ongoing operation activity relating to the adjacent landfill site and for tanker access and effluent discharge connection – the landfill site is illustrated in Figure 8 below.

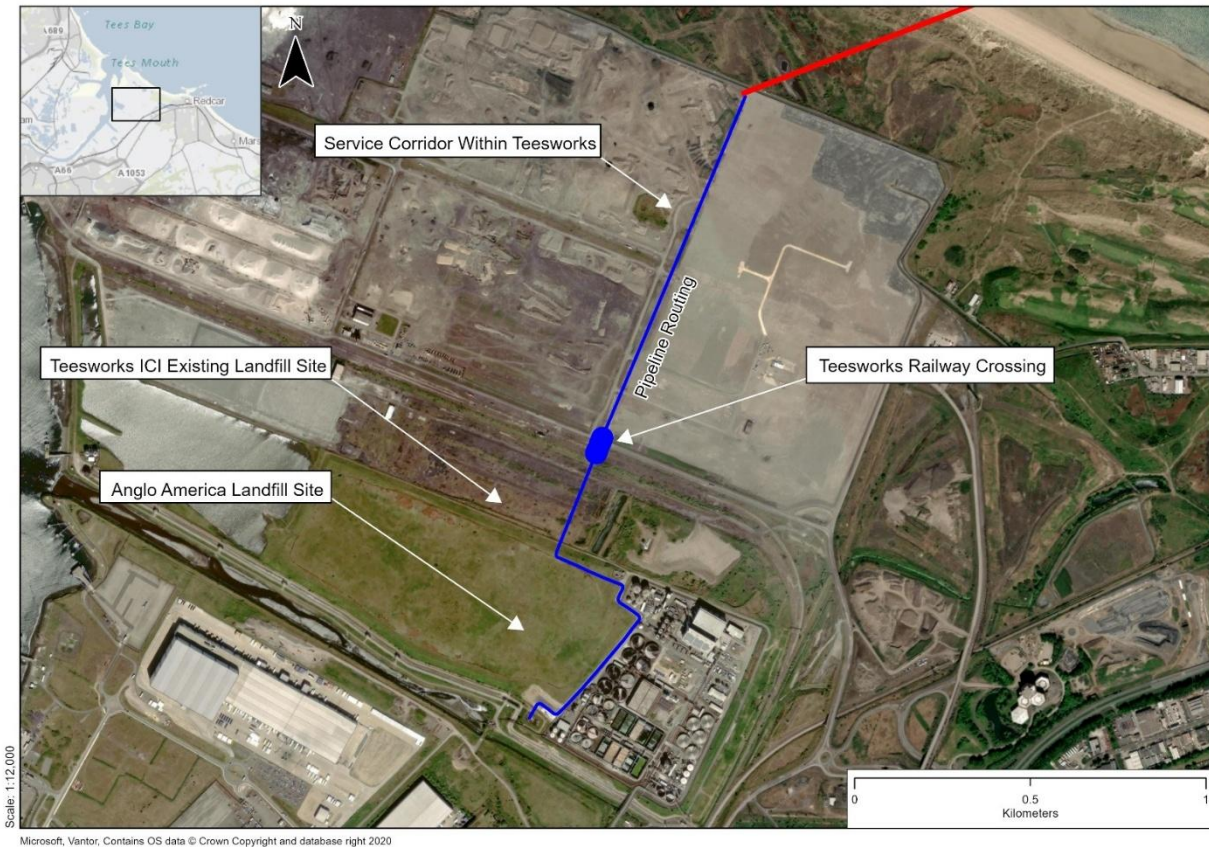


FIGURE 8 - ROUTE 2A OWNERSHIP AND CONSTRAINTS

57. **Pipe Material:** This is covered is covered in Section 4.4 of the Design Report and key considerations are summarised below.
58. In advance of any site investigation, assessment of likely materials and contaminants present in the landfill has relied upon the limited information that was available during the Concept Stage and reference should be made to the Geotechnical and Geoenvironmental Desk Study document (16007-010-DOC-PLN-AA11-001). From work completed to date, it is anticipated that the route through the landfill area will encounter Ash, Furfural, Oil, Lime and Boron Phosphate - each of these substances have the potential to adversely impact pipe materials.
59. For a 2m diameter Glass Reinforced Vinyl Ester pipeline, pipe materials including polyethylene (PE), ductile iron and steel pipelines would normally be considered, but all of these are likely to be unsuitable given the anticipated substances in the area around the landfill (and other areas on the route where similar contamination is anticipated). We expect that a GRP/GRVE () pipeline material is likely to be more appropriate because we would expect it to offer enhanced chemical resistance compared with other pipe materials (but this will continue to be reviewed through the project delivery).
60. **Installation Considerations:** The initial proposal for the pipeline along this route proposed an above-ground pipeline with the pipeline installed on pipe supports within Anglo American land. This had three advantages: it reduced the requirement to work in and around hazardous materials and potential contaminants; it would have allowed alternative pipe materials to be considered; and would have been consistent with most of the pipework infrastructure in and around the local area. However, during discussions between NWL and Anglo American,

Anglo confirmed their preference for a below ground pipeline around the edge of their landfill site and we have followed their preference in the preferred option. Given the concerns around landfill materials and likely contaminants, we will continue to consider an above ground pipework solution during further design development in the Definition and Delivery Stages of the project.

3.3.4. Onshore Tunnel (Pipejack)

61. **Route and installation method choice:** North of the Teesworks site between the industrial area and the tide line is an area that is designated as SSSI and Ramsar. To minimise impact of pipeline installation works on this area a trenchless solution is proposed with the pipe installed through pipejacking. The pipejack pipes and joints will be designed to carry the loading from the surrounding ground, surcharges due to construction and infrastructure above and internal hydrostatic pressures. Design development during the Concept Stage which included reference to similar completed projects in the UK, discussions with specialist tunnelling subcontractor H B Tunnelling at the Constructability Workshop, and the conclusions presented in the Tunnel Concept Report which considered likely ground conditions, it was concluded that for Option 2A pipejacking with interjacks is likely to be feasible.
62. The launch shaft will be designed to carry the external ground loads and surcharges and the temporary loads from the pipejacking process. In addition, the cover slab will be designed to carry the permanent surcharges and loading.
63. **Material:** Pipeline material selection for the pipejacking section of the pipeline will require a concrete shaft installed to launch the pipe jack tunnelling machine. Pipejacking itself will utilise precast concrete pipework launched from the shaft.

3.3.5. Offshore (Marine Pipeline)

64. **Route and Material:** The offshore alignment has been selected to avoid existing services and associated safety zones as far as practicable. From the pipe-jacked tunnel connection, the offshore outfall pipeline will comprise a 2100 mm OD SDR26 HDPE solid wall pipe installed within a dredged trench below the seabed, extending from the connection point to the offshore diffusers. The use of long string manufactured pipework reduces the number of joints and the need for on-site welding.
65. Other materials were considered in conjunction with pipeline specialist Haskoning. The methods of installation associated with other materials would significantly increase installation time, in an already challenging programme, due to the need for more joints which would likely comprise mechanical / flanged joints. Additionally, keeping the number of joints to the minimum reduces potential points of pipeline failure.
66. The diffuser would consist of a multi-riser and port configuration discharging above the seabed with suitable protection against navigation and dropped objects. At Concept Stage, the diffuser is assumed to consist of six-risers with two ports on each riser (a twelve-port configuration). A typical elevation along the outfall at the diffusers is illustrated in Figure 9 below:

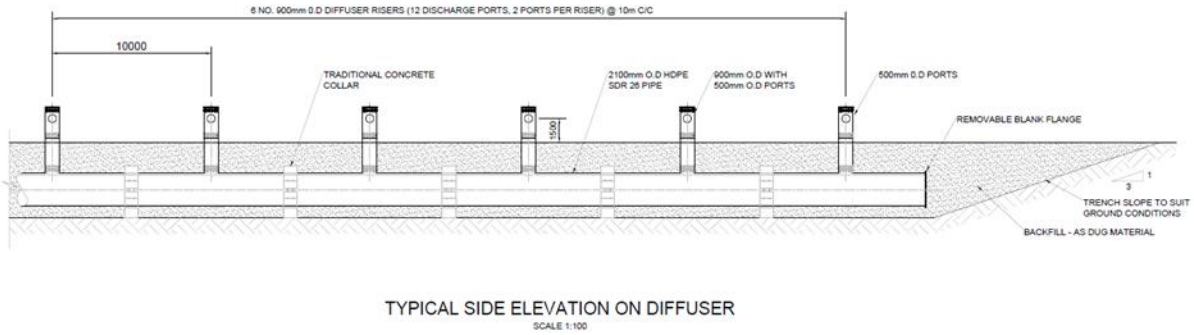


FIGURE 9 - TYPICAL SIDE ELEVATION ON DIFFUSERS

67. **Construction Considerations:** Figure 10 below illustrates a typical profile for the pipe trench for the long sea outfall. The construction methodology to be utilised for Option 2A for the installation of the Offshore Section of the outfall pipeline from the connection to the pipejack exit point (temporary cofferdam) to the diffuser at the discharge location (offshore), for approximately 4.5km is outlined below.
68. This offshore section of the outfall is proposed to be constructed within an open cut dredged trench within which a HDPE pipeline (suitably weighted with concrete ballast for stability) is installed using the ‘float and flood’ technique and then backfilled to the existing seabed level.

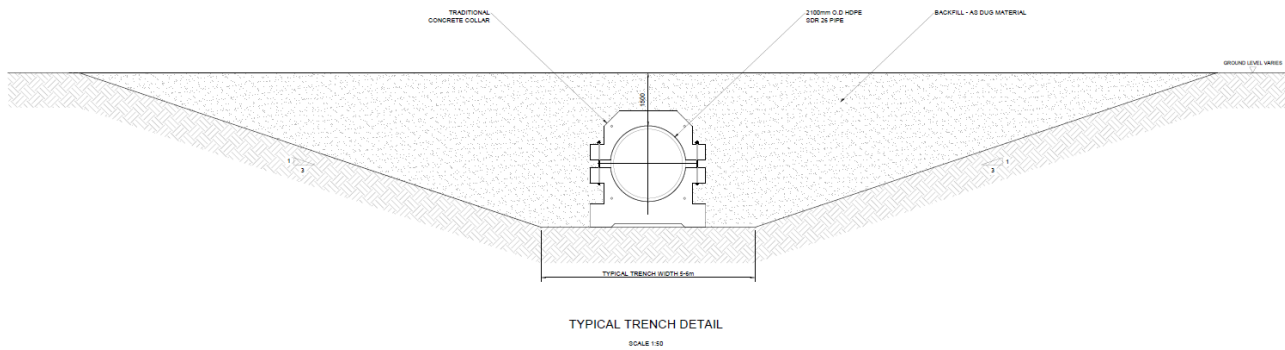


FIGURE 10 - TYPICAL PROFILE FOR THE PIPE TRENCH

69. Preferred Scheme plans and long sections are included in Appendix 8.

4. SOLUTION COMPLIANCE REQUIREMENTS

4.1. INTRODUCTION

70. The Ofwat guidance asks us to confirm that environmental assessments of the solution are sufficiently advanced to support DCO or local planning pre-application stages after the submission – and to include evidence of solution compliance with obligations for environmental regulations including:

- Water Framework Directive Assessment (section 4.3)
- Habitats Regulations Assessment (section 4.4)
- Environmental Impact Assessment (section 4.5)
- Other Environmental Considerations – for this project, this includes SSSI assent (section 4.6) and marine licence (section 4.7).

71. We note that an assessment of drinking water quality considerations (which is also part of the Ofwat guidance) is not applicable to this wastewater project.

72. We have sought planning advice from Lichfields and the STP on the full range of consents which the scheme will need to comply with. Appendix 9 includes a Consenting Briefing Note drafted by Lichfields. The consents are summarised in Figure 11 below. These consents include the specific Ofwat requirements above, as well as some additional matters. We have included an update on some of these additional matters in this section too, which includes:

- Seabed activity and the Crown estate (section 4.8)
- Onshore land access (section 4.9)

73. We have also progressed with our engagement of relevant statutory bodies as early as possible to de-risk solutions and ensure opportunities are not missed. The details of this engagement are included in Section 9.

74. We note that the overarching compliance requirement is to design a solution which meets the primary statutory nutrient neutrality obligations affecting the Teesmouth & Cleveland Coast SPA, while avoiding any wider impact on water quality in the Tees Estuary and any adverse impact on adjacent bathing waters along the Redcar coast.

75. The main aspect of the scheme which will determine compliance with the above is selection of the end point for the outfall and hence the dispersion area. Section 3.3 of the Design Report sets out how we have selected and assessed a range of discharge locations, including via marine impact modelling, with only those locations assessed as ‘no impact’³ taken forwards for further consideration. This supports meeting the overarching compliance requirement (which is the key specific consideration for meeting WINEP requirements for this project).

76. Further to these environmental assessments, in response to OFWAT guidance that solutions should have completed non-statutory consultation, and be undertaking statutory pre-planning consultation, or planning

³ See figure 3.1 in design report

application and permission by submission two we have progressed to pre-application with the local planning authority and similar pre-application engagement with Natural England and the Marine Management Organisation.

FIGURE 11 - BRAN SANDS LSO RANGE OF CONSENTS

Requirement	Relevance to Scheme	Comments
Planning Permission	The scheme clearly meets the statutory definition of 'development' set out in Section 55 of the Town & Country Planning Act 1990, hence planning permission is required.	See section 4.2, and section 4.10 for archeology requirements
Environmental Impact Assessment	The Town & Country Planning (EIA) Amendment Regulations 2018 sets out the conditions in which an EIA is required. The proposed onshore elements of the scheme meets those conditions. In addition, work below Mean Low Water Mark is subject to the Marine Works (EIA) Regulations 2007, under which the proposed offshore elements of the scheme meet the conditions for requiring an EIA.	See section 4.5
WFD Assessment	The Water Framework Directive (WFD) requires us to conduct an assessment to avoid undue impact from the construction and operation of the scheme on the estuarine waters of the river Tees and the associated coastline. This is also required to support the Marine Works Licence Application (see below).	See section 4.3
Habitats Regulations Assessment	Due to proximity of the scheme to sand dune and saltmarsh habitats, a HRA is required under the Conservation Habitats & Species (Amendment) (EU Exit) Regulations 2019, and is also required to support the Marine Works Licence Application (see below).	See section 4.4
SSSI Assent	Under the Wildlife & Countryside Act 1991, the proximity of the scheme to a SSSI requires SSSI Assent to be obtained from Natural England.	See section 4.6
Marine Works Licence	Under the Marine & Coastal Access Act 2009, a licence is required from the Marine Management Organisation (MMO) for offshore construction works.	See section 4.7
Crown Estate Lease	The seabed over which the offshore element of the scheme will pass is owned by the Crown Estate. A Seabed Survey Licence is hence required to support initial survey work followed by a Seabed Licence for the scheme itself.	See section 4.8 and in Section 9.
Harbour Works Order	Under the Harbour Act 1964, and the powers it delegates to Statutory Harbour Authorities (SHAs), we are required to seek a Harbour Works Order from PD Ports – the relevant SHA.	Our engagement with PD Ports is described in Section 9.
EA Discharge Permit	Under the Environmental Permitting (England and Wales) Regulations 2016, the discharge permit at Bran Sands will require revision to reflect the new discharge location and forecast future flows.	Relevant process to be initiated with the EA once the final design for the scheme is confirmed.
General land access	As the onshore pipeline crosses 3rd party land, we need to act within our statutory powers alongside ensuring an appropriate mix of land lease and purchase agreements are put in place.	See section 4.9 and Section 9.

77. Figure 11 also shows requirements for a Harbour Works Order and the EA Discharge Permit consent. We describe our engagement with these stakeholders in Section 9.
78. Finally, the Ofwat guidance asks us to consider the carbon impact in our design. As this is not a water resources project, it does not formally follow the Water Resources Planning Guidelines – but we have followed the same broad method, including assessing the carbon cost of our options using the most up-to-date carbon costs and values. Section 4.11 explains how we have done this.
79. We note that our net zero plans are clearly linked to national government targets and, consistent with Ofwat's net zero principles, we prioritise the elimination and reduction of emissions before offsets (see 4.11).

4.2. PLANNING PERMISSION

80. A meeting was held between NWL and Redcar and Cleveland Borough Council (RCBC), as local planning authority (LPA) on 23 July 2025. The purpose of the meeting was to introduce the scheme to the LPA, set out an approximate timeline for the construction of the development and how NWL were proposing to seek planning permission for the scheme,
81. Following the July 2025 meeting, a formal pre-application submission was made to RCBC on 9 February 2026 and a copy of the application letter is included in Appendix 10. This submission provided details of the proposal including the preferred route of the pipe, the likely means of construction and timescales for its development. A meeting was held with the LPA on 3 March 2026 to discuss the scheme further and to seek the views of the LPA. RCBC confirmed that they would provide their pre-application comments on the scheme during March 2026.
82. The following high level planning application submission programme was set out to the LPA:

May 2026	Submission of EIA Scoping Request to the LPA
Summer - Autumn 2026	Pre-application local community consultation events
April 2027	Submission of planning application to LPA
September 2027	Likely determination of the planning application

83. Engagement with RCBC will continue throughout the preparation of the planning application. Following the submission of the planning application NWL and its planning consultant will keep in close contact with the LPA to ensure that, should any issues be raised by third parties or statutory consultees which require addressing, these matters are responded to and addressed to the satisfaction of the local planning authority.
84. A delay in the submission of the planning application or subsequent approval is likely to result in delay to the delivery deadline of March 2030. This is explained in more detail in Section 6.1.1.

4.3. WATER FRAMEWORK DIRECTIVE (WFD) ASSESSMENT

85. A WFD Assessment for the main scheme will be undertaken to assess the impact of construction, operation, and decommissioning of the LSO on the estuarine (transitional) waters of the River Tees and the coast and submitted

with the Environmental Statement in April 2027. A WFD assessment has already been undertaken to assess the impacts of offshore ground investigation surveys and has been provided to the MMO for acceptance.

4.4. HABITATS REGULATIONS ASSESSMENT (HRA)

86. The Teesmouth and Cleveland Coast Ramsar and Special Protection Area (SPA) is designated for sand dunes and saltmarsh habitats and bird assemblage, located on-site. These coastal habitats are designated for foraging birds e.g. tern. The birds rely on prey items including fish species, such as lesser sand eels, herring (both listed under NERC Section 41), and sprat, and these species are therefore offered a level of legal protection within the estuary to support the birds.
87. Potential impacts on these prey species may include habitat loss, direct disturbance/mortality, pollution, noise, vibration (affecting fish movement or spawning), visual disturbance (suspended sediment), and light disturbance. Indirect impacts may result from long-term changes in habitat quality, such as alterations to water quality and prey quantity.
88. There is one other internationally statutory designated site within 10 miles of the Site, namely the more distant Southern North Sea Special Area of Conservation (SAC) which is designated for a mobile species that utilise the project area (such as harbour porpoise) and therefore will also be assessed within the HRA.
89. Standard best practice pollution control measures will be put in place during construction to avoid pollution or siltation of the marine environment and minimise other disturbance effects (including abiding by potential seasonal restrictions).
90. An HRA was undertaken to support the Marine Licence application for the offshore geotechnical investigations (GI). This was detailed in the Offshore Surveys HRA Screening report dated 11th December 2025. The HRA for the onshore pipe GIs will be undertaken in May 2026 and the date of the survey windows for both GIs are set out in Section 4.5. The HRA for the main scheme itself will be submitted with the Environmental Statement in May 2027.

4.5. ENVIRONMENTAL IMPACT ASSESSMENT (EIA)

91. As part of the staged Environmental Impact Assessment (EIA) process, an EIA Scoping Report is being drafted and will be submitted by 29th May 2026. The following topics will be scoped into the Environmental Statement (ES):

Marine Ecology & Biodiversity	Coastal Processes	Terrestrial Ecology	Water Resource & Flood Risk
Geology and Soils	Cultural Heritage (Archaeology only)	Waste and Materials	Climate Change

92. Assessment supporting ongoing drafting of the EIA Scoping indicates that the following environmental aspects can be scoped out of the EIA process:

Climate Change (Built Heritage & Landscapes)	Landscape & Visual	Transport & Access	Noise and Vibration	Air Quality
Population & Human Health	Socio-Economics	Daylight, Sunlight & Overshadowing	Agricultural Land	Utilities & Energy
Wind Environment	Heat & Radiation	Risk of Accidents & Disasters		

93. Following receipt of an EIA scoping opinion response from the LPA, an Environmental Statement will be produced to accompany the planning application to the LPA and the marine license application, for construction, to the MMO. If any likely significant effects are identified, these will be minimised where possible through design (embedded mitigation), with any further mitigation measures required agreed with statutory regulators and committed to. Any opportunities for enhancements will also be taken.
94. The following surveys are required during preparation of, and prior to the completion of the ES to provide data to support the assessment:
- Bird surveys (wintering and breeding including Terns) – these have begun and are expected to finish in December 2026.
 - Ground investigation –
 - Onshore – to include geotechnical and geoenvironmental testing – 7th May to 6th December 2026
 - Offshore – to include non-intrusive geophysical survey, intrusive ground investigation – 19th August to 29th September 2026
 - Subtidal benthic survey (including drop-down camera) – 15th July to 11th Aug 2026.
 - ADCP and CTD monitoring – 13th July to 20th August 2026
 - Preliminary Ecological Appraisal incl. River Condition Assessment and species-specific surveys – complete by 31st July 2026.
95. The North Eastern Inshore Fisheries & Conservation Authorities (IFCA) will be consulted during the course of the EIA and asked to provide fisheries data to supplement the marine ecology chapter in the ES, and will also form part of the marine license application for construction.

4.6. SITE OF SCIENTIFIC INTEREST (SSSI) ASSENT

96. There is one statutory designated site within 2 km of the Site, namely the Teesmouth and Cleveland Coast Site of Special Scientific Interest (SSSI), designated for sand dunes and saltmarsh habitats, bird and invertebrate assemblages, located on-site. A SSSI assessment will be undertaken as there is potential for disturbance to habitats and species, including birds and invertebrates, as a result of vibrations/noise from tunnelling/other construction activities within the zone of influence. The SSSI assessment report will also be submitted as part of the Marine License Application.
97. A meeting was held with Natural England following a Discretionary Advice Service (DAS) request on 11th December 2025 (UDS-A021423-Northumbrian Water Bran Sands Long Sea Outfall-529865). The project was introduced and early discussions on constraints took place. The requirement for a full year of ornithology surveys was discussed, as well as specific pinniped (marine mammals: seals) surveys. NE confirmed that no pinniped

surveys are required and this was recorded in the minutes of the meeting issued to NE. The requirement for wintering bird data in January 2027 is to be confirmed.

98. A second meeting was held with NE through the same DAS request on 12th February 2026. Further project updates were provided to NE including the new preferred solution for the LSO. Scour protection for the outfall was discussed, along with decommissioning of the pipe and its design life. Following this meeting, minutes were shared with NE, alongside a Water Quality data overview (to confirm the scope of the water quality assessment to be undertaken as part of the EIA), a shapefile of the proposed route, and a survey programme overview (to enable NE to comment on any additional surveys required).
99. A third meeting was held with NE on 17th of March 2026. Discussion was primarily on the limitations of a trenchless crossing of the SSSI and if sections of the pipe not feasible which lengths would have least impact and be quickest to recovery.
100. SSSI Assent was granted by NE in October 2025 for the November 2025 intertidal walkover survey.

4.7. MARINE LICENCE

101. A Marine License Application will be submitted to the Marine Management Organisation (MMO) for construction and operation of the LSO in April 2027. A comprehensive assessment of the works will be made and documentation to be appended alongside the application includes:

- Environmental Statement (including results of marine ecology surveys)
- Water Framework Directive Assessment
- Habitats Regulations Assessment
- Marine Plan Policy Assessment
- Marine Conservation Zone Assessment
- SSSI Assessment
- PD Ports Works Licence

102. A general enquiry to the MMO has been submitted – this was to introduce the project and to establish a line of communication with the MMO ahead of the marine license application.

103. Further questions were submitted to the MMO on 17th November 2025 as part of the same enquiry regarding geophysical survey works and exemptions for both the geophysical and grab sampling. MMO has confirmed that NWL must apply for separate exemptions for geophysical survey, subtidal grab, ADCP/CTD, and onshore ground investigation.

104. To avoid any adverse impacts from dredging activity, the application also requires a sediment sampling plan for sediment chemistry analysis which will be submitted to the Centre for Environmental, Fisheries & Aquaculture Science (Cefas) in May 2026 via the MMO to ensure sampling is sufficient. We expect the response from Cefas to be after the 1st May deadline for issuing this submission two document. We anticipate commencing sampling to commence between the 15th of July and 11th August 2026.

4.8. SEABED ACTIVITY AND THE CROWN ESTATE

105. We are in ongoing discussions with the Crown Estate regarding the project and lease of land. We are exploring alternative pricing models for the lease.

106. A Seabed Survey Licence was applied for from the Crown Estate on the 13th April 2026 for survey works between April – September. This will cover the subtidal grab survey, geophysical survey, ADCP/CTD survey, and both the onshore (intertidal) and offshore ground investigation.

4.9. ONSHORE LAND ACCESS

107. The land required for the proposed pumping station and the first part of the route for Option 2A is owned by Anglo American and includes ongoing operation activity relating to the adjacent landfill site and for tanker access and effluent discharge connection. The land occupied by Bran Sands WwTW is leased by Northumbrian Water from Anglo American Ltd. North of the Anglo American landfill site the land is owned by Teesworks and the proposed route through this section corresponds with a route proposed by Teesworks. We are in dialogue with both organisations in respect of access agreements for the permanent works.

4.10. ARCHAEOLOGY

108. Consultation with Historic England commenced in March 2026. We have engaged with the local planning authority and their consultant archeologists to feed into the Environment Scoping report.

4.11. CARBON

4.11.1. Carbon Assessment

109. The carbon emissions impact of the scheme has been assessed at regular intervals aligned with the OFWAT submission process. To date, this includes three whole life carbon assessments at Price Review (PR) 24, Submission 1 and now Submission 2. The Bran Sands LSO Carbon Estimate Report is included in Appendix 11.

110. The assessments at Submission 1 and 2 have been undertaken by Stantec using Stantec's in-house carbon calculator and within Stantec's PAS2080 certified process. The calculator is a web-based application, designed specifically to evaluate the whole life carbon of capital projects in the water sector. As such, the calculation methodology is aligned with UKWIR guidance (UKWIR, 2022) alongside the HM Treasury's Green Book (HM Treasury, 2022) and its supplementary guidance (DESNZ, 2023) for undertaking a carbon assessment. It draws on a regularly updated database of emissions factors which has been compiled using:

- Institution of Civil Engineers' CESMM4 Carbon and Price Book (ICE, 2013),
- the Inventory of Carbon and Energy (University of Bath - Sustainable Energy Research Team, Circular Ecology, 2019), and
- supplier Environmental Product Declarations (EPDs) where applicable for embedded emissions.

111. Operational emissions factors are comprised of the latest: 1. UK Government Greenhouse Gas (GHG) Conversion Factors for Company Reporting; and 2. Water Industry Emissions Factors included in the Carbon Accounting Workbook (CAW v18).
112. Emissions estimated from the consumption of electricity are calculated over the whole life of the scheme by considering the aforementioned factors and the decarbonisation of the UK electricity grid in line with forecasts provided in Green Book supplementary guidance: Data tables 1 to 19" (DESNZ, 2023).
113. The scheme carbon assessment is addressed in more detail in Section 5.4 Best Value Assessment and Solution Benefits.

4.11.2. Net Zero

114. At Submission 2, all options have been assessed for carbon, and these results have been included in the optioneering process where carbon is one of several factors that has been considered.
115. The Brans Sands LSO project has been assessed for whole life carbon at regular intervals throughout the design process. At each stage, recommendations have been made to minimise the carbon impact of the scheme within the constraints of achieving the project's principal objective. For example, the preferred choice of pipeline at this stage in the project has a lower embedded carbon footprint per m than industry averages that were used for estimating previously. Additionally, the pipelines are anticipated to be transported to site by barge as opposed to road, yielding a significant reduction in emissions.
116. As an organisation, we have committed to reaching Net Zero emissions by 2050, well within the operating lifetime of this scheme. As such, recommendations have been made to mitigate the operational impact of this scheme by optimising pumping requirements for energy efficiency. Although, it is noted the operational impact of this scheme will significantly decrease as the UK electricity grid decarbonises.
117. We have also made a commitment to the CO2nstructZero Five Point Plan encompassing contracts for low carbon construction, eliminating fossil fuel use, reducing use of the most carbon intense concrete and steel products, and adopting PAS2080 as standard. ⁴ The latest carbon review at Submission 2 highlights carbon hotspots across the scheme and recommendations to minimise concrete volumes where possible. As the preferred option is taken through subsequent gateways, we will seek to mitigate the potential for significant emissions as much as possible. This should primarily be addressed through engagement with the construction contractor and procurement of supplies.

4.12. BIODIVERSITY NET GAIN (BNG)

118. The project, as a result of the necessary planning and consents has a requirement to deliver Biodiversity Net Gain (BNG). This will result in a minimum 10% increase in habitat against the preconstruction baseline. We are assessing the most appropriate method of deploying BNG as the existing site has very limited available land and the pipeline is primarily in third party land. This may result in the need to utilise credits or deploy off-site BNG

⁴ [Climate Action](#)

rather than on-site BNG; if this is needed, this is likely to be achieved through our own biodiversity strategy which includes purchasing land to generate credits to use as offsets, reducing the need to buy additional credits.

5. SOLUTION COSTS AND BENEFITS

5.1. INTRODUCTION

119. In line with development of the LSO scheme to Concept Design from Submission One, we have developed our cost estimate for the preferred solution – and we have captured changes from Submission One in the Change Log. Section 5.2 expands on the changes and discusses how uncertainty in costs and benefits has been reduced including where optimism bias has also been reduced as cost forecasts have been further developed. We provide an update to the best value assessment and solutions benefits status included in Submission One, as well as changes to the Risk Register with respect to the scheme costs.

120. In section 3, we confirm that the original optioneering and solution selection is still valid against the identified need.

5.2. FINAL SOLUTION COST ESTIMATES AND ACCURACY OF ESTIMATES

5.2.1. Sources of Estimate

121. Recognising the unique nature of the project, we acknowledged at PR24 that the typical modelled cost for the project would have limited source data and potentially prove unreliable. We therefore concluded that we needed to seek input from additional sources to build confidence in the estimate to support scheme delivery. For our PR24 business plan estimate, we used cost estimates from our own iMOD system and Aqua Consultants (with a separate cost assurance report from Gardiner & Theobald) to do this.

122. For our cost estimates since PR24, we engaged three primary sources of estimates:

- Aqua Consultants updated estimate based on the latest project information.
- Contractor Estimate based on latest project information supplemented by additional knowledge and experience
- Haskoning Independent Class 4 estimate based on the latest project information.

5.2.2. Aqua Consultants Estimate Development

123. Aqua Consultants have supported the development of the project cost estimates and provided inputs to the PR24 submission and Submission One under the large scheme gated approach. These estimates are shown in Figure 12 below and included in Appendix 12.

FIGURE 12 - COSTS FROM AQUA CONSULTANTS AT PR24 AND SUBMISSION 1

Submission	Cost (FY 22/23)
PR24 Estimate	245,350,331
Submission One Estimate	254,227,000

124. We have used the same method to provide an assessment of the shortlisted options which supported the identification of the preferred option. We summarise this in Figure 13 and provide the full cost build-up of each option as additional information with this submission in Appendix 13. These are in current prices and adjusted to 2022/23 prices, consistent with PR24 and with previous estimates.

FIGURE 13 - COSTS OF SHORTLISTED OPTIONS

Solution	Current Prices	Adjusted (FY 22/23)
Option 2A	£259,893,023	£229,785,798
Option 2B	£475,955,467	£420,818,557
Option 2E	£283,411,902	£250,580,140
Option 2F	£480,482,599	£424,821,245
Option 3F	£583,743,866	£516,120,243

5.2.3. Aqua Consultants Option 2A Estimate Breakdown

125. Our optioneering identified Option 2A as the preferred option, and so we present these costs in more detail. The breakdown of the Option 2A estimate is summarised in Figure 14 below.

FIGURE 14 - AQUA CONSULTANTS OPTION 2A ESTIMATE BREAKDOWN

Option 2A – Preferred Solution	Current prices	Adjusted (FY 22/23)
Pumping Station	£13,955,318	£12,338,668
Onshore Pipeline	£15,326,264	£13,550,798
Offshore Pipeline	£79,294,410	£70,108,574
Other	£2,609,079	£2,306,831
Contractor Indirect Costs	£46,310,808	£40,945,947
Project Indirect Costs (Client Costs)	£28,141,995	£24,881,895
Risk and Estimating Uncertainty	£74,255,149	£65,653,085
Total	£259,893,023	£229,785,798

5.2.4. Contractor Estimate

126. We recognise the limitations of consultant estimates and the high variability that can occur in specialist markets. So, we engaged a main contractor, Costain, to undertake a cost estimate using their expertise in constructability, planning and risk management. This estimate also included elements of market engagement to confirm constructability and assumptions on working method and durations and included subcontract estimates from reliable sources. The full estimate is provided in Appendix 14 and summarised in Figure 15 below in both the price base from the estimate (current prices, see attached estimate and assurance report) and in 2022/23 prices.

FIGURE 15 - COSTAIN ESTIMATE OF COSTS

Costain Estimate	Current prices	Adjusted (FY 22/23)
Pumping Station	£23,624,830	£20,888,019
Onshore pipeline - Open cut	£28,404,118	£25,113,652
Onshore pipeline - Pipejack	£14,695,206	£12,992,845
Onshore pipeline - Launch & Reception Shafts	£1,540,874	£1,362,372
Offshore pipeline - Mobilisation, Site Setup, Surveys, Preliminaries	£12,353,686	£10,922,577
Offshore pipeline/Diffuser Materials and Off-site Assembly	£35,276,937	£31,190,291
Offshore pipeline - Dredging and backfill	£27,106,598	£23,966,443
Design	£12,126,591	£10,721,790
Risk	£16,024,627	£14,168,259
Prelims	£28,493,822	£25,192,965
Overhead/Profit	£19,465,611	£17,210,623
Client Cost	Excluded	Excluded
Total	£219,112,900	£193,729,836

127. We note that this estimate does not include client costs so is not directly comparable to the Aqua Consultants estimates in Figure 13 and Figure 14. We explain how we have taken account of client costs, estimating uncertainty and risk in the following sections.

5.2.5. Independent Class 4 estimate

128. We also instructed Haskoning to provide an independent estimate, using their extensive engineering and estimating knowledge. In particular their experience of delivering multidisciplinary projects in the coastal and maritime sectors which has allowed them to develop a good knowledge base on costs and methods of dredging.

129. The Haskoning Estimate, summarized in Figure 16, included in full in Appendix 15, was provided as a Class 4 estimate as they did not have the benefit of market engagement.

FIGURE 16 - INDEPENDENT COST ESTIMATE (HASKONING)

Haskoning Estimate	Value (current prices)	Adjusted Value (FY 22/23)
Landside - Mobilisation, Site Setup, Preliminaries	£9,000,000	£7,957,398
Pumping Station (incl. External works, MCC & Transformer areas)	£25,300,000	£22,369,130
Pipeline landslide - open cut (2.3k)	£33,500,000	£29,619,203
Pipeline landslide - pipe jacked (1.1k)	£11,600,000	£10,256,202
Jacking shaft	£1,600,000	£1,414,649
Marine - Mobilisation, Site Setup, Surveys, Preliminaries	£10,100,000	£8,929,969
Offshore Pipeline/Diffuser Materials and Installation	£29,430,000	£26,020,691
Offshore pipeline - Dredging and backfill	£14,250,000	£12,599,213
Cofferdam Connection Inter Tidal	£2,600,000	£2,298,804
Overhead and Profit	£16,485,600	£14,575,831
Contingency	£46,159,680	£40,812,327
Client Cost	Excluded	Excluded
Total	£200,025,280	£176,853,415

5.2.6. Normalised Costs

130. We then carried out an exercise to normalise the estimates – that is, establishing comparable costs that exclude client cost, risk and contingency. Figure 17 shows the three estimates for the preferred option without these costs (or for the “construction scope”) and in the same price base. This shows that the three estimates are broadly similar, with an average that is slightly above the Aqua Consultants cost – we note that this is the original PR24 method, updated for the changes in Option 2A.

131. We have taken the average value from these cost estimates as our central estimate of construction scope costs. This places equal weight on each cost estimate.

FIGURE 17 - NORMALISED COST ESTIMATE COMPARISON

Estimating Source	Value (Current prices)	Normalised Value (FY 22/23)
Aqua	£157,495,878	£139,250,818
Costain	£203,088,273	£179,561,576
Haskoning	£153,865,600	£136,041,088
Average	£171,483,250	£151,617,828

5.2.7. Client Costs

132. We have developed an estimate of client costs as outlined in Figure 18 and included in Appendix 16, separately from our three cost estimators. This has been assured by our commercial consultants to confirm that there is clear delineation between client costs and other cost categories. This recognises both the value to date, and a forecast of the Definition and Delivery stage costs.

FIGURE 18 - CLIENT COSTS

	Value (Current prices)	Adjusted Value (FY 22/23)
Value to date	£2,618,505	£2,315,166
Forecast	£36,285,913	£32,082,383
Project Management	£2,390,400	£2,113,485
Feasibility	£26,000	£22,988
Definition	£7,742,075	£6,845,197
Implementation	£25,390,158	£22,448,843
Acceptance	£737,280	£651,870
Total	£38,904,418	£34,397,548

5.2.8. Scope & Estimating Uncertainty

133. During earlier stage project estimates we made an allowance of 30% for estimating uncertainty – this was our standard approach at PR24, and consistent with our costing methodology for the planning stage (GW1). This has now been removed and reassessed based on increased project maturity.

134. Our capital delivery methodology for project estimates at Gateway 2 (GW2), provided in Appendix 15, sets out the method for determining allowances for estimating uncertainty. For Gateway 2, this moves from a 30% allowance to 15 or 20% dependent on the delivery programme – this is because typically, the scope has been improved and so there is less uncertainty due to the work that has already been done on the project. This scheme is an enhancement scheme, and therefore our own guidance indicates that an allowance of 20% is typical under this programme.
135. Independently, the AACE estimate classification provides published guidance on estimate preparation. Class 4 estimates which are generally used at concept evaluation, and Class 3 estimates which are generally used for budget authorization, both have certainty ranges of – 15% to +30%.⁵
136. Given the level of definition for the scheme, we consider that a 30% scope and estimating uncertainty would be over-conservative. This is because there is already a scope based project cost estimate, with build ups for main components and a quantified risk register. We therefore consider that our estimating uncertainty in this case should be lower than both the standard Northumbrian Water procedure and AACE recommendations – recognising that we have also included a quantified risk value separately. We therefore propose to use a **15%** uplift to the scope cost **£33,384,871**.

5.2.9. Risk

137. During early estimates, we included a 10% risk allowance (again, in line with our standard PR24 costing methodology). We have now removed this from our project as a percentage inclusion and we have instead included a risk value of **£36,550,428** (FY22/23) based on the quantified assessment of the current Risk Register (see section 6.2), included in Appendix 5. This is a higher risk cost than the 10% allowance at PR24, but as a consequence of this quantified assessment of risk, we have significantly reduced our allowance for estimating uncertainty.

5.2.10. Revised Estimate

138. We provide a summary of the revised estimate in Figure 19. This is a slightly higher estimate of scope than at PR24, and a slightly lower estimate of risk and estimating uncertainty costs. In total, this is around £2.3m higher than our original PR24 costs; we note, however, the scope has increased slightly since then due to improved understanding of scheme constraints. This is a lower cost than in Submission 1 in late 2025.

FIGURE 19 - REVISED FINAL COSTS

	Value (Current prices)	Adjusted Value (FY 22/23)
Construction Scope	£171,483,250	£151,617,828
Client Costs	£38,904,418	£34,397,548
Risk Register	£41,339,375	£36,550,428
15% Scope & Estimating Uncertainty	£37,759,057	£33,384,871
Total	£289,486,100	£255,950,675

⁵ <https://aheinc.ca/wp-content/uploads/2018/12/AACE-Cost-Estimate-Classification-System.pdf>, p2

5.3. COST BENCHMARKING

5.3.1. Benchmarking Methodology

139. In addition to the cost benchmarking we carried out at PR24, we have carried out further cost benchmarking using two primary sources: information directly from our supply chain (using supplier estimates); and reference benchmarking from other projects (provided to us by a specialist, Haskoning). This shows that our scope costs are efficient compared to supplier estimates, and our project costs are broadly within the range of reference projects (though this project is larger than any reference project).

5.3.2. Supply Chain informed benchmarking

140. We have used supplier estimates to challenge and support internal estimates against a number of the main packages. We continue to engage suppliers to help validate item estimates and inform risk quantification. Supply chain estimates are identified in the Costain estimate (see section 5.2.4 and Appendix 14) and agreed actions for procuring additional estimates to support validation of the scheme cost have been documented in the Costain estimate assurance report.

141. Our final project costs are lower than the Costain estimate (by 12%). This suggests that our scope costs are efficient compared to supplier estimates.

5.3.3. Project informed benchmarking

142. Haskoning have provided a bank of project references which seek to inform the context for the marine pipeline.

FIGURE 20 - PROJECT REFERENCE COSTS

Project Title	Year	Diameter	Length	Outfall Value	Project Value (£m)
Anchorholme Long Sea Outfall	2017	2500	3750	30	150
Belle Greve Outfall Replacement	2016	900 1200	2400 1800	20	20
Swalecliffe SSO	2024	1200	960	12	20
Bridlington rBWD	2015	1800	1250	19	58
Barrow in Furness Outfall	2014	1200	2400	8	8
Arklow Wastewater Treatment	2023	630	930	20	120
Wheatcroft Long Sea Outfall	2017	355	2500	7	10
Withernsea Outfall	2021	450	1000	13	15

Project Title	Year	Diameter	Length	Outfall Value	Project Value (£m)
Whitehaven Outfall	2013	710	1000	8	10
Sandon WWTW Outfall Extension	2013	2100	280	10	10
Bacton Outfall	2019	500	747	8	24

143. Haskoning concluded in Appendix 15 that a project estimate in the order of magnitude of £200 - £250m (in current prices) was appropriate. There is no clear conclusion that can be drawn from econometric analysis based on parameters such as diameter and length: these projects are highly varied; there is no model that fits the data well; and the Bran Sands long sea outfall option 2A (4,500m) is longer than even the largest reference project.

144. We can illustrate this point with the nearest comparison project in Figure 20 - Anchorsholme (similar diameter but shorter length). Assuming a unit cost for these pipelines based on length, we would estimate approximately £300m for the Bran Sands project (Anchorsholme⁶). This is unlikely to be a particularly good comparison as the site constraints for Anchorsholme in Blackpool and Bran Sands on Teesside vary significantly, but it does show that on a unit cost basis the Bran Sands outfall would likely be efficient.

145. The independent cost estimate (see 5.2.5) provides two sources of additional benchmarking to provide general validation of the scheme estimate. In particular, the marine scope and dredging are familiar to the Haskoning team on both a domestic and international basis for marine pipelines and other dredging projects.

146. We note that Costain, in their estimate, have also been involved in similar projects which have helped them to develop benchmark rates. These projects include HS2, Thames Tideway and London Power Tunnels as well as cost benchmarking libraries developed over a number of years, including the Costain Consultancy Calculator. Our final costs are 12% below the Costain estimate which has used these reference costs, which suggests that our proposed costs are efficient compared to similar projects.

5.4. BEST VALUE ASSESSMENT AND SOLUTION BENEFITS

147. In our PR24 optioneering, we identified a range of benefits that could apply to the need at Seal Sands. Figure 21 of the Summary of Seal Sands Optioneering in Appendix 1 shows the benefits we identified and these are reproduced in Figure 21 below.

FIGURE 21 - RANGE OF BENEFITS IDENTIFIED FOR TEESMOUTH CATCHMENT OFFSETTING (HD_IMP_NN)

Value measures or Benefit	Description	Unit	Value	Value source
Improved water environment	Length of water environment improved	Km	Not monetised in VM	NWL Value Framework
Biodiversity net gain	Change in biodiversity units (BU)	BU	Not monetised in VM	NWL Value Framework

⁶ <https://waterprojectsonline.com/case-studies/anchorsholme-iso-2019/>

Value measures or Benefit	Description	Unit	Value	Value source
Amenity (Recreation)	Number of visitors on England Coast path passing through saltmarsh site (10,000 average visits for all English coastal and beach sites)	Visits/day (Coastal)	£23*	NWL Value Framework
Operational Carbon	t/CO _{2e} /year	tCO _{2e}	£256.2**	NWL Value Framework
Embedded Carbon	t/CO _{2e} /year	tCO _{2e}	£256.2**	NWL Value Framework
Cost Savings	Mechanism for including monetisation of Improved water environment	£	£16,869***	WINEP Wider Environmental Outcomes Assessment
Education	Mechanism for including monetisation of Education	£	£2,272 ^{iv} £4,543 ^v	WINEP Wider Environmental Outcomes Assessment
Recreation	Mechanism for including monetisation of Recreation	£	£37,200	WINEP Wider Environmental Outcomes Assessment
Habitat Water Purification	Mechanism for including monetisation of Water Purification by Habitat	£	£10,410,025	WINEP Wider Environmental Outcomes Assessment
Climate Regulation	Mechanism for including monetisation of Climate regulation	£	£18,260 ^{v**}	WINEP Wider Environmental Outcomes Assessment
Water Quality (lakes)	Mechanism for including monetisation of water quality (lakes)	£	£30,157 ^{v***}	WINEP Wider Environmental Outcomes Assessment

* Value of coastal visit if 'Slight benefit' (values with Moderate and Major benefit are £115 and £230 respectively)

**£ value per tonne of CO_{2e} in 2025/26, annual increase (varying rate) reaching £378.6/t CO_{2e} in 2024/55

*** Annual value of £22,493 multiplied by an assumed confidence level of 0.75

^{iv} Native Oyster Recreation: 180 pupils (6 school visits per year with classes of 30 pupils) with a benefit of £25.74 per pupil multiplied by an assumed confidence level of 0.5

^v ICW at Greatham ICW: 360 pupils (1 school visit per month with classes of 30 pupils) with a benefit of £25.74 per pupil multiplied by an assumed confidence level of 0.5

^{v*} Saltmarsh restoration + restoring oysters + shellfish farming + seaweed farming: 6449.6ha with a benefit of £2,152/ha/year multiplied by an assumed confidence level of 0.75; Greatham ICW: 1.41ha @ £350/ha/year @ 0.75 confidence

^{v**} Saltmarsh restoration: 14.55ha with a carbon sequestration of 5.133 tCO_{2e}/ha/yr with a benefit of £326 per tCO_{2e}/ha/yr ('Central' estimate) multiplied by an assumed confidence level of 0.75

^{v***} Bran Sands – reduction by 50%: 2.25km² improved from Poor to Good status with a benefit of £8,238/km² for Poor to Moderate improvement and £9.633/km² for Moderate to Good improvement with a confidence level of 0.75

148. However, as we explained in our PR24 optioneering, these benefits are not applicable to a long sea outfall – that is, none of the WINEP wider environmental outcomes apply; there is no amenity, improved water environment or biodiversity net gain. The benefits calculated for this option at PR24 only relate to the nature-based solutions (which are out of scope for the large scheme gated process).

149. Further to this, all options identified for the long sea outfall achieve the same outcome in the catchment, by definition (that is, the relocation of the outfall to the sea). This is the requirement under WINEP, so is identical under each option.

150. This means that our cost-benefit appraisal is just the relevant costs of each option and an assessment of carbon costs. The pumping requirements and capacity are the same under any option, so differences in carbon costs are assessed using the length of pipeline under each option.

5.4.1. NPV

151. We estimated an NPV for each of the shortlisted options, based on our costs and an assessment of carbon costs. There are no other differences between the benefits for each option (we note that nature-based solutions would have wider benefits, as set out in 5.4 above, but these are not in scope). We show this in Figure 22.

FIGURE 22 - NET PRESENT VALUE OF OPTIONS

Option	Option Brief Description	Advantages	Disadvantages	CAPEX	OPEX	NPV	WL Carbon (tCO ₂ e)
2A	Routed west of the WwTW, trenched offshore	Lowest cost, limited onshore crossings	Contaminated land onshore, corridor limited	£260.2m	£883k	£289m	17,718
2B	As 2A tunnelled offshore	Below significant infrastructure offshore	As 2A + offshore build technically complex	£536m	£883k	£565m	-0.7%* relative to 2A
2E	Routed south and east of the WwTW, trenched offshore	Reduces contaminated land crossing	Several complex crossings of significant infrastructure	£286m	£883k	£315m	+7.7%
2F	As 2E, tunnelled offshore	As 2E & 2B	As 2E & 2B for onshore route	£531m	£883k	£560m	+4.2%*
3F	Routed south and east tunnelling from Redcar and offshore.	Remote from offshore infrastructure constraints	Highest cost, NE objection to offshore route	£636m	£883k	£665m	+20%*

* Excludes any tunnel infill

152. This analysis shows clearly that Option 2A has the lowest costs and (almost) the lowest carbon costs of all options. Our value framework shows that the carbon costs for Option 2A would be estimated at around £4.5m (using the valuation from Figure 24 multiplied by the whole life carbon cost), and so it is clear that carbon costs

do not lead to any change in the rankings for NPV. We explain the carbon costings and provide more detail on these in section 5.4.2 below.

5.4.2. Carbon Assessment

153. The Bran Sands LSO Carbon Estimate report is included in Appendix 11.

154. We assessed whole life carbon estimates for 5 options for the Bran Sands Long Sea Outfall (LSO) in line with the methodology described in this report. This follows the UKWIR guidance (published in 2012 (UKWIR, 2012) and updated in 2022 (UKWIR, 2022), which sets out how to calculate capital and whole life carbon for water industry assets. We also used the HM Treasury's Green Book (HM Treasury, 2022) and its supplementary guidance (DESNZ, 2023) for undertaking a carbon assessment. A comparison of embodied carbon for each of the five options is presented in Figure 23.

FIGURE 23 - EMBODIED CARBON IMPACT OF EACH OPTION BROKEN DOWN BY ASSET

Asset	Option 2A	2B	2C	2F	3F
Pumping Station	2,663	2,663	2,663	2,663	2,663
Onshore Pipeline	4,395	3,213	5,963	4,775	4,354
Offshore Pipeline	10,661	11,719	10,462	11,036	14,246
Total	17,718	17,594	19,087	18,474	21,263
Rank	2	1	4	3	5

155. The sole source of operational carbon on this scheme is the electricity demand from pumps at the pumping station and explained further in the Carbon Assessment report. The assessment estimate carbon emissions of 540tCO_{2e} in the first year after construction and whole life impact of 2,874tCO_{2e} and is assumed to be the same across all options. Total whole life carbon emissions (tCO_{2e}) for the five options are shown in Figure 24.

FIGURE 24 - WHOLE LIFE CARBON EMISSIONS IMPACT

	Option 2A	2B	2C	2F	3F
Embodied	17,718	17,594	19,087	18,474	21,263
Embodied Replacement	1,671	1,671	1,469	1,469	1,464
Operational	2,874	2,874	2,874	2,874	2,874
Whole Life	22,263	22,139	23,429	22,816	25,601
Rank	2	1	4	3	5

FIGURE 25 - COMPARISON OF RESULTS BETWEEN THE PREFERRED OPTION 2A AND BASELINE

	Baseline	Option 2A	Change	%
Embodied	18,517	17,718	-799	-4
Embodied Replacement	852	1,671	+819	+96
Operational	17,482	2,874	-14,608	-84
Whole Life	36,852	22,263	-14,589	-40

5.5. COMPLETED CHANGE LOG (REFLECTING COST RELATED CHANGES)

156. The project Change Log has been updated to include material changes to scope, programme and cost, the scale of the change, the cause of the change and the impact for customers and the environment and this is included in Appendix 18. We provide a summary of key changes in Figure 26 below.

FIGURE 26 - CHANGE LOG

Ref	Change description	Reason for change	Change to CAPEX
8	Change in proposed option: Preferred option now identified as Option 2A	Change in offshore pipe alignment and discharge location required due to plans provided by DCO holder.	-£36,692,332
9	Updated assumptions on land purchase requirements	Confirmation of easement, lease and land purchase requirements	£3,240,000
10	Quantified Risk Register	Design, estimating and planning accuracy improvements	£18,391,357
11	Biodiversity Net Gain (BNG)	Requirement for BNG has been outlined and an initial estimate provided prior to completion of on-site HRA surveys	£16,711,358
TOTAL			£1,650,383

6. PROGRAMME AND PLANNING

6.1. FINALISED DELIVERY PLAN

157. We have updated the project-level plan milestones and activities to reflect development of the project to Concept Design stage. We have also updated the associated programme requirements including the outputs that need to be achieved before the approval gates (but after Submission Two). This has been shared with Costain who have prepared and issued the following document Bran Sands LSO Main Programme – Costain – Issued for Information that is included in Appendix 19.

158. This includes all of the requirements set out in the [Ofwat guidance](#) for the wider “delivery plan”, where we note we have set out the required information in each quarterly submission too (including risks and issues).

159. We summarise the key programme milestones in Figure 27 below.

FIGURE 27 - NORTHUMBRIAN WATER GATEWAY PROCESS AND OFWAT MILESTONES

OUR MILESTONES	OUR MILESTONES - DATES	OFWAT MILESTONES
GW1 - Project Launch	28/03/2025	
CP1 - Project Commence	28/03/2025	IM1
CP2 - Feasibility Budget	05/06/2025	
GW2 - Solution Approval	30/04/2026	IM2
CP3 - Budget Approved	31/03/2027	
GW3 - Tender Approval	31/03/2027	IM3
GW4 - Delivery Authorisation	01/10/2027	
CP4 - Contract Award	01/10/2027	IM4
CP5 - Handover	31/03/2030	
GW5 - Project Acceptance	31/03/2030	IM5
CP6 - Project Closure	31/03/2031	
GW6 - Project Closure	31/03/2031	
Regulatory Date	31/03/2030	IM6
Forecast Reg date	31/03/2030	

6.1.1. Planning Approvals and impact of delays

160. In its feedback for Submission 1, Ofwat asked us to confirm how any delays in planning approval could impact the delivery timeline, as it did not consider the two were integrated.

161. We commissioned Lichfields in May 2025 to provide advice about the most appropriate mechanism for seeking planning permission for the development of a long sea outfall and associated works at Bran Sands. This advice considered whether the proposed development could fall within the parameters set out in the Planning Act 2008 in relation to nationally significant infrastructure projects and as such whether it would be necessary or possible to apply for an order to grant development consent (DCO). The alternative would be to seek planning permission for the development via the Town & Country Planning Act 1990 (as amended).

162. Lichfields' advice confirmed that the proposed development does not automatically qualify as a Nationally Significant Infrastructure Project (NSIP) and would require a discretionary Section 35 direction to take that route to consent, introducing risk and uncertainty. The Town and Country planning route is appropriate and offers greater flexibility during the design and consultation phases. It is likely to be more cost-effective and to better fit in with how NWL will design and deliver the project. While planning application timelines may be less predictable than NSIP's, early engagement with the local planning authority and Marine Management Organisation will help mitigate delays.
163. Lichfields facilitated and attended a meeting with Redcar and Cleveland Borough Council (RCBC), as local planning authority (LPA) and NWL on 23 July 2025. The purpose of the meeting was to introduce the scheme to the LPA, set out an approximate timeline for the construction of the development and how NWL were proposing to seek planning permission for the scheme, based upon the note prepared by Lichfields detailed above.
164. Following the July 2025 meeting, we made a formal pre-application submission to RCBC on 9 February 2026. This submission provided details of the proposal including the preferred route of the pipe, the likely means of construction and timescales for its development. A further meeting was held with the LPA on 3 March 2026 to discuss the scheme in more detail and to seek the views of the LPA. RCBC confirmed that they would provide their pre-application comments on the scheme during March 2026.
165. We set out the following high level planning application submission programme to the LPA:
- May 2026 - Submission of EIA Scoping Request to the LPA;
 - Autumn 2026 – Pre-application local community consultation events;
 - April 2027 – Submission of planning application to LPA;
 - September 2027 – Likely determination of the planning application.
166. As described in Section 4 we have initiated the planning and consenting process, initially through soft engagement with key regulators and now with formal pre-applications to the local planning authority; Redcar & Cleveland Borough Council (RCBC), the Marine Management Organisation (MMO) and Natural England (NE). As the scheme has developed, we have also worked with landowners to make them aware of our plans and update as we reach increased levels of definition.
167. The programme has been developed and identifies a critical path through planning and consenting which then flows to seasonal marine work. As a result of this interface there is significant risk that any planning delay beyond existing allowances, could delay the whole project. There are elements of the programme that remain within our control to reduce the impact of delays, namely offshore and onshore surveys, preparation and submission of the environmental statement, detailed design and onshore construction activities (which have fewer seasonal constraints) including procurement of long lead-in materials.
168. However, the key risk mitigation is to continue to proactively engage stakeholders and regulators to increase likelihood of a successful planning application. There is a fixed regulatory deadline of March 2030, however, there is a risk of an extension of time requirement of up to one calendar year as we would still need to allow two seasons for the marine works for a contract of this scale to avoid excessive risk pricing (effectively two calendar

years from the point at which all planning permissions are received). While there will be opportunities to exploit and improve the programme within that period, at this time a high level of uncertainty remains. Through discussion with the EA, they may consider an extension albeit there is likely to be a high bar for granting one – in turn, this deadline necessitates the ambitious timetable.

169. The critical path for the scheme is driven by: completion of environmental surveys; EIA Scoping; planning determination; and marine construction (seasonal windows May–September). Any delay to planning determination beyond September 2027 results in a full-season knock-on delay to marine works, directly threatening the March 2030 regulatory date.

6.1.2. Programme optimism bias

170. The Assurer's report for Submission 1 included the following statement proposing attention ahead of the next submission.

'The delivery programme timelines appear optimistic, versus comparable projects in the UK and Ireland with similar outfall diameters and lengths. These comparable projects had 3 years for the construction of the pipelines, whereas for Bran Sands both the design and construction of the pipeline is forecast for 3 years.'

171. Ofwat asked us to address this comment for Submission 2.

172. The current programme is based on submission of a planning application in March 2027 and receiving planning permission in September 2027. We acknowledge that this is optimistic and assumes that there are no significant objections raised. We have shared the proposed timelines with the key regulators and requested their feedback. In these discussions, regulators have accepted that the proposed duration is pragmatic and in excess of statutory determination periods. Supported by early engagement and a commitment from the regulators to adopt a "coastal concordat" way of working to streamline the consenting process, these timelines could be achieved. The critical nature of the planning and consenting process, coupled with the seasonal marine construction activities, has been raised as an 'Issue' through the quarterly reporting process and we intend to engage with OFWAT and the Environment Agency to seek further guidance on applying for an extension to the delivery date should this begin to impact the programme.

173. The construction period assumed in the programme is 30 months (inclusive of two full marine seasons) commencing October 2027. This will allow for a six-month mobilisation period ahead of construction being able to commence in the most seasonally affected areas in May to September 2028 and 2029. Through dialogue with experienced marine contractors there is a level of confidence that the marine construction activities can be completed within one season but allowance for a further season has been made should there be significant delays in the marine construction that impact the works. The construction of the onshore pumping station and pipeline are less critical than the marine works as they have far less significant seasonal constraints.

6.2. KEY RISK AND MITIGATION MEASURES

174. The key programme risks, as shared with OFWAT through the quarterly engagement process, are summarised in Figure 28 below. This has been regularly reported in qualitative format as part of the quarterly engagement with OFWAT. The risk register presented in submission one has been continually reviewed and updated by the project team as the project has progressed. As the project has progressed to a single solution we have taken the opportunity to rebaseline the risk register and have had the preferred delivery partner lead on compiling the latest version which now reflects assumptions applied to costing and scheduling the project. We provide this full risk register in Appendix 5. This table sets out the key risks and summarises mitigation measures with references to the project risk register.

FIGURE 28 - OFWAT RISK REPORTING

Quarterly Engagement Report Ref	Short description	Impact rating	Detailed description	Project Ref ⁷	Owner
RSK001	Planning Permission, Consents and EIA	Amber	The scheme requires planning permission from the Local Authority and will also require a Marine Works License and Consent for works on SSSI/Ramsar. There is a risk that if these consents are not streamlined from the outset that the consenting timeline could become extended due to additional requirements coming in via consultations at different times/stages of the relevant processes. Mitigation underway to initiate pre-application and align consenting bodies.	R05, R06, R25, R26, R27, R29, R39	NWL
RSK002	Landowner and Stakeholder engagement	Amber	The proposed pumping station and pipeline will need to be constructed on land owned by private developers. Options study is underway and constraints are being identified and mapped to inform route selection and construction method.	R03, R32	NWL
RSK003	Existing Assets and DCOs	Amber	There are existing assets in close proximity to the likely pipe route. Some of which are protected oil and gas assets. The proposed pumping station and pipeline will likely be in close proximity to several major developments, some of which have already secured DCO approval. Options study is underway and constraints are being identified and mapped to identify clashes and map land/asset ownership	R11	NWL
RSK004	Marine Construction	Amber	The proposed development will involve installation of a 4.5km marine pipeline. The requirement for dredging of the marine pipeline introduces seasonality to the programme of works. The risk of delay to the project will be increased. The cost exposure of delay will be significantly increased if works are required over more than one working season (May to	R13	NWL

⁷ Reference to Project Risk Register as included at Appendix 5.

Quarterly Engagement Report Ref	Short description	Impact rating	Detailed description	Project Ref ⁷	Owner
			September) leading to demobilisation over winter and re-mobilisation the following Spring/Summer.		
RSK005	Environmental Constraints - Onshore	Amber	Onshore works will be subject to additional approvals due to the nature of the Bran Sands site - historic industrial waste and the sites that need to be traversed. Testing and sampling of ground and groundwater will be required to confirm suitability for construction and confirm requirements for remediation or other mitigation	R02, R25	NWL
RSK006	Environmental Constraints - Offshore	Amber	Offshore works are likely to require dredging in significant volumes. This will need to be supported by environmental testing and sampling (surface and at depth) to confirm suitability of material for release to the marine environment. There has been historical issues with dredging linked to crab mortality in the past and despite an independent report which concluded there was no causal link this remains an emotive topic for stakeholders and the local environment.	R10, R25	NWL
RSK007	Procurement and Contract Strategy	Amber	A case has been made for engaging early with a preferred delivery contractor. This will facilitate NWL working collaboratively with our delivery contractor to develop a solution through the planning and consenting process which utilises input from specialists in the supply chain. However, should this not be successful it will not be possible to achieve the delivery date due to time required for open market procurement. Mitigation: Actively engaging with preferred contractor to agree contract and engage supply chain. Alternative procurement and contract strategy available but timeline for delivery date will not be recovered.	R20, R21	NWL

175. We have made reference to where the qualitative risks have mapped through to the latest version of the project risk register. The project risk register includes a risk assessment and quantification for each item.

6.3. CHANGE LOG UPDATE

176. We provide a completed change log in Appendix 18 and summarise this in section 5.5 of this submission.

7. CUSTOMER PROTECTION

7.1. INTRODUCTION

177. In our Submission 1 in 2025, we proposed a new category of PCDs for the Bran Sands LSO. This would be similar to existing PCDs such as growth at sewage treatment works or water supply schemes – that is, delivery of a specific large project to the specification that customers expected. We said that this should reflect the benefit to customers, measured according to delivering the final agreed capacity for the scheme.

178. We also said that there were no similar programmes with time incentives, and so we did not think it was sensible to specify a time incentive until at least Submission 2 (so that the timing could be confirmed first). However, we said that this should include a non-delivery incentive similar to water resources schemes, with a similar 12-month grace period to reflect the scope for delays beyond our control.

179. Finally, we said that this does not need the flexibility across deliverables that is in the “water supply schemes” PCD, as there are no alternative options that could be delivered instead.

180. In its feedback, Ofwat asked us to:

- Clearly define the PCD for customer protection in the event of non-delivery or under-delivery, in line with those applied to similar schemes within final determinations.
- Set out the key outcome or outputs from the allowance provided for Bran Sands LSO, together with an explanation of how the metric will be measured and tracked over the delivery period.
- Clearly define how customers will be protected from late delivery in the form of a late delivery penalty.

181. For Submission 1, we did not have the final proposed output or costs for the scheme, so we described how the output and late delivery penalty would be expressed and calculated. Now that we have those final proposed output and costs, along with the final determination from the CMA, we have calculated values for the output penalty. We explain how we have calculated this and how this can be updated.

182. In section 7.2 below, we set out our proposed PCD using the same headings as Ofwat uses for the water resources PCD in section 6.1.2 of the [PR24 PCD appendix](#). We have used this as a template so that we can demonstrate that this PCD is clearly defined for customer protection in the event of non-delivery or under-delivery, in line with those applied to water resources in FD24.

183. We note that there is no impact from this project on PCLs, as none relate to this type of activity. The outfall will simply be relocated. This also has no impact on any other PCDs, and none of these relate to the Bran Sands site or to the environment at Seal Sands.

7.2. PROPOSED PCD DESIGN AND VERIFICATION

7.2.1. Deliverable

184. Northumbrian Water is to deliver the long sea-outfall to the agreed design capacity set out in the [new published Ofwat model at in-period determinations for the Bran Sands LSO].⁸

FIGURE 29 - PCD OUTPUTS

PCD outputs (cumulative)	Unit	2025- 26	2026- 27	2027- 28	2028- 29	2029- 30	2030- 31	2031- 32	2032- 33
Outfall capacity delivered	l/s	0	0	0	0	0	6,197	6,197	6,197

7.2.2. Measurement and reporting

185. The benefit to capacity is measured in l/s. The company should report progress against deliverables as per the common reporting requirements set out in the [PR24 PCD appendix](#), section 2.2. That is, the company will report in line with the Delivery Plan guidance:

- Actual and forecast deliverables (l/s)
- Actual and forecast costs (in £m)
- Actual and forecast interim milestones / gateway dates (as defined by Ofwat’s Delivery Plan Guidance).

186. Additional reporting is to include updates on the scheme being delayed or cancelled, changes to scheme scope that result in a change to capacity, or changes to the scheme being delivered. This should be done through quarterly reporting in the first instance, as well as in the Delivery Plan.

187. The schedule set out in Ofwat’s in-period determination will form the baseline for the delivery of this PCD.

7.2.3. Other conditions

188. For the purposes of this PCD, for the PCD to be confirmed as delivered, it must be fully commissioned, operational, and in permanent use. The solution delivered must be permanent and not temporary.

189. We considered a clawback for reduced capacity, but we consider that delivering the design capacity is a requirement of WINEP and so a reduced design capacity would not be acceptable. We have expressed the capacity within Figure 29 above; alternatively, this could be expressed as a single deliverable (so just “1” project in Figure 29) and a separate “other condition” for the design capacity requirement.

7.2.4. Assurance

190. Common assurance requirements apply as set out in the [PR24 PCD appendix](#), section 2.3.

⁸ We note that this follows the same format as the FD24 approach – Ofwat may wish to include this table directly in its in-period determinations document or in a separate model.

191. In addition to these requirements, independent third-party assurance should be provided on:

- The total design capacity of the long sea outfall delivered (that is, compared to the design capacity required in the PCD).
- Any reasons for schemes being delayed or cancelled.

192. These third-party assurance checks will be supplemented by a contractor completion certificate.

193. Independent third-party assurance should also be provided on the company forecast of deliverables and costs for 2028-29 and 2029-30. The assurance on these forecasts should be provided in July 2028 (and in line with updates to Ofwat's Delivery Plan guidance).

7.2.5. Payments: non-delivery

194. Non-delivery is determined as delivering a capacity less than set out in the PCD delivery profile. This does not require a complicated formula as it is binary, so it is defined simply as:

$$\text{Non – delivery PCD payment} = \text{Payment rate}$$

195. Where the payment rate is determined according to the determined cost of the scheme. We expect Ofwat to calibrate this value after real price effects and frontier shift, as it will calculate this (along with any revisions to costs) as part of its in-period determinations. This should take the CMA final determinations into account.

Non-delivery PCD payment	Unit	Underperformance rate
Bran Sands long sea outfall	£m	255.951

Note: this is set at the total scheme cost (see 5.2)

196. We note that as the capacity is set as a threshold, the units for non-delivery payments are £m rather than using capacity as a denominator. That is, it is not possible to deliver only part of the capacity.

7.2.6. Payments: time incentives

197. As the delivery date for this PCD is 31 March 2030, we do not propose a specific time incentive for this PCD. Instead, Ofwat's updated approach to non-delivery PCD flexibility⁹ provides the same protection for customers.

198. That is, if the company does not deliver the PCD output by 31 March 2030 but the output is still required to be delivered in AMP9, Ofwat will:

- Not apply non-delivery PCD clawback at the end of the 2025-30 period where the company has spent at least 60% of the allowed expenditure within this PCD. The non-delivery PCD clawback will be applied if the company fails to deliver the PCD output by the end of the 2030-35 period.
- Apply late delivery penalties in the form of a time incentive PCD so that the company is not better off by delivering late.

⁹ [Price-control-deliverables-guidance-Feb-4-republishing.pdf](#)

199. Alternatively, if the company has not spent at least 60% of the allowed expenditure within this PCD, Ofwat will apply the non-delivery PCD clawback at the end of the 2025-30 period. This will be adjusted in line with Real Price Effects (RPE) as applied in the CMA final determinations.
200. We understand that Ofwat has taken this approach without specifying what the AMP9 late delivery penalties would be, because this calculation depends on financing costs in 2030-35 too. We propose that late delivery penalties, if required, would be calculated in the same way that Ofwat sets out in the [Changes to Price Control Deliverables Guidance](#) and would be set at PR29.
201. This protects customers and the environment because it removes any potential benefit to delaying delivery. We note that for the water resources PCD set at FD24, the underperformance rate is (at its highest) set at 0.7% of the non-delivery PCD payment. We would expect non-delivery penalties applied at PR29 to be at least as high as this. Alternatively, if Ofwat prefers to set a time incentive now, we can accept this alternative approach.

8. PROCUREMENT AND OPERATION MODEL

8.1. INTRODUCTION

202. Large schemes sit within a water company's in-house delivery portfolio, and as a result, no specific procurement requirements exist. However, the Bran Sands LSO project is of significant scale and complexity especially within the on-shore and off-shore pipelines. Northumbrian Water has developed a Procurement Strategy setting out its approach to supply chain engagement and deliverability of the project, The objective of the strategy is to demonstrate how we have assessed the existence of supply chain capacity and capability chain to deliver and commission the project in line with the statutory programme requirements. The completed project will be operated and maintained by Northumbrian Water and these requirements have also been assessed from both the NWL and supply chain angle.

8.2. OVERVIEW OF PROCUREMENT STRATEGY

203. The recommended procurement strategy included in Appendix 20 was created with the benefit of incumbent and open market supplier engagement, which included specialists from a number of fields.
204. We released a Preliminary Market Engagement Notice (PMEN)¹⁰ in August 2025 to raise awareness and seek supplier engagement for the project. We engaged suppliers through questionnaires, receiving 33 completed response. We further engaged with 16 of those suppliers at a full day collaborative workshop in September 2025 to gather feedback on the market appetite, market capability, preferred route to market and risk appetite.
205. We conducted a similar engagement with our existing supply chain. Engaging with our living water enterprise partners which includes seven Design and Build Contractors and five consultants with experience across environment, engineering, commercial and contract.

¹⁰<https://www.find-tender.service.gov.uk/Notice/046931-2025?origin=SearchResults&p=1>

206. The combined output was to recognize that the key risks we were seeking to mitigate against were programme constraints, design maturity, planning and consenting. The result was therefore to engage the existing supply chain who could demonstrate benefit of major project delivery, site knowledge and long sea outfall experience in a mechanism that encourages early engagement of specialist suppliers and subcontractors.

207. The recommended procurement strategy enabled

- Early Contractor Involvement,
- Coordinated design of on and offshore packages,
- Flexibility for undefined package boundaries,
- Contractor input to Planning & Consenting,
- Procurement of long lead plant and materials, and
- Reduced programme lag by enabling procurement concurrent to planning and consenting activities.

208. The procurement strategy was approved at Asset Management Investment Board (AMIB) in December 2025. The Project will be procured using standing framework agreements and call-off provisions. This confirmed the primary route for contracting the Works would be a NEC4 ECC utilising X22 to facilitate Early Contractor involvement.

209. The other main elements of procurement are services which come primarily from the following providers:

Strategic Technical Partner	Planning Consultants (Town & Country Planning)
Stantec	Lichfields
Jacobs	
Strategic Commercial Partner	Third Party Assurance (OFWAT LSGP)
Aqua Consultants	AtkinsRealis
Turner & Townsend	Price Waterhouse Coopers (PWC)
Design & Construct Partner	
Costain	

8.3. OVERVIEW OF DELIVERY STRATEGY

210. The procurement strategy was developed into a project delivery strategy following approval at AMIB in December 2025 and is included in Appendix 21.

211. **Project Scale and Complexity:** the delivery strategy acknowledges the scale and complexity of delivering the project within AMP8 and the challenging offshore and onshore environments. Across the design development, investigations, completion of consents and planning approvals to the detailed planning and preparation for the commencement of construction there is a need to progress at pace whilst not overlooking the inherent risk and losing sight of delivering best value for customers. The Operating Model has been designed to optimise project planning, development and delivery, and integration of delivery partners.

212. **Operating Model:** implementation of the delivery strategy is through the proposed Operating Model which is founded on a fully integrated and collaborative delivery team framework comprising NWL, the Strategic Technical Partners (STPs) Stantec and Jacobs, Strategic Commercial Partners (SCPs) Aqua and Turner & Townsend and the Delivery Partner Costain.

213. **Management of Critical Interfaces:** the project contains several critical interfaces that need to be proactively managed to ensure successful delivery. Examples include the dependency between marine survey mobilisation, EIA completion and Marine License determination, and the integration of environmental assessments with design evolution, hydraulic performance across pumping station, onshore and offshore assets. The early engagement of Costain as a delivery partner provides construction expertise, procurement leadership and interface management, supported by specialist subcontractors for marine pipelines, tunnelling and major civils. This model reduces interface risk and ensures technical, commercial and delivery inputs are aligned from the earliest stages of the project.
214. **Project Delivery Control Points:** the delivery strategy outlines NWL expectations on programme, pricing and risk and the operating model provides control points at the relevant stages of governance and contracting designed to prompt periodic review of forecast outcomes.
215. **Supporting Delivery Certainty:** alternative procurement routes have been identified should they need to be invoked at any point in the future. Full visibility and proactive management of the risks to delivery, supported by thorough stage gate reviews will enable delivery continuity in the event of a change of procurement and delivery strategy is required.

8.4. CONSTRUCTION AND COMMISSIONING

8.4.1. Assessment of resource need

216. The project is constrained by the resources available in the current market. The water industry has embarked on a programme of work in AMP8 that will require additional supply chain and skilled labour if it is to be efficiently delivered within the investment period.
217. We have selected our preferred supply chain partner based on a 'best athlete' approach. This recognises the skills, knowledge and experience we seek to leverage directly from the supplier and that which will come from their engagement of specialist subcontractors and suppliers.
218. In the context of the water industry there will be typical concerns on lead time for PLC/MCCs, large diameter pipes, high output pumps. These will be addressed through early engagement and the benefit of the proposed contract operating model which will facilitate early procurement where necessary.
219. During the development of Bran Sands LSO project, we have identified in Figure 30, the following mitigation measures.

FIGURE 30 - MITIGATION MEASURES

Resource	Mitigation
Marine pipeline design	Due to the infrequency and highly specialist nature of long sea outfalls we have identified that there is limited knowledge and expertise in marine pipelines within the UK. We have therefore identified a preferred marine pipeline designer and engaged them as a subcontractor through the existing Strategic Technical Partner framework to leverage this and compliment our existing resources.
Large diameter pipe	We have identified a requirement for a significant volume of large diameter pipe for the onshore element of the pipe. We have identified suppliers capable of producing large diameter GRVE and Polyethylene. We are seeking to explore material options further to realise efficiencies such as long length delivery by sea utilising the neighbouring deep water quay or reducing the pipe diameter and installing multiple pipelines. This would improve logistics, handling and construction durations.
Long Length Large diameter pipe	We have identified that there is very limited sources of supply of long length large diameter PE pipe for the offshore element. We have engaged with the most local supplier, based in Norway, who has been engaged in multiple UK marine pipeline projects. The supplier has confirmed that they currently have capacity to support the project. We are seeking a slot agreement which will secure the necessary production capacity aligned to the forecast delivery date.
Shaft and tunnel Construction	Shaft and tunnel resources are in high demand due to increased infrastructure programmes. There is increased demand in the Water Industry as the Storm Overflows programmes
Marine Pipeline Installation	There is a limited supply chain for marine pipeline installation however, there is a more substantive supply chain and hence competition for dredging generally. Reference projects on parallel timelines include the Greater Dublin Drainage Scheme
High output pumps	Long lead item as the pumping capacity is in excess of standard pump units. Opportunities to work with Designer, Contractor and Suppliers to optimise and seek alternative pumping arrangements that minimise bespoke pump units and operational reliance on long lead spares.
Investment in Teesside	There is the opportunity to work with other developers on Teesside to build a local skills base due to the number of large scale developments which are running to similar timelines.

8.4.2. Assessment of supply chain capacity and capability

220. The challenge on supply chain capacity is a result of limited investment in skills and an increase in the required output. This can be managed but not mitigated within a project. We cannot directly influence the number of skilled workers within the specialist supply chain, but we are in a position to encourage our suppliers to invest in training and skills development. We have proposed a minimum number of apprentices and graduates to be deployed by Costain directly on to the project, recognising the scale of the opportunity and the long duration of the project which would provide huge experiential benefit to those graduates and apprentices.

221. We acknowledge that as a project we need to attract suppliers. We will have to compete with other projects that are contending for the same resources. The proposed delivery model seeks to lean into this by engaging earlier and using this as an opportunity to engage the most capable suppliers ahead of other projects which take a more traditional approach to supplier engagement.

222. The proposed delivery model seeks to develop relationships with key suppliers and subcontractors seeks to provide the supply chain with an earlier and more reliable forward forecast of requirements and develop knowledge and relationships with suppliers which encourages them to invest and scale their workforce.

223. More widely, we have assessed our supply chain capacity across the whole of our capital programme – and confirmed that our large scheme gated process projects and our proposed (2026) asset health projects together are still well within the overall capacity of the supply chain in AMP8. We had already assumed that this project would be required as part of our PR24 business plan, and the challenge here is more about specific skills rather than overall capacity – and so we have not provided more detail here. We can provide more detail about this on request.

8.5. OPERATION AND MAINTENANCE

8.5.1. Assessment of NWL and supply chain capacity and capability

224. We have engaged with their supply chain to seek additional capability for the delivery of Bran Sands Long Sea Outfall. Due to the infrequent requirement for new long sea outfalls in the UK, we sought support from our supply chain to bring in capabilities for major projects that include marine works.

225. In Costain, we have sought to engage a partner who has ongoing experience of working in the Tees Industrial cluster, having been engaged in the Northern Endurance Partnership and Net Zero Teesside developments adjacent to the Bran Sands site. Costain have also completed the Swalediffe scheme for Southern Water which included the construction of onshore infrastructure and a marine pipeline.

226. While the Bran Sands LSO scheme is a significant undertaking, some elements of the work can be considered common across the water industry. The pumping station including civils, mechanical and electrical installations is within the capability of the existing supply chain, as is the terrestrial pipeline. The challenges of traversing the sensitive SSSI/Ramsar site and connecting a tunnel to a marine pipeline are the niche areas of the project. For the Works required for the marine pipeline it is recognised that there is a smaller supply chain and therefore early engagement and contractor selection is required to secure resources. The tunnel can be delivered by a number of suppliers and therefore there is resilience in the supply chain and the opportunity to maintain competitive tension in the earlier stages of the project if necessary. The marine pipeline is more specialist. While there are several contractors who have delivered marine pipelines, installations of this length and diameter are rare. The requirement for a dredged trench and the need for highly specialised equipment in water depths in excess of 20m reduces the supply chain further. The ability to engage specialist contractors early through an ECI mechanism is invaluable in getting their early insights as well as securing their capability for the proposed programme.

9. STAKEHOLDER AND CUSTOMER ENGAGEMENT

9.1. EVIDENCE OF ENGAGEMENT

227. The objectives for our customer and stakeholder engagement in respect of this project are set out in a separate communications plan however in summary are:

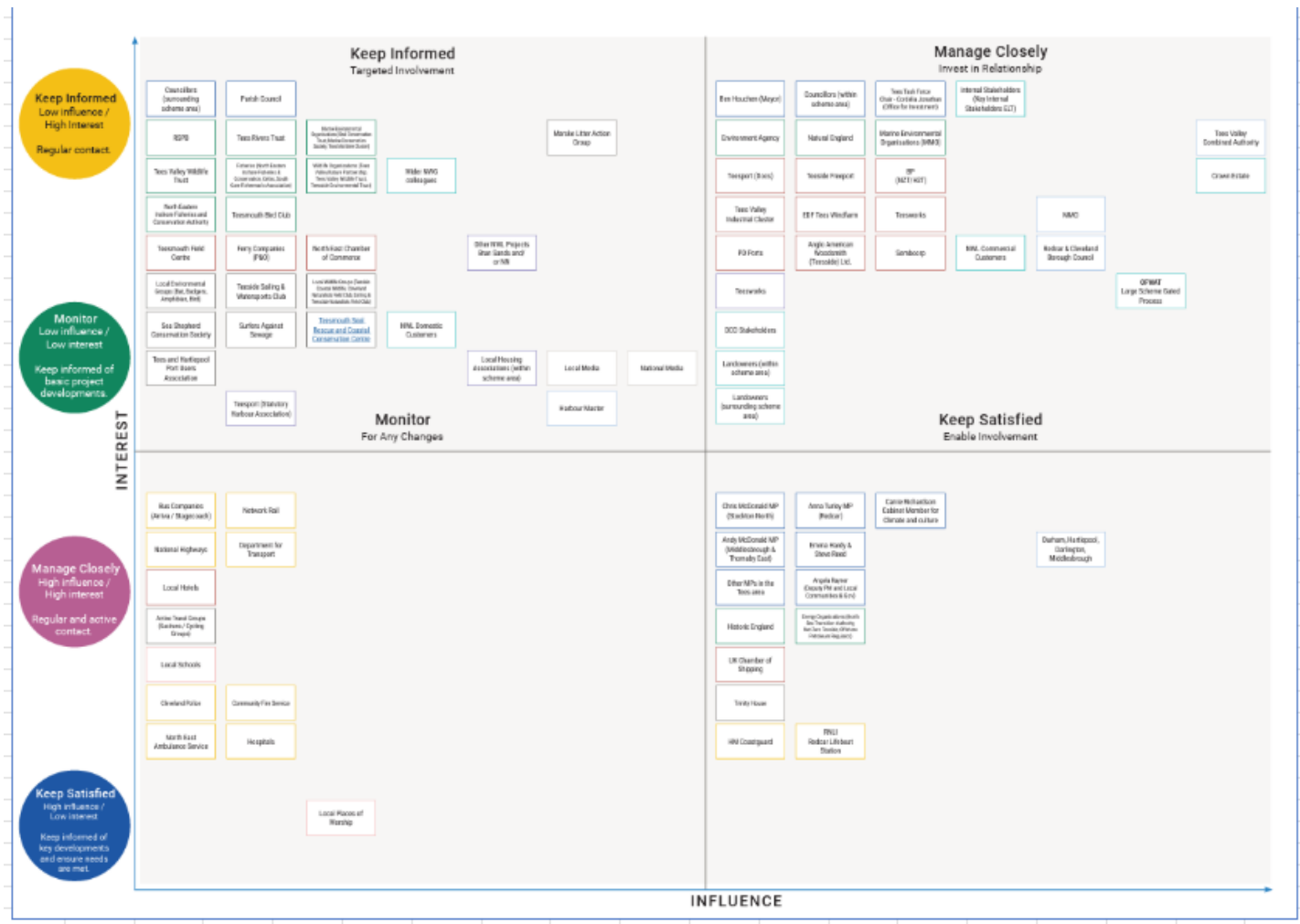
- To increase understanding of customers and stakeholders that we care for the environment and are taking action
- To show, and deliver, leadership in the environmental protection sphere
- To facilitate effective two- way communications and encourage feedback from stakeholders so that their views, issues and comments can help shape future communications planning and project delivery.

228. Our overarching engagement with key stakeholders is to be conducted via a Technical Advisory Group , led by the Environment Agency (EA) and including representatives of Natural England (NE), the Marine Management Organisation (MMO), Redcar & Cleveland Borough Council (RCBC) and the Ministry of Housing, Communities and Local Government (MHCLG), along with relevant NWL staff.

229. The inaugural meeting of the Technical Advisory Group was held on 18 February 2026 with a follow up scheduled for May 2026. It was agreed that the consenting bodies would hold a separate meeting to agree scope and ways of working aligned to the coastal concordat. This is aimed to streamline the consenting process and alleviate pressure on the consenting timeline.

230. A more comprehensive list of stakeholders has been mapped out and was provided in Annex D to Submission 1, the extract below is illustrative only.

FIGURE 31 - STAKEHOLDER MAPPING



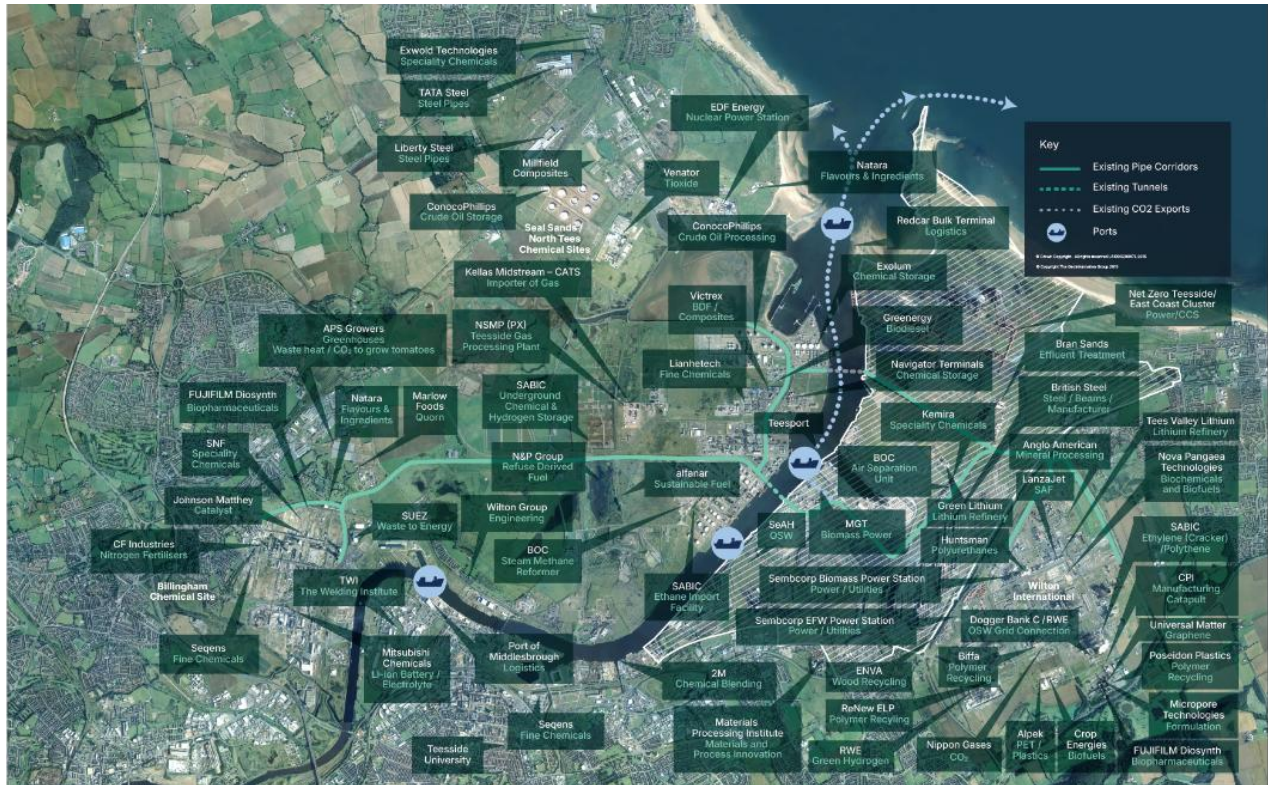
231. A detailed stakeholder log is being used to track completed and planned engagement, and align stakeholders with NWL representatives. A copy of this log is available in Appendix 22.

232. Section 4 of this document sets out specific pieces of engagement that are in progress in relation to ensuring compliant delivery of the scheme, in summary this consists of:

- To obtain Planning Permission, engagement is ongoing between NWL and Redcar and Cleveland Borough Council (RCBC).
- Engagement with various relevant stakeholders to develop a Habitats Regulation Assessment and Environmental Impact Assessment.
- Engagement with Natural England, in order to acquire SSSI assent.
- Engagement with the Marine Management Authority, to obtain a Marine Licence for the works.
- Engagement with Crown Estates (re seabed access) and other landowners – see in more detail below.

233. The Tees Industrial Cluster where the Bran Sands site is located comprises a complex picture of land ownership and industrial assets, and mapping these has been crucial to further developing our engagement strategy (as well as providing valuable input to the overall design of the scheme).

FIGURE 32 - OVERVIEW OF THE TEES INDUSTRIAL CLUSTER



234. As a result, NWL has actively engaged with landowners and operators in the area where we believe that our development will impact on their land and/or their business operation.

FIGURE 33 - SUMMARY OF ENGAGEMENT WITH LANDOWNERS

Stakeholder/Landowner	Relevance to Scheme	Engagement to Date
BP	Consented DCO. Carbon Capture Utilisation and Storage Scheme. Direct interface to working areas and risk of simultaneous operations.	Several informal meetings and share of information. NDA secured for further information sharing.
EDF	Owens the Tees Offshore Windfarm – need to agree proximity to the outfall scheme.	Online meeting on 10/02/2026 to update EDF on our proposals and request feedback and agreement to the proximity of the outfall scheme.
CATS	The existing offshore pipeline is in close proximity to the proposed pipe route. Nationally significant asset requiring proximity agreement.	Minuted meetings to share progress on design and seek acceptance of proposed route.
Breagh	The existing offshore pipeline is in close proximity to the proposed pipe route. Nationally significant asset requiring proximity agreement.	Minuted meetings to share progress on design and seek acceptance of proposed route.

Stakeholder/Landowner	Relevance to Scheme	Engagement to Date
PD Ports	PD Ports are a statutory harbour authority and will need to approve a Harbour Works Licence.	Online meeting on 20/02/2026 to discuss the latest scheme proposal.
Teesworks	Adjacent landowner. Identified on the preferred route and will need agreement for access to survey and construction.	Monthly meetings to share progress on design and seek acceptance of proposed route.
Anglo American	Adjacent landowner. Identified on the preferred route and will need agreement for access to survey and construction.	Regular meetings to share progress on design and seek acceptance of proposed route.
Sembcorp	Operator of Wilton International Industrial Complex.	Regular engagement through the NWL Commercial Team as relationship owner. Engagement required to agree access for surveys and possibly construction traffic.
Crown Estate	Owns the seabed between MLWS across which the outfall will run.	See Section 4 for details.
RCBC	Own the beach as far as MLWS.	Online meeting on 04/03/2026 to discuss scheme proposal and survey requirements.

235. The above has been supplemented by engagement with the relevant Member of Parliament (for Redcar) along with local councillors, and has comprised:

- A meeting on 04/08/2025 between Heidi Mottram (CEO) and Anna Turley (MP for Redcar)
- A project update issued on 19/02/2026 to council members for Coatham and South Bank Wards, Council Leader, and the Tees Valley Mayor

236. Finally, during April 2026, we wrote to all key stakeholders setting out a summary of the scheme and seeking letters of support in response. Letters of support received prior to submission of this document are included in Appendix 23.

237. We note that the Ofwat guidance requires us to confirm that we have completed non-statutory consultation and be undertaking pre-planning consultation (or planning application and permission). We set out our planning permission programme in section 4.2 above, which confirms that we have made our formal pre-application submission and we expect to be carrying out pre-application local community consultation events in Autumn 2026, before submission of the planning application in April 2027.

9.2. STAKEHOLDER AND CUSTOMER ENGAGEMENT RISKS

238. The key risks and mitigation measures related to stakeholder and customer engagement have been continually reviewed since submission one to reflect development of the project to Concept Design stage. The updated risk register is included in Appendix 5.
239. We have identified stakeholder risk in relation to building an asset across third party land. While we hold rights under the Water Act to construct new pipelines these do not extend to the pumping station, nor do they apply to the marine pipeline which is under the jurisdiction of the Crown Estate. Good stakeholder relations are required to secure access.
240. The general public, including our customers, will be aware of two areas of contention: the construction of a long sea outfall rather than a less infrastructure intensive solution; and the requirement for dredging which will raise historic concerns related to crustacean die off and seal pup mortality. We note that these historic concerns are reputational risks only: neither the [multi-agency investigation](#) into the October 2021 event nor the [subsequent local government investigation in 2025](#) found any link between dredging and this event. However, this remains a concern for customers and local stakeholders.
241. We raised potential customer concerns about the construction of a long sea outfall in 2023 and 2024 during the development of WINEP and our PR24 business plan, including asking our customers for their views about this. In our NES28A enhancement case provided to Ofwat at DD24, we explained this:

“Our customers did not originally support a long sea outfall when we asked them about this during the business plan process, as this is more expensive and does not have more benefits than the nature-based solutions alone. However, customers asked us to seek alternative nature-based solutions alongside challenging Defra on an NTAL solution (at the time of our first research, we estimated the costs at £292m or £390m at Teesmouth, depending on the requirements). In our pre-acceptability Part B research, customers said they supported nature-based solutions but understood the risk of a later bill increase if these were not effective – and preferred this to an immediate larger increase.

We asked our customers in July 2024 what they now thought about changing our plan to include the building of a long-sea outfall. Customers were generally surprised that this was needed but were mostly willing to trust regulators that this was needed (and did not feel able to say if this was important or not). The majority of our small group of customers thought this was acceptable (an average score of 6.64 out of 10, where 10 was very acceptable and 1 was very unacceptable).”¹¹

¹¹ [NES28A](#), p6

242. We would expect customers to continue to raise concerns about the long sea outfall and whether or not this is the best value solution, as they are required to pay for this through their bills. We will seek to share this reputational risk with the Environment Agency, as this is a statutory requirement that we must now deliver. Customers might also raise concerns about any potential environmental impact of the long sea outfall itself – although this is treated wastewater which causes no harm to the environment, there is likely to be some confusion with storm or emergency overflows.
243. We will continue to engage with customers locally through the construction phase of the project to mitigate these risks, including through the [dedicated page for this project](#) in our Community Hub.

10. ASSURANCE

244. As required by Ofwat in the guidance set out in Section 4.2.2 of '[PR24 large scheme processes guidance](#)', we have appointed PwC and Atkins to provide a third-party assurance report. These assurance providers also assessed our wider Delivery Plan forecasts and understand our delivery capacity and planning as a whole.
245. We provide the third-party assurance statement as Appendix 24.

11. EFFICIENCY OF EXPENDITURE TO DATE

11.1. BREAKDOWN OF SUBMISSION 2 COSTS

246. We have managed our expenditure within the PR24 development allowance. We have achieved some efficiencies through the use of existing framework suppliers through the feasibility stage and efforts to conduct extensive data gathering, stakeholder engagement and desk surveys prior to engaging in field work.
247. In preparation for AMP8 the Living Water Enterprise was established. This involved procurement of commercial, engineering and delivery partners. By utilizing these partners we have been able to mobilise resources rapidly and utilize existing
248. The project has benefited from information sharing across other projects in the Nutrient Neutrality programme and the availability of an existing hydrodynamic model being in place which is currently undergoing upgrades to support a revised model with greater accuracy.
249. The ability to engage existing consultants and contractors and support them with specialists from the wider supply chain has enabled a team to form quickly and with relative ease as the project has transitioned from Feasibility to Design.
250. Early contractor involvement has supported rationalization of key deliverables including the programme, cost estimate and risk register while accelerating to achieve the required survey outputs in 2026 to support definition design and EIA related studies and outputs.
251. Figure 34 summarises the expenditure we have incurred in progressing the project to Submission Two, and provides a forecast of expenditure to achieve Scheme Determination and Scheme Completion. The cost allocations use the work breakdown structure for capital projects, applying different types of expenditure and

activities to those categories. In the early stages of projects, the majority of costs are allocated to the Project Management, Feasibility and Acceptance Management categories. As the project develops and moves through delivery phases costs are allocated to the Design category and the Implementation category. We provide further details on forecast of project expenditure through to December 2026 and scheme completion in Figure 34.

FIGURE 34 - EXPENDITURE FOR SUBMISSION TWO (FY22/23)

Cost Category	Description	Submission Two	Scheme Determination (Dec 2026)	Scheme Completion
Project Management	NWL PM, External PM, Planner, Project Comms	£212,197	£565,859	£2,307,999
Feasibility	Strategic Partner Cost, LPA engagements, Early investigations (WQ, GI), Assurance Activities, Cost Estimation,	£1,224,102	£1,302,166	£1,302,166
Design	Strategic Partner Costs, EIA and associated surveys, enhanced GI, Topographic surveys	£1,079,112	£7,604,470	£7,604,470
Implementation	Construction Costs, BNG, Site Supervision, Contract Management	£-	£-	£207,533,741
Acceptance Management	Internal Engineering Support, Operations Input	£89,300	£-	£651,870
Risk		£-	£1,768,311	£36,550,428
Total		£2,604,710	£11,240,807	£255,950,675

11.2. COMPARISON AGAINST DEVELOPMENT ALLOWANCE

252. The PR24 final determination allowed a project development budget of £29.63m for the Bran Sands LSO (before frontier shift and RPEs). This amount represented 12% of total scheme cost set out in our original business case (NES28A) and was thought to be sufficient to allow the project to be sufficiently defined to enable design, engineering and procurement. We had noted that there was potential for long lead procurement, and this may necessitate early expenditure to commit suppliers to the project.

253. The forecast of costs associated with the remaining stages of scheme development and before commencement of scheme delivery are shown in Figure 34. We no longer anticipate that long lead procurement or land purchase would lead to a significant increase in expenditure before Scheme Determination.

254. We have shared these scheme costs and forecasts with our third-party assurers to enable their assessment of the efficiency of expenditure to date.

12. CONCLUSIONS AND RECOMMENDATIONS

12.1. CONCLUSIONS

255. We have developed our final preferred option 2A, and this has now gone through the concept design stage to our governance “Gateway 2” by 1 May 2026. This is consistent with our expectations for Submission Two, and so this project remains on track. Our preferred option meets the overarching compliance requirements to meet the primary statutory nutrient neutrality obligations affecting the Teesmouth & Cleveland Coast SPA (while avoiding adverse impacts on water quality in the Tees Estuary and bathing waters along the Redcar coast).
256. We have updated our cost estimate for option 2A, using three sources of estimates that included specialist experts in this area. The final cost estimate is £255.9m, broadly consistent with the estimate of £245.4m made in the PR24 business plan (and less than the cost estimate of £254.2m made at Submission 1).
257. We note that along with our asset health submissions in the cost change process, we are asking Ofwat to update totex allowances and allow revenue adjustments in-period. Our separate submission (which is not part of the large scheme gated process) explains why this is needed.
258. We have updated the project-level milestones and activities to reflect the development of the project to concept design stage, and we maintain the original completion date of 31 March 2030. We have proposed a new PCD for the Bran Sands LSO, to protect customers.
259. Customer and stakeholder engagement remain a core focus in the on-going development of the Bran Sands LSO project. Our overarching engagement with key stakeholders is conducted via a Technical Advisory Group, led by the Environment Agency (EA) and including representatives of Natural England (NE), the Marine Management Organisation (MMO), Redcar & Cleveland Borough Council (RCBC) and the Ministry of Housing, Communities and Local Government (MHCLG), along with relevant Northumbrian Water staff.
260. We have regular contact with landowners whose land the scheme will run through. In addition to a comprehensive list of wider stakeholders, we will continue to maintain proactive engagement with customers, statutory consultees and impacted organisations throughout the next stages of scheme development.

12.2. KEY RECOMMENDATIONS FOR DELIVERY PHASE

12.2.1. Securing Delivery Certainty

261. The Bran Sands LSO project is of significant scale and complexity especially within the on-shore and off-shore pipelines. We have developed a Procurement Strategy setting out our approach to supply chain engagement and deliverability of the project. The strategy demonstrates how we have assessed the existence of supply chain capacity and capability chain to deliver and commission the project in line with the statutory programme requirements.
262. The procurement strategy was created with the benefit of incumbent and open-market supplier engagement, which included specialists from a number of fields and engaging our Living Water Enterprise partners. This has

led to the engagement of the existing supply chain who could demonstrate benefit of major projects, site knowledge and long sea outfall experience in a mechanism that encourages early engagement of specialist suppliers and subcontractors.

263. We have selected our preferred supply chain partner Costain based on a 'best athlete' approach. This recognises the skills, knowledge and experience we seek to leverage directly from our delivery contractor and that which will come from their engagement of specialist subcontractors and suppliers.

264. However, we note that there are still key risks around planning permission and consents – which are increasing (see section 6). There are plans in place to mitigate these risks, but it will remain a key focus for the delivery phase.

12.2.2. Customer and stakeholder engagement

265. We have several key risks that relate to customer and stakeholder engagement – and this project must manage a complex set of needs and priorities, that could be emotive (as it relates to environmental management). Although we have set out our mitigation measures and customer and stakeholder engagement plans in this report, this will likely evolve and this will need to remain a key focus for the delivery phase.

13. SUPPORTING DOCUMENTATION

266. The following documents have been referenced in drafting this response and can be found in the separate accompanying folders.

- Appendix 1 – Summary of Seal Sands Optioneering
- Appendix 2 – Options Evaluation Report
- Appendix 3 – Design Report
- Appendix 4 – Environmental Constraints Maps
- Appendix 5 – Risk Register
- Appendix 6 – NWL Governance Map
- Appendix 7 – Technical Governance Review Meeting (TGRM) Presentation and Minutes
- Appendix 8 – Preferred Scheme Plan and Sections
- Appendix 9 – Lichfields Consenting Briefing Note
- Appendix 10 – Copy of Pre-Application Enquiry Letter
- Appendix 11 – Brans Sands LSO Carbon Estimate Report
- Appendix 12 – Cost Estimates to PR24 and Submission 1
- Appendix 13 – Aqua Cost Estimates for Shortlisted Options
- Appendix 14 – Costain Contractor Estimate
- Appendix 15 – Haskoning Independent Cost Benchmarking Estimate
- Appendix 16 – Estimate of Client Costs
- Appendix 17 – LWE Estimating Process
- Appendix 18 – Change Log
- Appendix 19 - Bran Sands LSO Main Programme - Costain - Issued for Information
- Appendix 20 – Procurement Strategy
- Appendix 21 – Delivery Strategy
- Appendix 22 – Stakeholder Engagement Log
- Appendix 23 – Letters of Support
- Appendix 24 – Assurance Reports