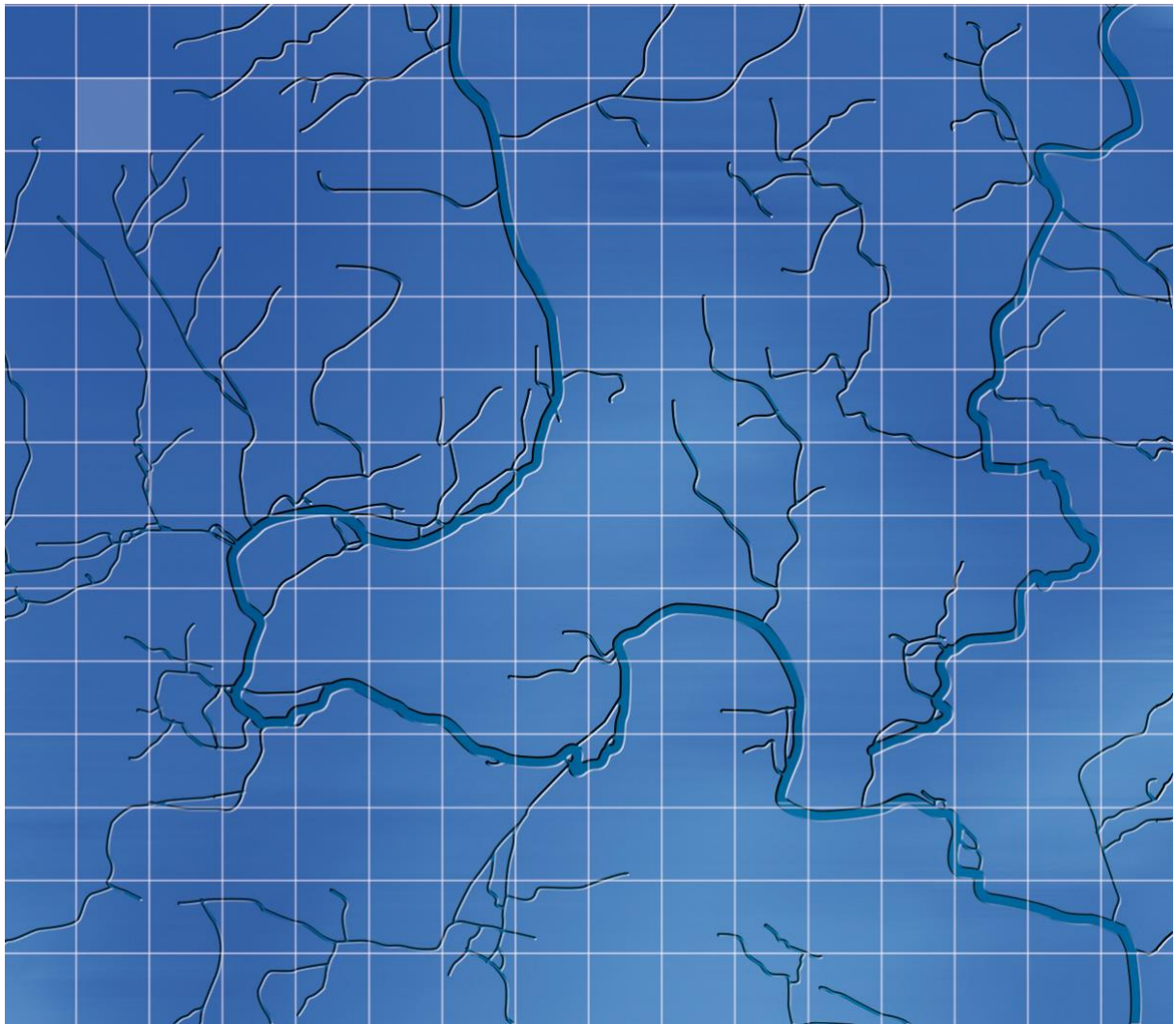


Conwy County Borough Council

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Kinmel Bay GI WFD Screening Assessment



WHS

Conwy County Borough Council

Kinmel Bay Ground Investigation WFD Screening Assessment

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For and on behalf of Wallingford HydroSolutions Ltd.

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1 Introduction

Wallingford HydroSolutions Ltd (WHS) has been commissioned by Conwy County Borough Council to complete a Water Framework Directive (WFD) Screening Assessment for the ground investigation work associated with the Kinmel Bay coastline improvements. This is to be submitted, as required by NRW to support the Marine License Application for the ground investigation works. The future coastal improvements will include the construction of setback flood walls, enhancement and improvement of rock revetment, raising of seawall crests, beach recharge, and reinstatement of sand dunes, which will form a separate Marine License Application at a future date.

The aim of this report is to identify the relevant WFD groundwater and surface water bodies located within the vicinity of the site and to assess if the proposed ground investigation for the development is compliant with the objectives of the WFD for the identified areas.

1.1 Legislation

The Water Framework Directive is a European Union legislation transposed into law in England and Wales by the Water Environment (Water Framework Directive) (England and Wales) Regulations 2003. The directive seeks to protect and enhance the ecological and chemical health of rivers, lakes, estuaries and coastal and groundwaters. The aim of the WFD is for all waterbodies to achieve “good status” by 2027. Waterbodies are assessed within River Basin Management Plans which allows the waterbody to be managed as a natural geographical and hydrological unit.

Each river basin has a River Basin Management Plan (RBMP) which sets out the current status and objectives for the waterbody required to achieve good status by 2027 in terms of ecological, chemical and protected area objectives. The status of each waterbody is reassessed regularly as part of WFD Cycles. The first cycle ended in 2015, for those waterbodies which did not achieve good status the target date was extended to either 2021 or 2027. The 2021 update is yet to be published.

To achieve good ecological status or potential, good chemical status or good groundwater status each element must be assessed as good status or better. If a single element is below the threshold for good status, then the water body’s status cannot be classed as good.

Surface Water Criteria

Surface water bodies can be classes as high, good, moderate, poor or bad status. The ecological status of surface waters is assessed based on the following,

- Biological quality – fish, benthic invertebrates, aquatic flora
- Hydromorphological quality – riverbank structure, continuity of channel or substrate of the river bed
- Physico-chemical quality – temperature, oxygenation and nutrient conditions

The chemical status refers to the environmental quality standards specific water pollutants.

Groundwater Criteria

The groundwater bodies are assessed according to their “quantitative” or “chemical” status.

1.2 Guidance and Methodology

There is no formal guidance for producing WFD Assessments for surface water bodies in England and Wales. The English Government however do provide guidance from the Environment Agency (EA) on completing WFD assessments for estuarine and coastal waters¹, this guidance has been taken into consideration for the completion of this assessment. The following approach has been taken for this assessment;

- **Screening:** Identify whether the proposed activities should be screened in to the assessment, based on their potential to impact the WFD water bodies.
- **Scoping:** For each WFD element, record current water body status, future objectives and any activities within the vicinity of the waterbody which may influence the status of the waterbody. Identify any protected sites which could be impacted by the proposed works.
- **Assessment and mitigation:** Identify the extent to which the development will influence (positively or negatively) the WFD elements. Identify where actions can be incorporated into the development to mitigate any negative effects of the development.

1.3 Site Description

The proposed ground investigation work will be undertaken to inform flood defence improvement works along the North Wales coast from Llanddulas (NGR: 288670, 378715) to Kinmel Bay (NGR: 299610, 381055). This is an 11km section of the coast, the scheme area is depicted in Figure 1.

¹ Environment Agency, Water Framework Directive assessment: estuarine and coastal waters, published December 2016. Available via: <https://www.gov.uk/guidance/water-framework-directive-assessment-estuarine-and-coastal-waters>

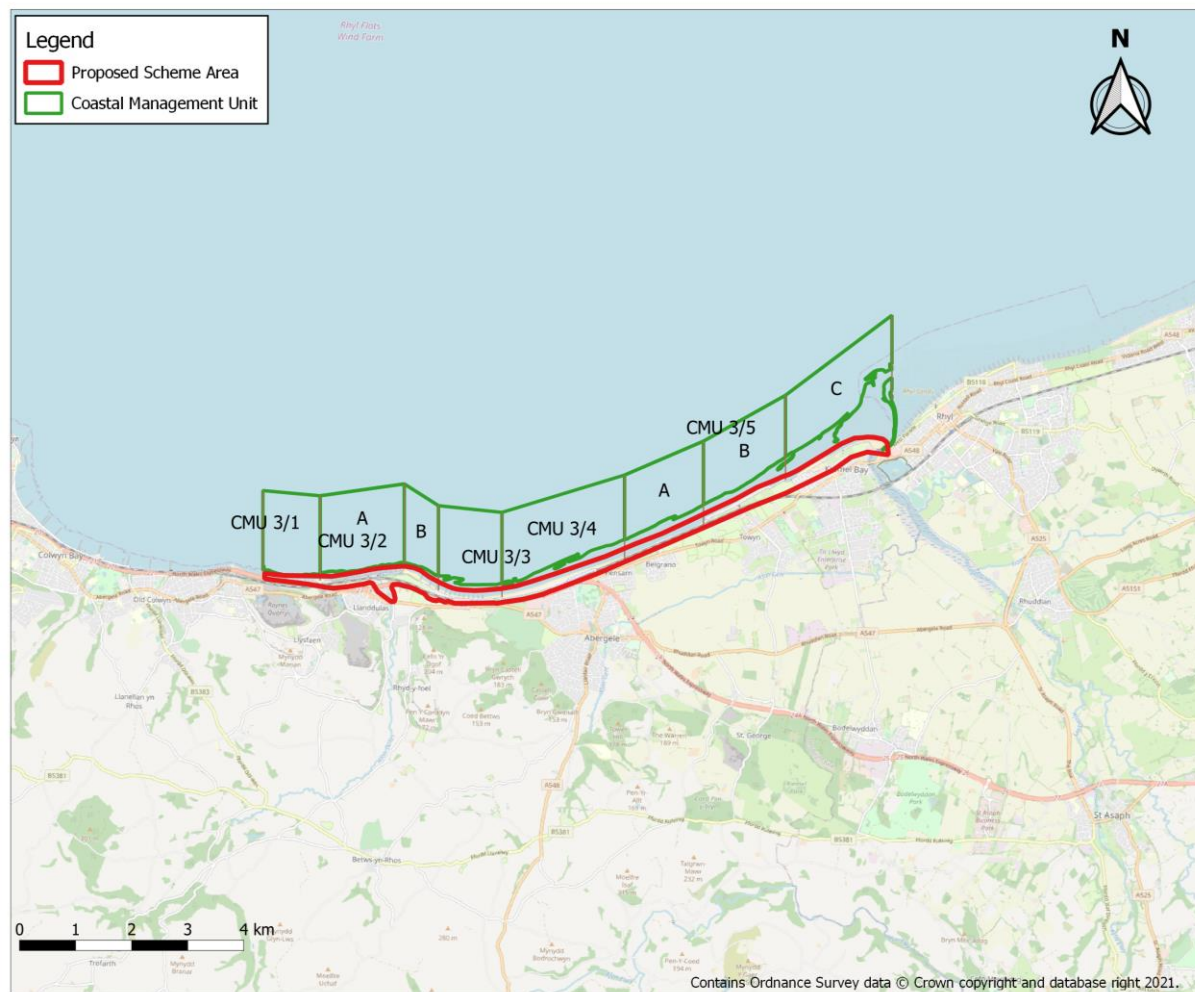


Figure 1-1: Site location plan

1.4 Proposed Works

The proposed works consist of digging eleven trial pits at the upper zones of the shoreline between Llanddulas and Kinmel Bay. The full description of works that will take place are summarised in Table 1-1, these correspond to the coastal management labelling shown in Figure 1-1.

Table 1-1: Proposed Works

Coastal management unit	Trail Pit number	Proposed Works
3-2B: Llanddulas Beach	TP01	Mechanical excavation of trial pit up to 3.0m deep, (a maximum of 4.5m) within one tidal cycle.
3-2B: Llanddulas Beach	TP02	Mechanical excavation of trial pit up to 3.0m deep, (a maximum of 4.5m) within one tidal cycle.
3-4: Pensarn Beach	TP03	Mechanical excavation of trial pit up to 3.0m deep, (a maximum of 4.5m) within one tidal cycle.
3-5A: Belgrano Beach	TP04	Mechanical excavation of trial pit up to 3.0m deep, (a maximum of 4.5m) within one tidal cycle.
3-5A: Belgrano Beach	TP05	Mechanical excavation of trial pit up to 3.0m deep, (a maximum of 4.5m) within one tidal cycle.
3-5B: Towyn Revetment	TP06	Mechanical excavation of trial pit up to 3.0m deep, (a maximum of 4.5m) within one tidal cycle.
3-5B: Towyn Revetment	TP07	Mechanical excavation of trial pit up to 3.0m deep, (a maximum of 4.5m) within one tidal cycle.
3-5B: Towyn Revetment	TP08	Mechanical excavation of trial pit up to 3.0m deep, (a maximum of 4.5m) within one tidal cycle.
3-5C: Kinmel Bay Beach	TP09	Mechanical excavation of trial pit up to 3.0m deep, (a maximum of 4.5m) within one tidal cycle.
3-5C: Kinmel Bay Beach	TP10	Mechanical excavation of trial pit up to 3.0m deep, (a maximum of 4.5m) within one tidal cycle.
3-5C: Kinmel Bay Beach	TP11	Mechanical excavation of trial pit up to 3.0m deep, (a maximum of 4.5m) within one tidal cycle.

1.5 Location of proposed works

All of the proposed trial pit sites are located at the upper shore zone, approximately half of them are partially below mean high water (MHWS) With the other half above MHWS. The location of pits 1-6 can be found in Figure 1-2, and the location for 7 – 11 can be found in Figure 1-3.

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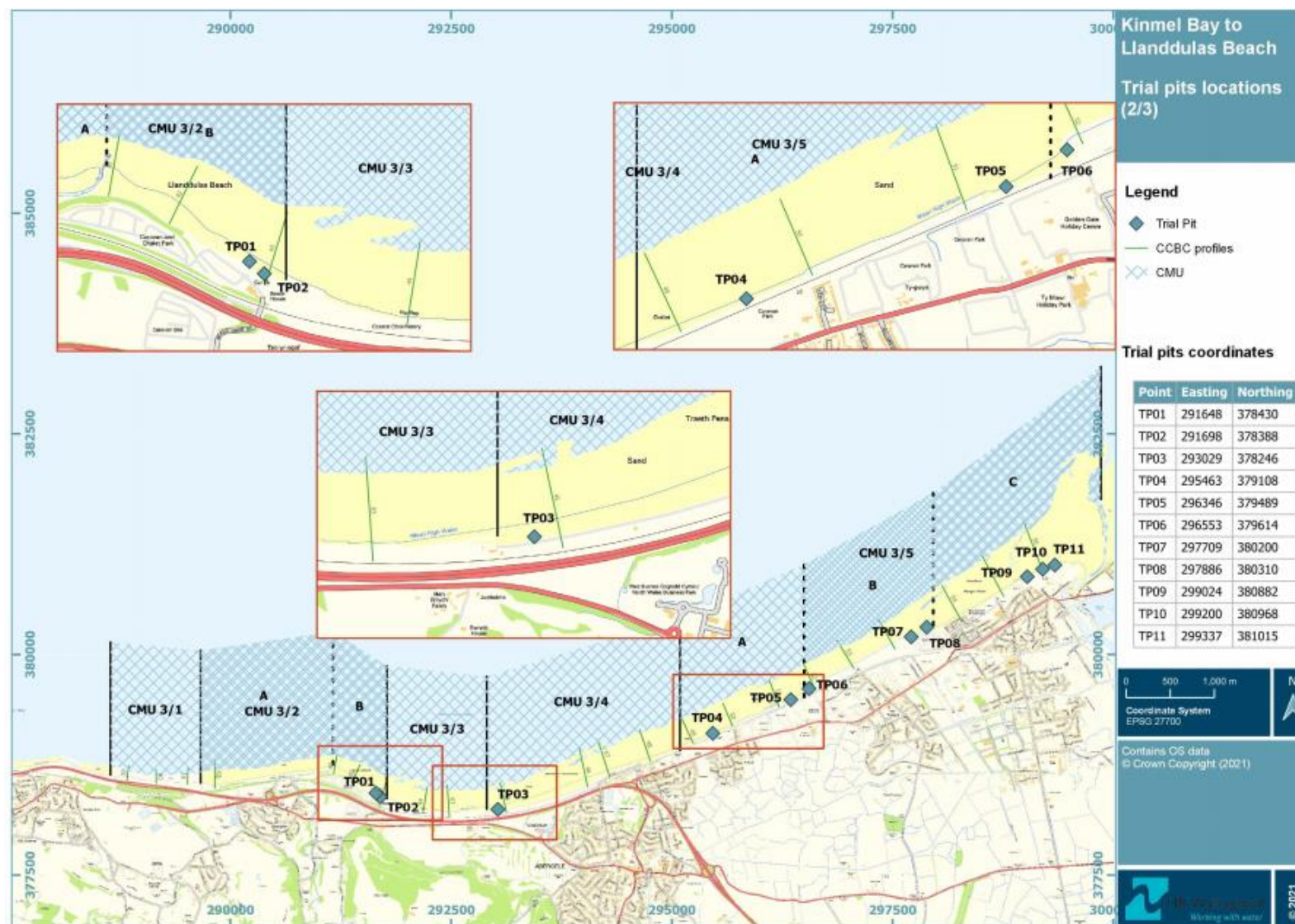


Figure 1-2: Location of trial pits 1-6.

Kinmel Bay Ground Investigation WFD Screening Assessment

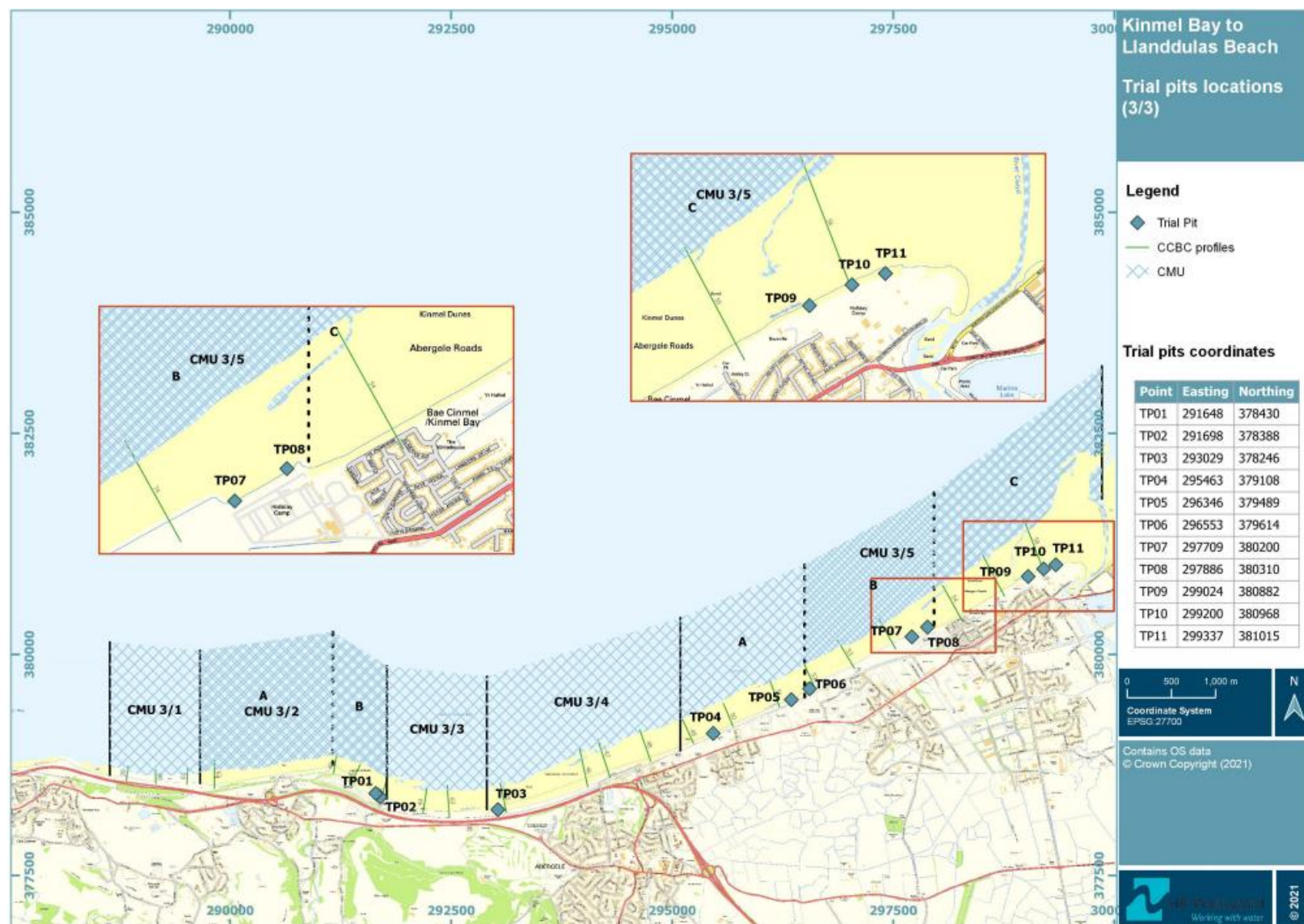


Figure 1-3: Location of trial pits 7 – 11

2 WFD Screening Assessment

2.1 WFD Screening

All of the 11 proposed trial pits have been screened in as they have potential to impact the WFD waterbodies in the vicinity of the site.

2.2 WFD Waterbody Scoping

The site is part of the Western Wales River Basin District. This section identifies the WFD surface water and groundwater bodies located within the zone of impact from the ground investigation works. The land use of the site and surrounding area is made up of urban, tourism and agriculture.

2.2.1 Surface Waterbody Catchments

The proposed ground investigation has potential to impact WFD surface waterbodies in the area. These waterbodies are the North Wales coastal waterbody, the Clwyd Estuary and the River Dulas.

Table 2-1 shows the WFD details of the three surface waterbodies, indicating their status and objectives.

Table 2-1: WFD Waterbody Characteristics

WFD Indicator	North Wales Coastal	Clywd Estuary	River Dulas
Water Body ID	GB641011650000	GB541006608000	GB110066059860
Overall Status	Moderate	Moderate	Poor
Ecological Status	Moderate	Moderate	Poor
Chemical Status	Fail	Good	Good
Overall Objective	Not available	Not available	Good
Chemical Objective	Not available	Not available	Not available
Ecological Objective	Not available	Not available	Good by 2015

2.2.2 Groundwater Body

The site lies over the Clwyd Permo-Triassic Sandstone groundwater body which covers a total area of 237km². The waterbody currently has an overall status of good. The details of this waterbody are shown in Table 2-2.

Table 2-2: Clwyd Permo-Triassic Sandstone Ground Water Body characteristics

WDF Indicator	Current Status/Information
Water Body Name	Clwyd Permo-Triassic Sandstone
Water Body ID	GB41001G202100
Overall Status	Good
Chemical Status	Good
Quantitative Status	Good

2.2.3 Western Wales River Basin Management Plan

The site lies within the Western Wales River Basin Management District, in the Conwy and Clwyd catchments area. The catchments are characterised by mainly agriculture and forestry. The RBMP outlines water management issues and objectives with the aim of protecting and enhancing the water environment.

The environmental objectives of the WFD are:

- To prevent deterioration of the status of surface waters and groundwaters.
- To achieve objectives and standards for protected areas.
- To aim to achieve good status for all water bodies.
- To reverse any significant and sustained upward trends in pollutant concentrations in groundwater.
- To end discharges, emissions and losses of hazard substances into surface waters.
- To reduce the pollution of groundwater and prevent or limit the entry of pollutants.

2.2.4 National Site network and bathing waters

There are four designated sites that lie adjacent to the proposed area of ground investigation works.

The first is the Liverpool Bay Special Protection Area (SPA) - UK9020294, this coastal site extends from the east coast of Anglesey to the Dee Estuary. SPA's are designated under the Habitats Directive for their bird habitats and/or species of national importance.

The Liverpool Bay SPA has been designated due to the presence of various bird species, including; *Gavia stellate*, *Larus minutus* and *Melanitta nigra*, which overwinter at the site, *Sterna albifrons* and *Sterna hirundo*, which reproduce at the site. Other important species aspects are Waterbird assemblages, of individuals, which overwinter, which can support up to 69,787 individuals. Threat to the site with a high rank, that are relevant to this study, are ports and marine constructions. Threats with moderate rank, are pollution to surface water (limnic & terrestrial, marine & brackish). and threats from marine water pollution.

Conservation objectives are required under the Habitats directive, as such there are objectives for this SPA. For the *Gavia stellate* and *Melanitta nigra* - subject to natural change, maintain or enhance the population and its supporting habitats in favourable condition. For the Waterbird Assemblage - subject to natural change, maintain or enhance the waterbird assemblage and its supporting habitats

in favourable condition. These mostly relate to ensuring the ecological status of the water environment is suitable to maintain or increase populations of the defined species.

The second site is Abergele Bathing Water which is sufficient standard in 2021, it is subject to short term water pollution resulting from rainfall runoff washing faecal material into the sea from livestock, sewage and urban drainage via rivers and streams.

The third site is Kinmel Bay Bathing Water which is sufficient standard in 2021, similarly to Abergele, it is subject to short term water pollution resulting from rainfall runoff washing faecal material into the sea from livestock, sewage and urban drainage via rivers and streams.

The fourth site is Marine Lake Bathing Water which is sufficient in 2021.

2.2.5 Impact mechanisms from proposed activities

The activities which will be taking place during the site investigation have been assessed to find their mechanism of impact to potential receptors that form part of each WFD waterbody, which can be seen in Table 2-3 below. The receptor types identified fall within the remit of the WFD, this includes National sites such as the SPA which will be considered further in the Habitats Regulation Assessment, and designated Bathing Waters.

Kinmel Bay Ground Investigation WFD Screening Assessment

Table 2-3: The four WFD water bodies identified with the receptors within each waterbody, the mechanism of impact to these receptors has been identified and noted here.

Activity type	Description of works	WFD waterbodies affected	Receptors at risk	Mechanism of impact to receptors
11 Trial pits	Pits will be dug at the highest point on the shore. The depth will generally be 3.0m, with a maximum of 4.5m	North Wales Coastal	Water quality	Release of contaminated material
			Fish	Release of sediment
			Habitat	Pollution (spillage of fuel and oil)
			Liverpool Bay SPA	Introduction of INNS
			Abergele Bathing Water	
			Kinmel Bay Bathing Water	
			Marine Lake Bathing Water	
			INNS	
		River Dulas	Water quality	Release of contaminated material
			Fish	Release of sediment
			INNS	Pollution (spillage of fuel and oil)
		Clywd Estuary		Introduction of INNS
			Water quality	Release of contaminated material
			Fish	Release of sediment
			INNS	Pollution (spillage of fuel and oil)
				Introduction of INNS
		Clwyd Permo-Triassic Sandstone groundwater body	Water quality	Release of contaminated material
				Pollution (spillage of fuel and oil)

2.3 WFD Impact Assessment

This section presents the impact assessment of the proposed development upon the WFD surface and groundwater water bodies identified, in Table 2-4 below. We have included potential impacts for all receptors identified at the scoping stage and if a pathway and impacts are present then mitigation measures are identified which work to avoid or minimise the impacts.

Table 2-4: The impact assessment for the four WFD waterbodies, potential impacts are identified and mitigation options are recommended.

WFD waterbodies affected		Receptors at risk	Potential Impact	Mitigation
North Wales Coastal	Water quality		Release of contaminated material from the trial pit spoil could reduce water quality of the surface waterbodies if it is mobilised by tidal waters. This could in turn impact fish, habitats, and the European sites at risk in the area.	• The works will be temporary, less than 6 months, which reduces disturbance to bird species. • Machinery will be well maintained, clean and fuelled offsite and cleaned after use to avoid introduction of pollutants and transfer of INNS. • Any spillage of pollutant will be removed and impacted beach material during the same tidal cycle as the ground investigation is carried out. • The trial pits will be dug, and spoil replaced in the trial pit in 1 tidal cycle. • The vehicles accessing the beach will use existing slipways to minimise disturbance to beach hydromorphology if available.
	Fish			
	Habitat			
	Liverpool Bay SPA			
	Abergele Bathing Water			
	Kinmel Bay Bathing Water			
	Marine Lake Bathing Water			
INNS		Release of sediment from the trial pit spoil could cause deterioration of surface water quality, if mobilised. Impacting fish, habitats and European sites in the area.		
River Dulas	Water quality		Pollution from oil and fuel spillage from machinery could impact ground and surface water bodies. Impacting water quality, fish, habitats and National Sites.	
	Fish			
	INNS			
Clywd Estuary	Water quality		Introduction of INNS by machinery could negatively impact surface waterbodies.	
	Fish			
	INNS			
	Water quality		Non-physical disturbance from machinery to protected bird species under the Liverpool Bay SPA.	
	Fish			
	INNS			

WFD waterbodies affected	Receptors at risk	Potential Impact	Mitigation
Clwyd Permo-Triassic Sandstone groundwater body	Water quality		- All work shall be carried out in accordance with the Site Investigation Steering Group "Guidelines for the Safe Investigation of Drilling of Landfills and Contaminated Land, 1993". - When spoil is replaced, it will be replaced at the depth it was excavated from, it will be tamped down. This will minimise erosion of the substrate. - If these mitigations are followed and best practice measures are followed then there will be no residual effect to the WFD waterbodies identified as part of this assessment. These guidelines are; (e.g. Environment Agency Pollution Prevention Guidance (PPG)s, specifically PPG5, 'Works and maintenance in or near water', PPG6 'Working at Construction and Demolition Sites', PPG7 'The safe operation of refuelling facilities', PPG13 'Vehicle washing and cleaning', Environment Agency Groundwater protection guides and CIRIA 'Environmental good practice on site'

3 Conclusion

This WFD screening assessment has been produced to accompany the marine license application, for the Kinmel Bay to Llandulas ground investigation works.

Four WFD waterbodies, 3 bathing waters and one National site were identified that could potentially be affected by the works.

The WFD assessment has concluded that the proposed development will not be detrimental to the objectives of the WFD waterbodies and National sites if the proposed mitigation and guidance in Table 2-4 is adhered to.