Rhyl Central Coastal Defences Scheme: Geoarchaeological Test Pit Survey Written Scheme of Investigation

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KEY PROJECT INFORMATION

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Site code	CDR
Report status	Written Scheme of Investigation APPROVED
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Client	Mott MacDonald
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NGR	from NGR SJ 02004 82431 to SJ 00230 81326
Authors	Kristina Krawiec
Illustrations	Kristina Krawiec
Editor	
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Contents

Written Scheme of Investigation for a Geoarchaeological Deposit Model

1. BACKGROUND

1.1. Introduction

1.1.1. York Archaeology (formerly Trent and Peak Archaeology) have been commissioned by Mott Macdonald on behalf of Balfour Beatty to undertake a geoarchaeological test pit survey to provide data for a deposit model as part of the Rhyl Central Coastal Defence Scheme, Rhyl, Denbighshire (from NGR SJ 02004 82431 to SJ 00230 81326, Figure 1).

1.1.2. The Scheme runs along the coastline of Rhyl, from Splash Point at NGR SJ 02004 82431 to the play area at NGR SJ 00230 81326. The Scheme area includes the beach and the existing promenade and coastal defences, which consist of hard engineered structures constructed from the 1950's onwards. These comprise a series of stepped revetments, recurve walls and vertical walls. There are also a number of groynes extending out from the defence structures. A desk-based assessment of the scheme has been carried out (CPAT 2018) with an addendum produced by Mott Macdonald (2021), with an Environmental Statement produced (JBA 2018). A project design has been provided (Mott MacDonald 2021a) in addition to a Ground Investigation (Mott MacDonald 2021b). In addition a WSI has been produced for the deposit modelling component of the project (TPA 2021).

1.2. Planning conditions/context

1.2.1. This Written Scheme of Investigation details a proposed scheme of geoarchaeological test pit survey (Figure 2). The scope of work has been designed following consultation with Clwyd-Powys County Council Planning Archaeologist. The work is required under the Environmental Impact Assessment (EIA) Screening and Scoping opinion request from Denbighshire County Council (DCC). Clwyd-Powys Archaeological Trust (CPAT), the archaeological advisers to the council, have recommended that a palaeoenvironmental deposit model be produced for the length of the Scheme.

1.2.2. The overarching legislation in relation to the historic environment in Wales is provided by:

- Historic Environment (Wales) Act 2016
- Planning (Wales) Act 2015;
- Town and Country Planning Act 1990; and,
- Planning (Listed Buildings and Conservation Areas) Act 1990.

Planning Police Wales (PPW) 2017, updated 2018

1.2.3. Planning Policy Wales (PPW) considers the importance of the historic environment in planning and development and sets out the government's policies regarding development that affects the historic environment. It requires that proposals are fully evidenced and assessed to help informed decision making. Chapter 6 outlines these policies. The following paragraphs are relevant to archaeology:

- Paragraph 6.1.7 states that the planning system should protect, conserve and enhance the significance of historic assets. Any change that impacts on an historic asset should be managed in a sensitive and sustainable way
- Paragraph 6.1.9 states that any decisions made through the planning system

must fully consider the impact on the historic environment and on the significance and heritage values of individual historic assets and their contribution to the character of place

Paragraphs 6.1.23-27 specifically consider archaeological remains:

● Paragraph 6.1.26 states that where archaeological remains are known to exist, there should be sufficient information to allow a full understanding of the impact of the proposal on the significance of the remains.

● Paragraph 6.1.27 states that there where archaeological remains are affected, there must be appropriate and satisfactory provision for their recording and investigation

Technical Advice note 24: The Historic Environment (2017)

1.2.4. TAN 24: The Historic Environment has been produced to provide guidance on how the planning system considers the historic environment during decision making on planning applications.

Denbighshire Local Plan 2006 to 2021 (Adopted June 2013)

1.2.5. The Local Plan is part of the statutory development plan for Denbighshire, the document will guide new development in the area until 2021. Archaeology is dealt with under the theme "Valuing our Environment", but there are no specific policies which deal solely with heritage.

1.2.6. DCC are also in the process of updating their local plan (schedule to run between 2018 - 2033) and the preferred strategy was published in May 2019. The 2006 to 2021 plan remains current until the replacement plan is adopted. One of the objectives for the replacement LDP is to protect, enhance and sustainably develop Denbighshire's built and historic assets.

Development details

1.2.7. The aim of the Scheme is to repair and improve the defences along the Central Rhyl coast. A variety of coastal defence solutions will be employed across the Scheme. The defences will run broadly east-west and the following coastal works have the potential to impact on archaeological deposits:

- Rock armour scour protection is proposed to be added to the defence toe to manage scour and prevent undermining and failure of the defence. This will be along the eastern section of the Scheme, broadly between Splash Point and Rhyl Events Arena and will be approximately up to 8.5m wide (seawards from the toe of the existing buried revetment / seawall); and

- A stepped revetment, consisting of precast concrete will be placed over the existing stepped structure to dissipate wave energy and prevent erosion at the revetment toe. This will be along the western section of the Scheme, broadly between Rhyl Events Arena and the play area at Drift Park. The toe of the proposed revetment will be between 16m and 27m from the edge of the existing promenade (extending over the existing beach and buried revetment).

- Other works along the western section include raising the promenade, new rear seawalls with flood gates for access points, new retaining structures and new access onto the raised promenade.

1.2.8. The work is required under the Environmental Impact Assessment (EIA) Screening and Scoping opinion request from Denbighshire County Council (DCC). Clwyd-Powys Archaeological Trust (CPAT), the archaeological advisers to the council, have recommended that a palaeoenvironmental deposit model be produced for the length of the Scheme. The model should target the area of the beach which will see the most ground reduction or compression impacts, which will generally coincide with the toe of the proposed new rock revetments. Other areas where the surface of the beach below the present sand cover may be impacted, e.g. for heavy vehicle tracking, should also be targeted.

Scoping Option

1.2.9. An EIA screening and scoping opinion was submitted to Denbighshire County Council in February 2021 (Application Ref: 45/2021/0092), with a response received on 26th April 2021. It was agreed that impacts on cultural heritage assets should be scoped in. CPAT also had a list of recommendations as part of the cultural heritage assessment, specifically related to the requirement of a palaeoenvironmental deposit model:

- The sub-surface potential for significant prehistoric deposits consisting of past land surfaces, peat deposits and prehistoric forest remains should be assessed by the provision of a palaeoenvironmental deposit model along the length of the scheme. Geoarchaeological specialists should be engaged to complete this model using appropriate techniques, which may include test pits, boreholes and/or geophysical survey. The geoarchaeological specialists will be responsible for designing the methodology, completing the evaluation works and reporting with suggested mitigation options. Mitigation may require additional sampling/excavation/survey or monitoring prior to, and during, construction works;

- The palaeoenvironmental deposit model should target the area of the beach which will see the most ground reduction or compression impacts, which will generally coincide with the toe of the proposed new rock revetments. Other areas where the surface of the beach below the present sand cover may be impacted, e.g. for heavy vehicle tracking, should also be targeted;

- If any geotechnical test pitting or cores are proposed to inform the EIA, or at any subsequent stage prior to construction, then they must be observed via a watching brief process by a qualified archaeological contractor. The findings should be reported, and the information should be shared with the geo-archaeological specialists, who may also wish to be present during GI excavations;

- The archaeological contractors and geoarchaeological specialists involved in the above works should forward a WSI (written scheme of investigation, sometimes called a specification) to me [the archaeological adviser at CPAT] prior to commencing any assessment so that the methodologies can be approved; and

- There should be full reporting and archiving of all aspects of the assessment work in accordance with CIfA standards and guidance. Normally the digital archive will be sent to the HER [Historic Environment Record] at CPAT and the National Monuments Record, RCAHMW. Finds will be archived at a regional museums service, or with the National Museum of Wales.

2. GEOLOGY ANDTOPOGRAPHY

2.1.1. The Scheme runs along the coastline of Rhyl from Splash Point at NGR SJ 02004 82431 to the play area at NGR SJ 00230 81326 (Figure 1). The Scheme area includes the beach and the existing promenade and coastal defences, which consist of hard engineered structures constructed from the 1950s onwards. These comprise a series of stepped revetments, recurve walls and vertical walls. There are also a number of groynes extending out from the defence structures.

2.1.2. The underlying bedrock of the site as mapped by the British Geological Survey is the Kinnerton Sandstone Formation, formed between 252.2 and 247.1 mya in the Triassic. This is overlain by Marine Beach Deposits- Sand and Blown Sand, most likely reworked in the Holocene.

2.1.3. At the western end of the scheme is the mouth of the River Clwyd and at the eastern end lies the Dee Estuary lies which drains into the Liverpool Bay (the bay of the Irish Sea between NW Wales to the east of the Irish Sea). The area was connected to the Isle of Man as part of a now submerged palaeolandscape. With the onset of the Devensian glaciation the area was buried beneath the ice until the after the Last Glacial Maximum when the climate began to ameliorate sending the glaciers into retreat.

2.1.4. The Marine Beach and Blown sand deposits represent more recent reworking of sediments and overlie extensive areas of peat and drowned forest. These peat deposits are periodically exposed, often following high energy storm events which strip the beach sands from the surface of the peat. A number of archaeological artefacts and mammalian remains have been recovered from these peat deposits, ranging from the Mesolithic to the Bronze Age. In addition, footprints are often recorded in such deposits with examples at Splash Point in Rhyl and Formby recording both human and animal prints. Also recovered from the Rhyl deposits is a red deer antler mattock dating to the Mesolithic 5640 to 5360 cal BC (OxA-1009:6560 ± 80 BP, Bell 2007).

2.1.5. However, despite frequent observations and larger studies, the extent and date of the submerged landscapes are still only partially understood. The expected sequence of these deposits around Rhyl is based on a study undertaken by Bell in 2007. This collated the known information and observations on the prehistoric land surfaces. The sequence established by Bell is as follows (from latest to earliest):

- Estuarine sediments;
- Upper peat with submerged forest, including oaks, deer and aurochs prints;
- Estuarine sediments with human and deer prints, possible context of Mesolithic mattock and polished axes;
- Lower peat and submerged forest of willow, possible context of flint artefacts reported in 1924;
- Estuarine sediments; and
- Boulder Clay

2.1.6. Work has been recently undertaken as part of the Rhyl East Coastal Defence Scheme, which

has helped to further refine the sequence. This sequence is not closely dated; however, the Lower Peat Deposit, associated with a mattock, returned an age determination of 7600-7300BP. The base of the Upper Peat Deposit is dated to 6000-5500 BP, with the top of this layer dated to 1800-1200 BP. Analysis of the submerged land surfaces there has revealed a complex terrain, with evidence for submerged forests and palaeochannels. It has also been noted that archaeological and biological material is potentially associated with the estuarine clays as well as the peat.

3. ARCHAEOLOGICAL BACKGROUND

3.1.1. The following background is taken from the desk-based assessment (CPAT 2018).

Prehistoric period

3.1.2. After the Last Glacial Maximum, and as the ice sheet retreated, the area of the Scheme would have been located at least 10km from the coast, with sea levels being 9m below Ordnance Datum. The area would have been rapidly colonised by pioneer vegetation such as pine, birch and shrubs. As the climate ameliorated and as sea levels rose, the character of the area would have shifted to one initially of dense deciduous woodland with lower lying areas being more susceptible to marine incursion.

3.1.3. When the early Mesolithic activity recorded at Rhuddlan took place (c.7600 cal BC), the main coast was about 10km to the north. By the time a Mesolithic mattock (PRN 33099) was deposited at Splash Point, Rhyl (c.5400 cal. BC) the area was under a positive sea level tendency with marine/estuarine conditions beginning to encroach onto the site. As this process continued the area would have been characterised as a promontory of boulder clay within the expanding estuary which likely extended up the Vale of Clwyd probably as far as St Asaph.

3.1.4. Evidence for human activity has been recorded along the modern foreshore and occasionally from within the sediments associated with the peat/clay silts outcropping on the beach. These finds range in date from a Mesolithic antler mattock to a variety of finds of Neolithic or Bronze Age date. Significantly some of these finds have been made in the estuarine blue clay underlying the forest beds. These deposits have also produced mammal remains including red deer (including a full set of unshed antlers), roe deer, ox, horse, sheep, pig, badger, fox, wolf and whale. In addition, animal and human footprints have been recorded in the underlying clays.

3.1.5. The exposed submerged forest at Splash point contains the remains of several large trees (Figure 2 for the location of the peat outcrops). In addition, several possible fish traps, of unknown age are recorded within these deposits and comprise rows of upright stakes some with stone packing. These remains are undated and may span the prehistoric to early modern period

Roman

3.1.6. The evidence for Roman activity in the area is less well evidenced and comprises a small number of Roman coins recovered from the beach (PRN 102176), on Marsh Road (PRN 102177) and at Rhydwen Drive (PRN102182).

Medieval Period

3.1.7. Although there are documentary references to Rhyl dating back to the 14th century, these

probably refer to an area rather than a settlement as such. The early form of the name is thought to be 'Hull', translatable as 'hill', and perhaps referring to the collection of low sandbanks here, raised a little above the level of the low ground which was in the past subject to flooding in high tides. Until the beginning of the 19th century the area seems to have contained only a handful of scattered farms and cottages.

Post-Medieval

3.1.8. A Bill was passed in 1794 authorising the construction of a sea defence and land drainage channels to control flooding. The remains of possible early sea defences or fish traps (PRN 123322) have been identified within the study area, close to Splash Point, comprising a series of wooden posts set in roughly parallel short trenches filled with stone. These are recorded to have been cut through the peat deposits, rather than being associated with the prehistoric finds that have been recovered from the immediate surrounding area.

3.1.9. Rhyl was the earliest of the North Wales coastal resorts to develop. Growth of the town began in the late 1820s with the building of two hotels and a number of lodging houses. By the time of the Tithe survey in 1839, a number of roads had been set out, but there were very few new buildings. Large areas of common still survived on the land nearest to the sea. Inland, there was much arable land and with a large number of strip fields and quillets and some of these were visible along the southern edge of the Study Area.

3.1.10. It is also evident that the depiction of the sea front on the Tithe map is some 140m further inland than the present front, which has undergone considerable redevelopment, particularly for the leisure and tourism industry. Royal Alexandra Hospital along Marine Drive was used for the care of wounded soldiers during the First World War and German prisoners of war were recorded at Rhyl, and were possibly accommodated in a camp there, in the years after the Second World War.

4. AIMS ANDOBJECTIVES

4.1.1. The overarching aims of the work as defined in the project design produced by Mott Macdonald (2021) are to:

- Understand the potential for surviving evidence of palaeoenvironments;
- Understand the nature and depth of any surviving archaeological remains, which may consist of past land surfaces, peat deposits and prehistoric forest remains;
- Interpret the archaeological significance of deposits identified in the borehole logs data; and
- Suggest possible mitigation strategies

4.1.2. The main objectives of the work are:

- To undertake a test pit survey;
- To make a lithological record of the deposits and recover samples should further work be required;

- To produce a deposit model with suitable outputs using existing data in conjunction with the test pit survey record (a transect-based model due to the linear nature of the data from the proposed scheme);

- To consider previous geoarchaeological and environmental work from the area (including those contained in the Historic Environment Record) to understand the likely dates and potential of mapped sediments; and

- To produce of a series of research questions relevant to the mapped sediments which may be useful for consideration in future planning decisions.

4.1.3. All recording will result in 'the preparation of a report and ordered archive', in line with the guidelines of the CIfA Chartered Institute for Archaeologists (2020a, 2020b, 2020c). In addition, the work will conform to the Historic England *Guidance for Deposit Modelling and Archaeology* (2020). The work will also conform to the Environment Agency's *Cultural Heritage Minimum Technical Requirements* (EA 2015).

4.2. Research Questions

4.2.1. The West Coast Palaeolandscapes survey identified the area around Rhyl as having a high potential for preserving archaeological deposits (Fitch and Gaffney 2011). In addition, the Archaeological Coastal Forum Group recommended a series of aims for mitigation concerning the foreshore of which this project will meet the principal aim (highlighted below):

- **The presence of peat beds and submerged forests should be identified at the outset of the project**;

- Coastal monitoring should be undertaken over a period of at least 6 months to observe and define possible extents of peat beds and submerged forests, with the results feeding in to the design of the development or coastal defences scheme;

- In all cases where intertidal development is proposed, it is recommended that some form of detailed geophysical survey of the sea bed is carried out at the early design stage of identify wreck sites or the presence of fish traps;

- Where possible, structures to be constructed on the foreshore should be designed to avoid impacting upon these deposits, or minimising any impacts;

- Prior to the commencement of development, a scheme of archaeological evaluation of the deposits should be undertaken. This could include observation of the exposed surfaces of any peat beds and initial assessment of tree stumps (identification of species and assessment for suitability for dendrochronology dating). A number of test pits should be excavated through the peats, where they will be impacted upon, to obtain palaeoenvironmental evidence for assessment. Radiocarbon dates should be obtained at this stage;

Contingency aims

- Should significant remains be identified, such as artefacts or footprints, a scheme of

detailed recording should then be implemented. This would include further palaeoenvironmental sampling. Alternatively, this information may indicate that redesign of the proposals would be appropriate;

- If few or no significant remains are identified then a scheme of intermittent watching brief may be appropriate;

- Full assessment of the palaeoenvironmental and dendrochronology samples should then be undertaken, preferably before or during the construction phase in order that if highly significant information is revealed, further sampling can be undertaken; and

- Full reporting and archiving of all results.

5. METHODOLOGY

5.1. Test pitsurvey

5.1.1. All fieldwork will be carried out in accordance with CIfA Standard and Guidance for an Archaeological Field Evaluation (CIfA 2014b) and Code of Conduct (CIfA 2014a). A total of 17 machine excavated test pits will be carried out, with a particular focus on the deposits closest to Splash Point (Figure 2). The pits will be excavated using a toothless ditching bucket to the maximum reach of the excavator arm.

5.1.2. Test pits and features will be located using GNSS.

5.1.3. The lithology will be recorded by a geoarchaeologist using the Troels-smith system of sediment classification (1955). The scheme breaks down a sediment sample into four main components and allows the inclusion of extra components that are also present, butthat are not dominant. Key physical properties of the sediment layers are darkness (Da), stratification (St), elasticity (El), dryness of the sediment (Sicc) and the sharpness of the upper sediment boundary (UB). A summary of the sedimentary and physical properties classified by Troels-Smith (1955, Appendix 1) and a stratigraphic breakdown of the deposits will be recorded on proforma log sheets. The logs will be supplemented by digital photography.

5.1.4. If appropriate deposits are encountered (i.e peats or estuarine silts) grab samples will be recovered at measured intervals. The work will be carried out by a geoarchaeologist using standard methods and following Historic England *Guidelines for Environmental Archaeology* and *Geoarchaeology* (2015a and 2015b). Sampling will be carried out with reference to Table 1.

5.1.5. If lithic scatters are encountered these will be excavated with reference to guidance laid out in the draft Historic England Guidance *Managing Lithic Scatters* (HE 2019).

5.1.6. If archaeological features are encountered the test pit will not be progressed further and where possible features will be excavated in such a way as to determine the stratigraphic sequence within each pit. If it is safe to do so, features will be hand-cleaned and planned. Features will be sample excavated sufficient to determine their plan and form, and to recover any datable artefacts.

5.1.7. All finds of medieval date or earlier will be recorded three dimensionally, or at a minimum by context/spit. Post-medieval finds or abundant redeposited structural material will be recorded by context/spit.

5.1.8. In the event of the discovery of human remains disturbance will wherever possible be avoided. Where removal is deemed necessary following discussion with, and the approval of, the client and the Archaeological Advisor, the necessary burial license will be obtained in line with the current Ministry of Justice procedures. The excavation of any human remains will be carried out in accordance with *Updated Guidelines for the Standards for Recording Human Remains* (Mitchell and Brickley 2017).

5.1.9. In the event of the discovery of any artefacts which constitute Treasure, these artefacts will be archaeologically removed to a safe location and reported to the coroner within 14 days in accordance with the procedures of the Treasure Act 1996 and the Code of Practice 1997. All treasure should be reported to the Finds Liaison Officer.

5.1.10. Sections of all features will be drawn on drafting film in pencil at a scale of 1:20/1:50, and will show at least: context numbers, all colour and textural changes, , levels expressed as O.D. values. Digital photos of each context will be taken together with general views illustrating the principal features of the excavations.

5.1.11. Written records will be maintained as laid down in the YA recording manual (YA 2022).

5.2. Post excavation

5.2.1. All finds will be cleaned, conserved, marked and stored as recommended in 'First aid for finds' (Watkinson & Neal 1998, United Kingdom Institute for Conservation), and marked with the site and find codes, and relevant accession numbers. These will be deposited with appropriate repository on completion of the report.

5.2.2. A deposit model will be constructed using the test pit survey results, existing British Geological Survey records and any other GI works undertaken at the site available at the time of the study. In addition, HER data will also be used to construct the model. This will follow the methodology set out in the WSI previously prepared (TPA 2021).

5.3. Project Staffing

5.3.1. Geoarchaeologists will be fully qualified and experienced (CVs can be supplied upon request).

5.3.2. The project will be undertaken and managed by Kristina Krawiec (TPA Geoarchaeology Project Manager) with additional expertise provided by Dr Martin Bates (Freelance geomorphologist).

5.4. Reporting andLiaison

5.4.1. A report detailing the results of the fieldwork will be produced with appropriate illustrations including a transect based model and thickness plots/Digital Terrain Model. These results will be considered in light of previous paleoenvironmental and geoarchaeological studies from the region. A series of research questions will also be prepared.

5.4.2. Copies of the report will be provided to:

- The client.
- CPAT.

5.4.3. The report will include:

- Non-technical summary
- Introductory statement
- Aims of the project
- Methodology
- An objective summary statement of results
- Conclusion
- Illustrations at appropriate scales, all to include levels tied to Ordnance Datum which will include a detailed location map, detailed site plan showing GI locations, deposit model transect, and surfaces with map,
- Index to archive and details of archive location; confirmation of archive transfer arrangements including a provisional timetable for deposition.
- References
- A copy of the OASIS form

5.5. Archive

5.5.1. All data used to undertake the deposit model (including raw data, the interpretation of those data and the outputs from the model) will be deposited with a suitable digital archaeological repository (e.g. the Archaeological Data Service) in a suitably accessible format to allow future work in the area to use and build on it. This should include borehole logs, spreadsheets of interpreted stratigraphic units including XYZ information and resultant GIS files of various deposits and surface parameters. A digital copy of the report will also be sent to the HER at CPAT (via https://cpat.org.uk/heddos.html) and the NMR, RCAHMW. The archive will be submitted within 4 weeks of completion of the report.

5.5.2. The digital archive where appropriate will conform with standards outlined in:

- Management of Research Projects in the Historic Environment MoRPHE (HE 2015);
- Archaeological Archives: A guide to best practice in creation, compilation, transfer and
- curation (AAF 2011);
- CIfA's Standard and Guidance for the collection, documentation, conservation and research of archaeological materials (2020c);
- Guidance for the Submission of Data to the Welsh Historic Environment Records (HERs) (Welsh Archaeological Trusts 2018);
- RCAHMW Guidelines for Digital Archives (Edwards 2016);
- Archaeological archive deposition policy in Wales (National Panel for Archaeological Archives in Wales 2017);
- Deposit Modelling and Archaeology. Guidance for Mapping Buried Deposits (Historic England, 2020);
- Archaeology Data Service (ADS 2020) How to Deposit; and
- EA Minimum technical requirements (EA 2015).

5.6. Copyright

5.6.1. York Archaeology shall retain full copyright of any commissioned reports, tender documents or other project documents, under the Copyright, Designs and Patents Act 1988 with all rights reserved excepting that it hereby provides exclusive licence to the client for the use of such documents by the client in all matters directly relating to the project, with no limitation on the number of times that the client may reproduce any report. The client's contribution will be acknowledged in any future use of the work by YA.

5.7. OASIS

5.7.1. An OASIS online record will be initiated (http://ads.ahds.ac.uk/project/oasis/). A copy of this document will be included in the report.

5.8. Programme

5.8.1. Following approval of the WSI a date for fieldwork will be proposed.

6. REFERENCES

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Feature type	**Sediment conditions**	**Overall scope of sampling**	**MM**	**Charred material**	**C14**	**OSL**	**Pollen/Diatom**	**Ch**	**BP/BS**	**Bo**	**Wood**
Sampling method:			**Undisturbed block sample small kubiena tin**	**Loose bulk sample, representative of particle size, and quantity for desired methods**	**A4x1 cm (sea)**	**Light-tight canister, moisture/sediment sample; where available, gamma spec background radiation measurement.**	**column in gutter + Clingfilm**	**Min.40L for dry deposits or 20L from waterlogged deposits (specialists to advise as to appropriate level of sub sampling of deposit)**			**In bags with water**
Archaeological Feature/ buried soil	Waterlogged organic (looks 'peaty')	Each occurrence series of samples if thick (>150mm)		x			x	x	x	x	X
	Dry visible charred material	Each occurrence (C14 selected: best is twigs then layer)	x	x	x			x		x	
	Waterlogge d organic	Each occurrence, at thickest point or every 10cm	x		x		x	x	x	x	X
	Dry visible charred material	Each occurrence, at thickest point, series of samples if thick (>150mm)	x		x		x	x		x	
	Buried soil horizon	Across soil profile	x			x	x	x			
Sediment change, reaction to environmental change	Laminated or changes in sediment in profile	Sample of each sedimentation type, in middle of sediment unit, or over equal interval		x	x	x	x				
Any	Wood structure	Retain all, keep damp, bag each timber separately			x						x
Industrial residues / debris etc.		All process stages to be represented							x		

Abbreviations MM Micromorphology **C14** Radiocarbon **BP** Waterlogged Beetles/Plant remains **Bo** small bone. BS –Bulk Sample (industrial waste/residues/processing debris) **CS** Sediment sample

Table 1 Preliminary Site Sampling Strategy

*Adjustments to be made following specialist advice and liaison with CADW/development control archaeologist where appropriate

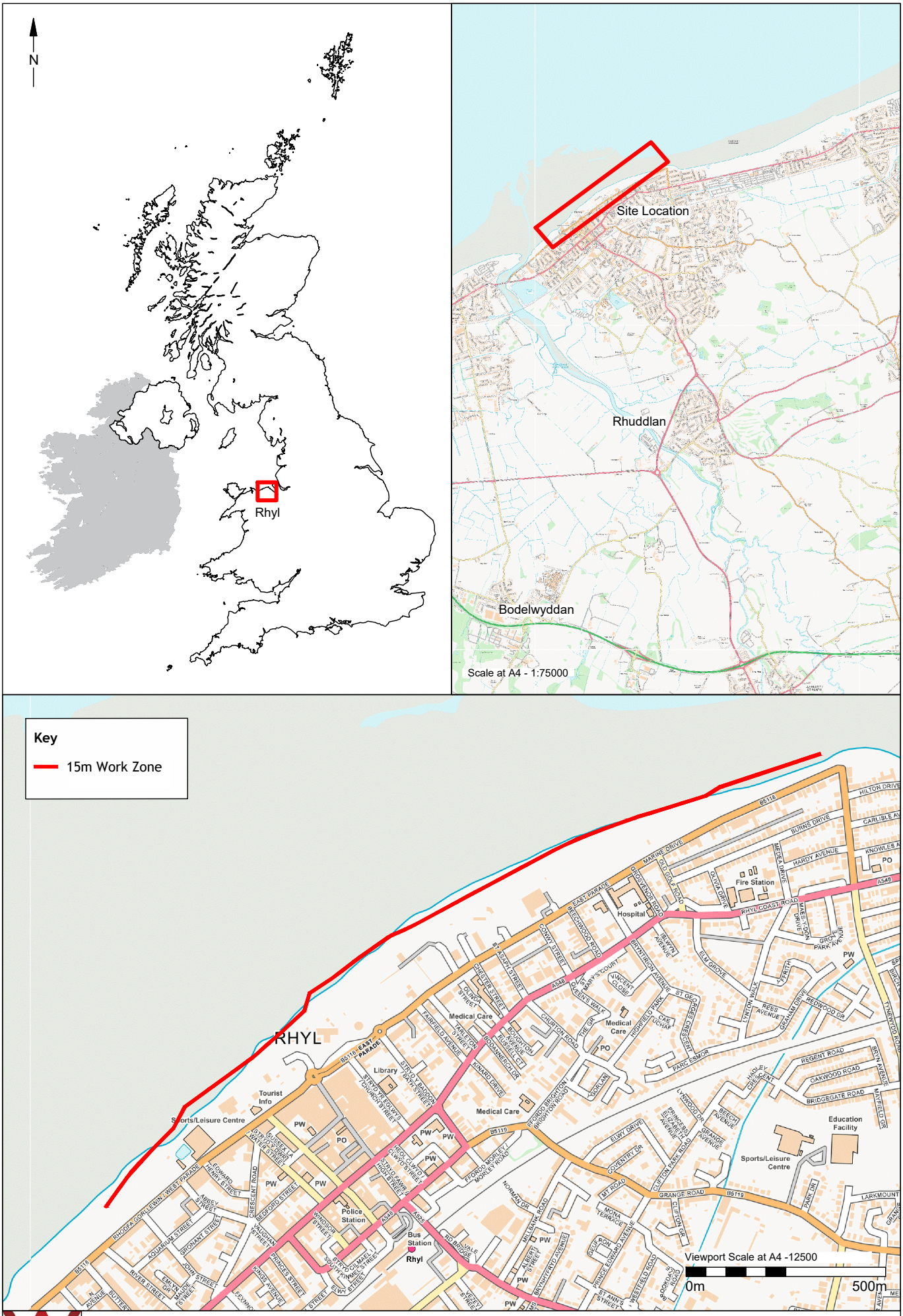

Figure 01 - Location Map
Rhyl Costal Defence

Scale at A4 - varies
Drawn by MI

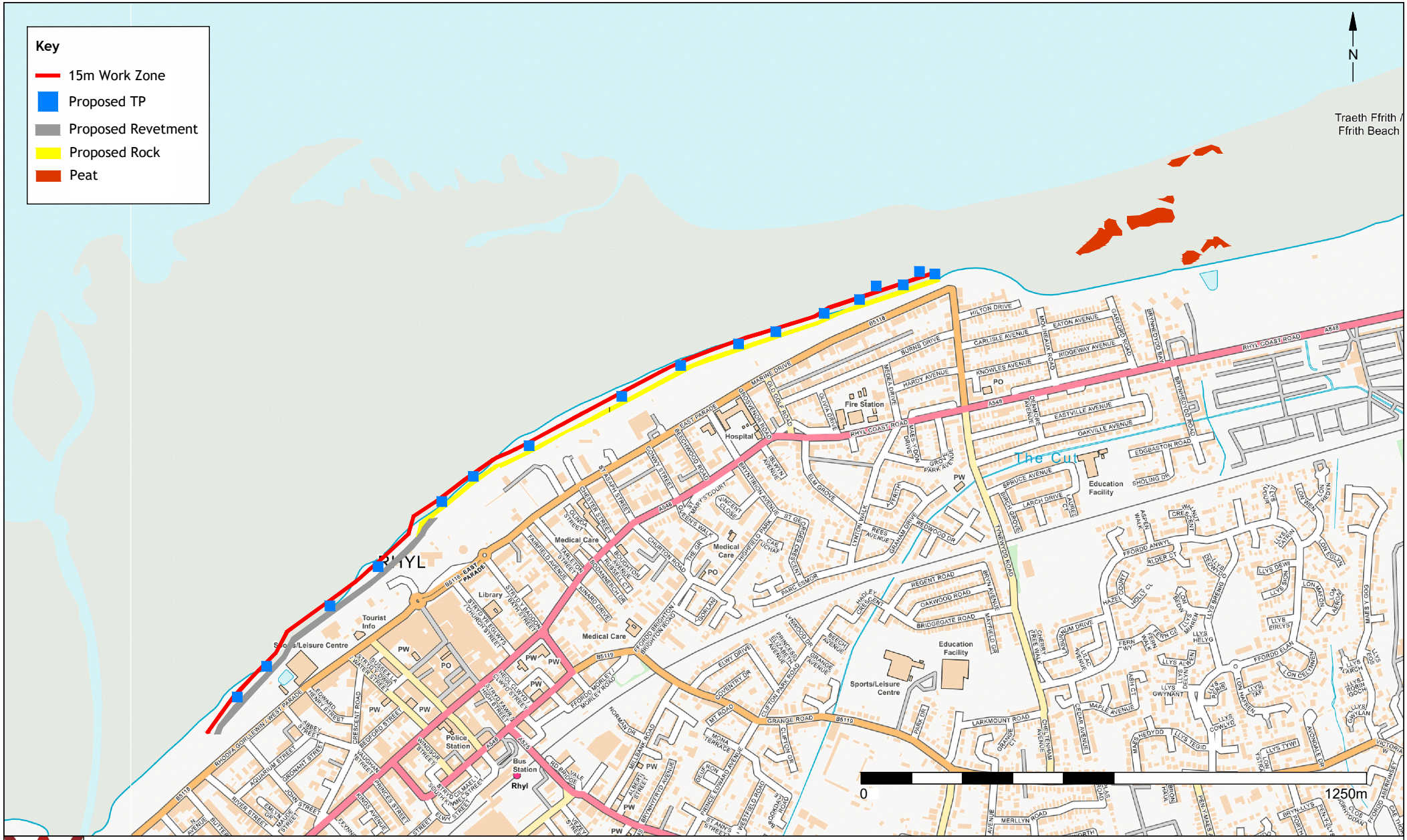

Figure 02 - Site Plan Showing Proposed Works
Rhyl Costal Defence

Scale at A4 - 1:12500
Drawn by MI