



Rhyl Harbour Public Square and Extended Quay Wall

Environmental Statement Addendum -
Maintenance Land Based Dredging
April 2018

Denbighshire County Council

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Amended October 2018

Denbighshire County Council

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Non-Technical Summary

Introduction

In December 2011, DCC completed an ES for the Rhyl Harbour Public Square and Extended Quay Wall Scheme. This latest ES addendum is an update of the ES addendum produced in 2015 to support the application for a dredging licence which followed the EIA process to accompany a full planning application submitted to CCBC, for the construction of the proposed harbour developments.

This scheme was granted planning permission and construction was completed by May 2014.

Following the granting of planning permission which include annual dredging proposals there was an amendment to the original small scale land-based dredging proposals for the harbour. This amendment was addressed in the ES supporting the 2015 Marine Licence application.

There are some minor amendments to both the methodology and a reduction in the quantity to be dredged within this ES addendum based on knowledge gained over the term of the previous marine dredging licence. The dredging is purely to maintain the depth approved as part of the main scheme and referred to in the 2011 ES and planning application. The bed levels change dependent on river flows with the sand build up causing problems at some locations during the summer requiring its removal in October as well as the main dredge in March. Where some areas do not affect river flows or navigation dredging does not take place (or the bed level is already adequate).

The harbor has always had problems with siltation and since completion of the main harbor scheme works have been considered to reduce the level of buildup. Unfortunately the funding is not available in the short term to undertake any improvements although the authority are seeking this funding. The main buildup of sands and gravels is at the end of the quay wall and an extension of the quay wall is considered to be the best method of reducing this.

Due to a limited annual budget which is in the region of £24,000 which is raised through charging fees for harbor use it is necessary to carefully prioritise the dredging to maintain flows and keep mooring free of obstruction. The only cost effective method for the removal of such a small quantity of material being land based dredging and disposal as both pumping from a barge or vessel based excavation are too expensive, and potentially more environmentally damaging as the dredging would need to be carried at high tide.

Only minor trimming has occurred above Wellington Road Bridge. No works have been undertaken near the Clwyd flood embankments and there has been no erosion upstream of the marked up area of dredge with the very small quantity of material having been trimmed to improve navigation having no impact elsewhere.

The monitoring which has been undertaken following an annual colour key for each year clearly demonstrates any affects caused by high or low river flows outside areas dredged and also the specific areas dredged. The approved bed level is also shown on the drawings and you will note in some instances the main channel is below this level and hence no work is undertaken within the channel.

Three key issues were raised by the NRW as part of the 2015 application and these have been addressed in detail in this application with the relevant correspondence included in Appendix G.

Description of Revised Dredging Application

Maintenance dredging of Rhyl Harbour is required to be undertaken on a regular basis in order to maintain navigable channels and a suitable working depth for the remainder of the harbour area. The existing channels become infilled with sediments resulting in them being too shallow for navigation. Also silt build up around some moorings and adjacent pontoons is causing safety issues for harbor users.

Maintenance dredging has been undertaken annually since May 2015 with additional dredging activities being undertaken in October if siltation problems are encountered. The present licence expired in May 2018 with the final dredging under this licence having been undertaken in March 2018. The intention is to obtain a new three year dredging licence with the first minor dredge taking place in October 2018 (if required) and then March 2019 and repeated annually for the duration of the contract. This ES addendum is an update of the ES addendum submitted with the application for the 2015 marine licence. In most cases there has been no change, but these sections have been included for ease of reference with a note to clarify there has been no change inserted.

It is anticipated approximately 17,000 tonnes of material (dependent on seasonal flows affecting buildup) of material will require removal from the harbour and approach channel every year. The proposed finished levels for the areas of dredge have not been amended from the original 2011 ES or from the 2015 ES addendum these being:

- In the vicinity of the quay wall, the finished levels is to be +0.5 m AOD to allow for the exposure of mud habitat at low tide (ecological requirements);
- In the area of the outer channel adjacent to the training wall, the finished level is to be -1.8 m AOD;
- In the inner area between the floating pontoon and West Rhyl Sea Defence it is to be at -1.5 m AOD; and
- In the vicinity of the slipways and the inner harbour the finished level is to be -0.5 m AOD.

Whilst the depths and areas have not been amended the quantity to be trimmed or removed has been amended with only sufficient being excavated to maintain flows and ensure safe navigation and usage of the harbour. Appendix A.3 and A.4 gives details of these changes which has reduced the quantity of material to be removed from 22,000 tonnes to 17,000 tonnes

The works will be undertaken at low tide using land based excavation plant. This will minimise any potential contamination of water and also reduce the disruption to the existing harbour users.

Works are proposed to be carried out during daytime working hours (adapted to tidal working) with the associated health and safety and noise/vibration impact benefits.

Material removed from the picnic area will be transported by HGV's via road. This will be organised in order to avoid peak periods this will be a more efficient process and reduce carbon emissions.

The excavated sands and gravels will be transported to a local recycling yard to be processed to produce construction materials.

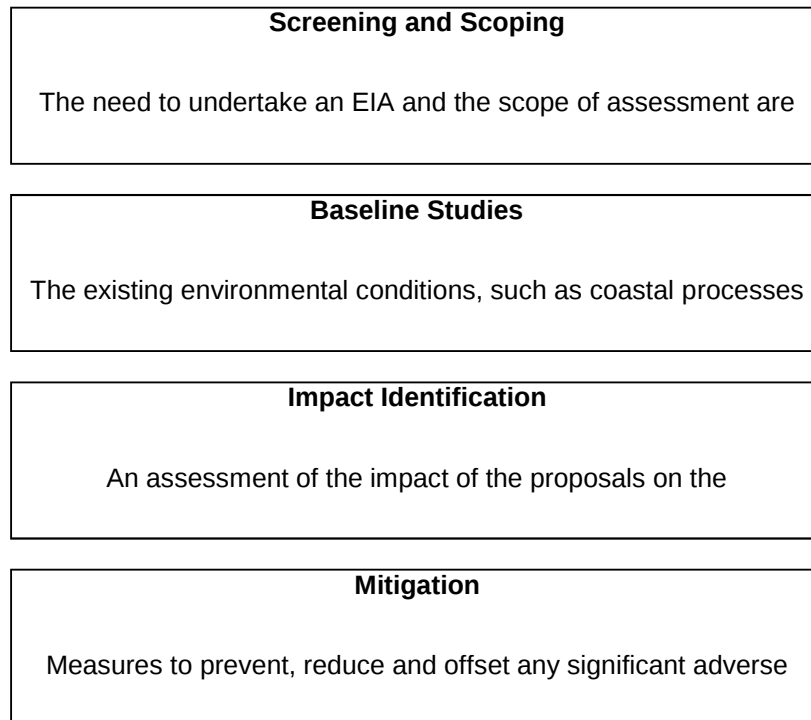
It is expected minor dredging will be undertaken in October 2018 and again in March 2019 and repeated annually for the duration of the licence. The above methodology is considered to be appropriate for future dredging activities.

A full description of the proposed excavation works methodology is provided in detail within this ES Addendum.

The Environmental Impact Assessment Process and Requirement for Addendum

Environmental Impact Assessment (EIA) is the process by which anticipated effects (which are also known as impacts, a term which has been used throughout the ES Addendum for consistency with previous submissions) on the environment of a proposed development are measured. If effects are identified, design measures or other relevant mitigation measures can be undertaken to reduce or avoid those effects.

An Environmental Statement (ES) is the report which presents the findings of an Environmental Impact Assessment (EIA) and is required as part of the planning and Marine Licence application for major developments with the potential for significant environmental effects. An EIA comprises a number of stages as shown below, throughout which consultation is required.



Other Licences/Permits

In addition to the ES, the scheme will require a new Marine License to be applied for (a Marine License is required for activities involving a deposit or removal of a substance or object in the UK marine area, which is broadly the area below the mean high water springs mark). This latest application is necessary as the present Marine Licence for undertaking dredging expires in May 2018.

Environmental Statement Addendum

This Environmental Statement Addendum is an update of the Environmental Statement Addendum submitted with the licence application in 2015 which in turn was based on the original 2011 ES. Each of the chapters scoped into the 2015 ES Addendum has been reviewed by a suitably qualified specialist in light of the changes to the original proposals. For consistency, the same significance criteria and method of impact assessment has been utilised for each specialist chapter that was used in the 2011 ES unless stated otherwise. Assessment has been made of the changes to impacts arising from the design and method of dredging alterations only. Where there are no changes this is stated and the chapter has been included for clarity.

A review of the revised small scale land-based dredging proposals in light of the planning context has been provided in detail within the ES Addendum.

Technical Topics

A brief summary of the conclusions from each of the technical topics re-visited has been provided below

Flood Risk, Drainage and Hydrology

This chapter has not been amended.

The proposed additional area to be dredged to achieve a specific level will be calculated from a level survey within the Harbour. Where the channel is of sufficient depth or deeper no work will be undertaken.

Annual monitoring records are also considered to see if any issues have been caused by previous dredging works. No problems with bed scour, destabilization of flood embankments and associated structures have been identified with care being taken to ensure dredging is not undertaken where problems could occur.

The key mitigation measures associated with the additional dredging will be to ensure that a flood management plan is in place for the area and flood warning systems are managed.

The additional material to be dredged within Rhyl Harbour is unlikely to have any further impacts associated with it compared to the original 2011 ES as the material is a buildup subsequent to original dredging. The overall changes to the flood risk for this work are considered to be negligible compared to the accepted ES. The annual dredging under the 2015 Marine License and consideration of the annual monitoring reinforces this view. The view that annual dredging will maintain the channels which will reduce risk of flooding remains unchanged from the 2015 application.

Coastal Processes

This chapter has not been amended.

The additional material to be dredged within Rhyl Harbour is unlikely to have any further impacts associated with it compared to the original 2011 ES. The overall changes to the coastal processes for this work are considered to be negligible compared to the accepted ES. The annual dredging undertaken under the 2015 Marine License reinforces this view.

Navigation

This chapter has not been amended.

The inclusion of the supplementary small-scale land based dredging area will be assessed in this chapter as the only change from the original. It is considered that although the construction methods have altered they will not have any different impacts on the navigational features of the harbour. The effects on navigation have been considered due to the new extent of dredging. The material to be dredged within Rhyl Harbour is unlikely to have any further negative impacts associated with it compared to the original 2011 ES and the 2015 addendum. The dredging will provide an additional benefit to the area. In order to limit these issues good communication between all parties is essential; this is helped by the employment of a Harbour Master.

Water and Sediment Quality

This chapter has not been amended.

With the mitigation of potential hydrocarbon contamination generated within the dredging area, the operational impacts are not considered to change from the 2011 ES.

By following the recommended mitigation detailed both in the 2011 ES, the 2015 ES addendum and this ES addendum, residual impacts to water and sediment quality are anticipated to be negligible.

Biodiversity

Whilst the scope of works for dredging activity in Foryd Harbour differed from that assessed within the 2011 ES, it is largely applicable in its assessment of the works and the present application does not differ from the 2015 application. The difference to the works from the 2011 ES and the 2015 ES Addendum is the timing of the works which minimises the impact on overwintering birds and the nesting season.

Noise

No additional significant adverse impacts have been identified using the methodology.

Transport

Depending on the height and timing of low tide it is anticipated approximately 1,200 tonnes of excavated material will be removed at each low tide, equating to 40 vehicle movements per truck over the period of the works. Sand transportation vehicles will be filled to their full capacity to ensure maximum efficiency.

The impact of dredging upon the local highway network is considered to be temporary but of moderate adverse significance. Once completed, the dredging operations will not generate any traffic and will have no impact upon the highway network.

Landscape

This chapter has not been amended.

The main changes to the original design are considered to be mainly beneficial in terms of increased park area, curved design elements, lower wall heights and sloped revetment. It is therefore considered that overall, the baseline mitigation measures and impacts assessed in the original assessment will not change as a result of the revised Phase 3 proposals. There are no further amendments to affect the assessment since the 2015 ES addendum or original ES.

Cultural Heritage

This chapter has not been amended.

Within 500 m of the proposed scheme there are a number of sites relating to maritime losses and wrecking events, harbour structures, buildings and find spots. Two wrecks are located within the tidal river – The Alice and the City of Ottawa.

With the dredging maintenance proposals, there is the possibility for change to the local hydrological and sedimentological regime; therefore the potential exists for altering the baseline of known cultural heritage assets. However, the 2011 ES found that hydrological/sedimentological changes would be *negligible* and given that the dredging area excluded the surroundings of the *City of Ottawa* there is not anticipated to be any change to this impact. The material dredged within Foryd Harbour since the 2015 ES addendum and subsequent Marine Licence has had no further impacts than those detailed in the original 2011 ES.

Socio-Economic

This chapter has not been amended.

Operational impacts were anticipated to be mostly moderate/major beneficial in the 2011 ES in relation to the local economy, regeneration, harbour users and the public. Maintenance dredging of the channel was taken into account in the original assessment and the additional dredging area and timescales of the dredging activities are not considered to change the outcome of the initial assessment. As for the original ES Chapter, temporary adverse impacts relating to the dredging activities will be far outweighed by the long term beneficial impacts of improved harbour maintenance and management, with the potential for the creation of local jobs in harbour maintenance activities.

Overall, therefore, an amendment to the Socio-Economic and Community Chapter has been scoped out of this addendum.

Cumulative Impacts

The projects with the potential to contribute to cumulative impacts are:

- Phases 1,2 and 3 of the WRCDS are already completed;
- A scheme to replace the Yacht Club Quay Wall (details or timing not finalised);
- The Wreck of the Ottawa is located within Foryd Harbour but not in the direct vicinity of the dredging works and it is understood that there are no longer any proposals for its movement; and
- The Ocean Plaza development on the Rhyl seafront is to be a retail park (details not fully confirmed).

Therefore the changes to cumulative impacts relating to the revised land-based dredging proposals are considered to be negligible and are not considered further.

Acronyms and Abbreviations

Acronym/Abbreviation	Details
AQMA	Air Quality Management Area
BS	British Standard
CCBC	Conwy County Borough Council
CCTV	Close Circuit Television
CEFAS	Centre for Ecology, Fisheries and Aquaculture Science
dB	Decibels
DCC	Denbighshire County Council
EHO	Environmental Health Officer
EIA	Environmental Impact Assessment
ES	Environmental Statement
EMP	Environmental Management Plan
FEPA	Food and Environment Protection Act
IBA	Important Bird Area
HGV	Heavy Goods Vehicle
HRA	Habitats Regulations Assessment
IBA	Important Bird Area
LDP	Local Development Plan
ND	Nitrogen Dioxide
LDP	Local Development Plan
MCAA	Marine and Coastal Access Act
MCU	Marine Consents Unit
MFA	Marine Fisheries Agency
mOD	Metred above Ordnance Datum
MPS	Marine Policy Statement
NO ₂	Nitrogen Dioxide
NRMM	Non Road Mobile Machinery
NRW	Natural Resources Wales
NSR	Noise Sensitive Receptor
PPW	Planning Policy Wales
RBD	River Basin District
RNLI	Royal National Lifeboat Institution
RSPB	Royal Society for the Protection of Birds
SAC	Special Area of Conservation
SMP	Shoreline Management Plan
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
SPG	Supplementary Planning Guidance
SWMP	Site Waste Management Plan
TAN	Technical Advice Notes
UDP	Unitary Development Plan

Acronym/Abbreviation	Details
UKCP	UK Climate Projections
WFD	Water Framework Directive
WG	Welsh Government
WRCDS	West Rhyl Coastal Defense Scheme

1 Introduction

1.1 Site Location and Description

Rhyl Harbour (formerly known as Foryd Harbour) lies at the mouth of the estuary of the Afon Clwyd, which is located at the western gateway into Rhyl on the North Wales coast, approximate NGR SH 994 806. The centre of the Afon Clwyd forms the administrative boundary between the unitary authorities of Conwy and Denbighshire and the harbour area straddles this, with Rhyl to the east and Kinnel Bay to the west. Although nearly all the land within the proposed project area is owned by Denbighshire County Council (DCC), including the harbour basin, the west side of the site comes under jurisdiction of the Conwy County Borough Council (CCBC) Planning Authority, and the east side of the site comes under the jurisdiction of the DCC Planning Authority. Rhyl Harbour provides a base for (amongst others) The Rhyl Fisherman's Association, Rhyl Charter Skippers Association, Rhyl Yacht Club and Rhyl Water Ski Club.

The northern boundary of the harbour area (from west to east) comprises the Rhyl Yacht Club building and boat yard, the Rhyl harbour boat yard, car park and quay wall, the recently completed harbour building and public square and the extended quay wall. Horton Nose Lane serves the northern area of the harbour. The southern boundary (from west to east) is formed by the inner and outer sea walls (West Parade road runs beyond and parallel to the sea walls), and the training wall guiding the navigable channel out to the north-east. The western boundary of the harbour basin is formed by the Foryd Harbour Bridge (the Blue Bridge) and a recently constructed Sustainable Transport Bridge (Pont y Ddraig) spans the harbour from the public square to the junction of West Parade and Quay Street for pedestrians and cyclists.

The wider site surroundings comprise:

North: Remainder of Horton's Nose comprising dunes, shingle, intertidal sands and boardwalk;
East: Rhyl West Promenade (a partially constructed business park and a car park beyond the road);
South: The remainder of Rhyl Harbour and the estuarine Clwyd beyond Rhyl Harbour Bridge; and
West: Sunnyvale Caravan Park is present beyond the boat yard (static caravans).

The site location and boundary is shown in context of the wider area and designated sites and in its local context in Appendices A.1 and A.2 respectively.

1.2 Summary of Significant Works to Rhyl Harbour.

Rhyl has a population of almost 27,000 – the largest town in Denbighshire and the second largest in North Wales. Its excellent natural environment, especially the beaches and its location on the main Chester – Holyhead Railway line enabled it to grow as a seaside town during the late Victorian era.

These attributes still exist today, however Rhyl is renowned for its economical and physical decline. Historically the town was heralded as the place to holiday, but like other seaside towns over the last 20 years it has suffered from under investment and the trend to holiday abroad has drastically reduced visitors, taken its toll on the local economy and crippled employment opportunities.

There is a significant lack of investment in public infrastructure in the Rhyl and Kinnel Bay area and as a result there is little in the way of a positive platform to draw in increased private sector investment.

The development of the Rhyl Harbour area, including the West Rhyl Coastal Defence Scheme and the Sustainable Transport Bridge (Pont y Ddraig) is all part of DCC's long terms plans to stimulate investment and growth in the West Rhyl area.

The major works which have occurred within the Rhyl Harbour area to date have been summarised in Table 1.1 to aid understanding of the development history of the harbour and also the amount of environmental assessment that has already been completed in this area.

Table 1.1: Rhyl Harbour Work Summary

Project	Works Included	Environmental Assessment (EIA) Required	Impact	Status
Rhyl Harbour Scheme – Initial Works	- Boat storage compound. - Car parking improvements. - Raising of original quay wall to 6.1 m. - Floating pontoon. - Boat hoist. - Environmental improvements at Horton's Nose: Footpath modifications, a boardwalk, viewing area and information boards.	No. Environmental Report produced for moorings works November 2010.		Complete (August 2009, moorings March 2011)
West Rhyl Coastal Defence Scheme	- Phase 1 – Upgrading the River Clwyd training wall. - Phase 2 – Improvements to the existing harbour wall, from the Foryd (Blue) Bridge to the intersection with the training wall. - Phase 3 – Precast concrete wall / slopped revetment, to the east of the training wall.	- Yes – Annex II - Screened under: - Town and Country Planning (EIA) (England and Wales) Regs 1999 (as amended). Part 2 Para 5. - Marine Works (EIA) Regs 2007. Schedule 2 Para 1. (Also required FEPA licence and CPA Consent). - Environmental Statement (ES) completed October 2010. - ES Addendum for Phase 3.		Phase 1 Complete Phase 2: Complete (Phases 1 & 2 completed September 2013) Phase 3: Complete (Phase 3 completed June 2015)
Sustainable Transport Bridge	Bascule Type Bridge spanning the Clwyd Estuary from the promenade at the junction of Quay Street and West Parade extending to the northern bank of the River Clwyd.	- No - Screened under: - Town and Country Planning (EIA) (England and Wales) Regs 1999 (as amended). Part 2 Para 5. - Marine Works (EIA) Regs 2007. Schedule 2 Para 1. - Non-statutory Environmental Report produced December		Complete (opened October 2013)
Rhyl Harbour Public Square and Extended Quay Wall Scheme	See Section 1.3.	- Yes – Annex II - Screened under: - Town and Country Planning (EIA) (England and Wales) Regs 1999 (as amended). Part 2 Para 5. - Marine Works (EIA) Regs 2007. Schedule 2 Para 1. - Also required Marine Licence. - ES Completed December		Complete (all facilities were completed by May 2014)

1.3 Rhyl Harbour Public Square and Extended Quay Wall

This Scheme comprised the most recent phase of development within the harbour area and included the following aspects all of which have been completed.

- Construction of a new public square;
- Construction of an extended quay wall with associated floating pontoon;
- Construction of a multi-use harbour building;
- Boat yard and car park Improvements;
- Moorings reconfiguration and additional moorings creation;
- Dredging of the deep water channel and harbour area;
- Dune restoration and habitat creation;
- Improvements to navigation aids in the harbour area; and
- Addition of 10 pontoon moorings in the centre of the river to the north-east of the pedestrian and Cycle Bridge.

The aspects of the original Scheme are summarised on the drawing provided in Appendix A.3.

As the first stage in the EIA process, and in accordance with the Town and Country (EIA) (England and Wales) Regulations 1999 (as amended) and the Marine Works EIA Regulations, a screening opinion was sought from CCBC and the Welsh Government's MCU who confirmed that an EIA was required. An Environmental Scoping Document was produced in support of the scoping opinion request.

In December 2011, DCC completed an ES for the Rhyl Harbour Public Square and Extended Quay Wall Scheme. This ES was produced following the EIA process to accompany a full planning application submitted to CCBC, for the construction of the proposed harbour development.

This scheme was granted planning permission and construction was completed by May 2014. The planning application included a need for forward dredging to maintain navigation channels and moorings.

1.4 Dredging Proposals: Original and Proposed

Note: While the term 'dredging' is used within this report, the sand/silt excavation process that will take place will be small-scale and highly localised in nature, and will be completed by land based plant at low tide. No specialist dredging equipment will be required (barges for example) and the vast majority of material will be removed from above low water level. The exception will be the dredging of the main navigable channel which will require some limited excavation below the low water level (this was included in the original 2011 ES).

During the consultation undertaken to obtain the 2015 Marine Licence three key issues were raised. These were addressed as part of the process and have been included in this ES in the appropriate sections and all correspondence concerning these issues is included in Appendix G.

These issues have again been raised for the present application and are again addressed within the ES.

1.4.1 Original Proposals (Construction Phase – now complete)

The extent of original excavation and dredging is shown on the drawing in Appendix A.3 which was completed during construction. The original proposals which included aspects of dredging comprised the following:

“Excavate silt from Horton Nose and backfill with sands and gravels.”

The silt will be excavated to a maximum depth of 2.5 metres at low tide using a 360 degree excavator with the

material stockpiled on the bank above. It will subsequently be removed to construct the sand dunes. Material excavated in the same method as excavation of the deep water channel item 4 above to widen the channel to allow for the 10 deep water anchorages downstream of the bridge will be pushed using a dozer

In to the Horton Nose basin to a height of 4.5 m AOD. The majority of this work will be able to be done in the normal working day dependent on tides. Close co-ordination with harbour users will be maintained during this work to ensure un-restricted access to the pontoons is maintained.

Excavate deep water channel commencing work at downstream end (Sydenham Avenue) and transport material for construction of dunes or stockpile by Public Square for re-use.

Where possible the works will be programmed to minimise disruption to the existing Harbour users with the works programmed to take place around low tide. The materials are predominantly sand and gravels and will be removed with 360 degree excavators which will excavate the material and place it onto the bank for loading into dumpers to take to the sand dunes for placement. Close liaison will be maintained with Harbour users to advice of channel changes and any possible obstructions (which will be marked with a buoy). Best practice guidelines for working in coastal waters will be adhered to with no fueling or maintenance to be carried out on the foreshore adjacent to the River Clwyd.

Marine Lake

Transport sands and gravels from the dredging operation to marine lake and construct causeway to island and construct beach for island (causeway to be fenced at night to prevent access to island). Upon completion of island work the causeway is to be removed and used to create a beach. All work is to be undertaken under the supervision of Countryside Services.

Complete Dredging of Harbour

The remaining sands and gravels will be removed from the front of the Redi Rock wall at low tide and stockpiled to the rear of the quay wall utilising tracked dumpers and 360 degree track machines."

1.4.1 Additional Dredging Proposals Going Forward (Maintenance)

Following the submission of the ES and completion of works in May 2014, the long-term future management of the Rhyl Harbour area is currently being arranged, including the creation of a Harbour Authority via a Harbour Empowerment Order (HEO) (not considered within this ES Addendum).

In advance of the Harbour Authority creation there is a requirement for the organisation of on-going harbour maintenance. This maintenance includes small-scale dredging which incorporates the area of the harbour originally dredged as part of the public square and extended quay wall construction process, along with an addition area to the south-west in the vicinity of the main moorings area prior to the main tourist season and in October if required. To date this dredging has been undertaken under a marine licence for dredging issued in May 2015 with the expiry date May 2018. To enable dredging to continue this ES addendum supports an application for a Marine Licence for a further three years of dredging commencing in October 2018.

The proposed dredging maintenance area is outlined on the drawing in Appendix A.4 and more details on the methodology to be used are provided within Section 2.

1.5 Requirement for Environmental Impact Assessment Addendum and Other Consents

1.5.1 ES Addendum

Dredging activities require the acquisition of a Marine Licence and this ES Addendum has been produced in support of the Marine Licence application for long term dredging at Rhyl Harbour and combines the significant amount of information gathered for the initial ES together with updated information on the anticipated environmental impacts of dredging proposals going forward.

1.5.2 Other Consents

1.5.2.1 Marine Licence (to Dredge and Dispose of Dredged Material)

A Marine Licence for the Scheme has previously been approved for the construction of the works. A Marine Licence has been previously approved for annual dredging with an expiry date in May 2018. However, a new Marine Licence will be applied for covering another three years of dredging maintenance activities. The Marine Licence is required for any 'licensable marine activity' in Welsh waters that comes under Part 4 of the Marine and Coastal Access Act 2009 (MCAA).

1.5.2.2 Environmental Permit/Waste Exemption

An Environmental Permit is required for the Scheme. The intention is to employ a Contractor who is in possession of the necessary Environmental Permits and Waste Exemption to both undertake the dredging and transfer the material dredged to their recycling center.

1.5.3 Planning

The dredging area covers both DCC and CCBC authority boundaries therefore; both sets of planners must to be notified to ensure that they are aware of the changes made to the original planning procedures. The notification e-mail is attached in Appendix B and details that DCC planning are aware of the changes and want the Marine Consents Unit to deal with any planning/policy changes in order not to duplicate any planning controls.

1.6 Environmental Statement Addendum Structure

It should be noted that while the Town and Country Planning (EIA) (England and Wales) Regulations 1999 refer to environmental 'effects' the term 'impacts' has been used interchangeably within this document to provide consistency with the 2011 ES.

Each of the chapters scoped into the 2011 ES has been reviewed in light of the changes to the original proposals. For consistency, the same significance criteria and method of impact assessment has been utilised for each specialist chapter as was used in the 2011 ES unless stated otherwise. Assessment has been made of the changes to impacts arising from the additional small-scale land based dredging operations proposed only.

This ES Addendum comprises the following (combined into one document for ease of access):

- Non-Technical Summary – This document provides a concise summary of the proposed development, the existing site, potential environmental impacts and mitigation measures;
- ES Addendum – This document forms the main body of the ES Addendum detailing the potential revised impacts arising and proposed mitigation measures. The ES is divided up into a number of background and technical sections; and
- ES Addendum Appendices – Key drawings and additional information.

The ES Addendum chapters in this addendum are listed below:

- Chapter 2: Proposed Methodology;
- Chapter 3: Planning Context Update;
- Chapter 4: Coastal Processes;
- Chapter 5: Flood Risk, Drainage and Hydrology;

- Chapter 6: Water, Land and Sediment Quality;
- Chapter 7: Navigation;
- Chapter 8: Biodiversity;
- Chapter 9: Cultural Heritage;
- Chapter 10: Landscape and Visual;
- Chapter 11: Socio-Economic and Community;
- Chapter 12: Transportation, Traffic and Access;
- Chapter 13: Noise and Vibration;
- Chapter 14: Other Aspects;
- Chapter 15: Impact and Mitigation Summary; and
- ES Addendum Appendices.

1.7 Consultation Activities

The consultation activities that have been completed in relation to the proposed dredging operation and are summarised below:-

- Governing bodies- The Welsh Government's Marine Consents Unit and National Resources Wales (NRW) have been informed of the extended dredging operation and an *'Application for a marine licence to dredge and dispose of dredged material'* will be sought.
- DCC Planning, Archaeological and Environmental Health officers have all been contacted in order to comment on the change to the original dredging proposals.
- Communication with The Harbour Forum has been ongoing throughout the process.
- Consultation with the Harbour Master has been ongoing through the process and in the refinement of the future dredging operation.
- Consultation with DCC Countryside Service to ensure ecological requirements are met.

1.8 Habitats Regulations Assessment Update

As the competent Authority under the Conservation of Habitats and Species Regulations 2010, DCC undertook Habitats Regulations Assessment (HRA) Screening to determine the need for Appropriate Assessment in relation to any significant residual impacts from the Scheme on the Dee Estuary European Marine Site (Special Area of Conservation (SAC); Special Protection Area (SPA) and RAMSAR site) and Liverpool Bay Special SPA.

The original HRA screening exercise concluded that the Rhyl Harbour scheme would have no significant affects either alone or in combination with other projects and that no Appropriate Assessment of the project would therefore be required.

Given the extended area of maintenance dredging identified, the HRA Screening process has been re- visited by a competent ecologist to determine whether the alterations would trigger the requirement for Appropriate Assessment. NRW has been consulted as part of this process.

The revised HRA Screening letter report is included within Appendix C and recommends that a HRA would not be required for the revised proposals.

2 Proposed Methodology

2.1 Introduction

Maintenance dredging of Rhyl Harbour is required to be undertaken on a regular basis in order to maintain navigable channels and a suitable working depth for the remainder of the harbour area. The existing channels are becoming filled with sediments resulting in them being too shallow for navigation. The extent of the extended area to be dredged along with estimated quantities is detailed on in the drawing provided within Appendix A.4 (with appendix A.3 detailing the previous quantities) It is expected that this work will be undertaken in October 2018 (if required) and then annually each year in March, with additional dredging activities occurring in specific areas in October of each year if required. In applying for this licence lessons learnt during the dredging over the course of the present licence have been taken into account with timings changed to suit ecological requirements and the extent and of sand removal has been reduced with seasonal river flows being utilized to transport sediment within the inner harbor (natural process). Monitoring over the term of the previous dredging licence and Consultation with the harbor forum and harbor master has identified where dredging works are required.

The site layout displaying vehicle movements, stock pile area and cross sectional detail for the small scale land-based dredging measures, vehicle wheel washing on and off site (at site entrance) is detailed on the drawing provided in Appendix A.5.

2.2 Methodology

It is anticipated that approximately 17,000 tonnes of material will require removal from the harbour and approach channel every year. This has been calculated from level surveys carried out at the harbour between 2014 and 2018 in order to assess the amount of siltation above finished level. The proposed finished levels for the area have not been altered from the original 2011 ES these being:

- In the vicinity of the quay wall, the finished levels is to be +0.5 m AOD to allow for the exposure of mud habitat at low tide (ecological requirements);
- In the area of the outer channel adjacent to the training wall, the finished level is to be -1.8 m AOD;
- In the inner area between the floating pontoon and West Rhyl Defences it is to be at -1.5 m AOD; and
- In the vicinity of the slipways and the inner harbour the finished level is to be -0.5 m AOD.
- Trimming of banks will be undertaken to a one in three slope with no trimming undertaken within the vicinity of the Clwyd flood Embankments or City of Ottawa.
- All material trimmed to ensure safe navigation and mooring will be left in place in the inner harbor (upstream of the new cycle bridge).
- No dredging upstream of the weir at the location of the original road bridge (approximately 50 meters upstream of the Wellington Road Bridge) is to be undertaken so river flows or bank erosion are not affected(outside dredging area).
-

It is the intention to undertake the minimum amount of work to ensure the working harbour is navigable taking advice from the Harbor Master and lessons learnt over the last three years. As the budget for dredging is very small it is necessary to consider where the budget can best be used, as can be seen from the monitoring records in the years where there was insufficient funding to remove the sand buildup by the turning circle (end of quay wall) it continued to build up and started to infill the main channel and harbour. This removal of buildup is now prioritized.

The monitoring records attached to this report use 2015 as the base line and consideration of results show there is very little variation and there is no effect on West Rhyl. The area of monitoring is to remain the same as the area of monitoring previously used for the 2015 licence.

The works will be undertaken at low tide using land based excavation plant. This will minimise any potential

contamination of water and also reduce the disruption to the existing harbour users. All plant will be stored in the site compound when not in use. Careful consideration and planning will be given to timings of high and low tide per day using a tide timetable. Depending on the height and timing of low tide it is anticipated in the region of 1,200 tonnes will be removed per tide equating to 40 vehicle movements per truck over the period of the works. Sand transportation vehicles will be filled to their full capacity to ensure maximum effectiveness.

Dredging will be undertaken by a 30 tonne extra reach excavator which will access the harbour either from the beach adjacent to the quay wall turning circle or via the boat slipway. The excavated material will be loaded into three 10 tonne dumper trucks which will access the harbour via the beach adjacent the quay wall. Banksman will be employed to make sure the operation is run safely and efficiently on site during the dredging operation.

Material will be removed from the area by excavating in cells to reduce suspended sediments to allow minimum disturbance to the marine environment with the majority of material being removed above low water level. The material will then be stored at the picnic area (shown on the drawing in Appendix A.5) using the Contractors Waste Transfer Permit. It is expected that the maximum stockpile size at any one time will be 1,000 tonnes and will only spend a maximum of two days in the stockpile before transportation off site.

Prior to each dredging operation taking place testing will be undertaken as the OSPAR Guideline for the Management of Dredged Material Agreement 2014-16 and also Agreement 2015-06. Detailing the interpretation of paragraphs 5.5 and 5.6 testing. As the material is to be disposed of on land the appropriate testing for this to take place will be undertaken with samples being taken at the location detailed in Appendix A.4, Drg H4/14409/D03C with the samples of the material to be removed taken from approximately 1.0m depth (safe working dictating actual depth).

Works are proposed to be carried out during daytime working hours (adapted to tidal working) with the associated health and safety and noise/vibration impact benefits.

Removal of material from the picnic area will be transported by HGV's via road. This will be organized in order to avoid peak periods this will be a more efficient process and reduce carbon emissions.

Anticipated future use of the excavated material will be for processing as construction material at the contractor's recycling yard.

Following completion of the dredging the land surveyor who has undertaken all surveys to date will continue to undertake these surveys and update the base drawing so any concerns following the dredging can be identified.

2.2 Frequency

It is expected that this work will be undertaken in March 2019 and then annually each year, with additional dredging activities occurring as required in October if siltation problems are encountered in specific areas. The above methodology is therefore considered to be appropriate for future dredging activities.

3 Planning Context Update

A full review of the planning policy framework relevant to the Rhyl Harbour Scheme was presented in the Rhyl Harbour December 2011 ES. Some notable changes have been made to planning policy in Wales since submission. A short summary of the pertinent changes in policy at national, regional and local level has been provided within this chapter. Where planning policy has changed significantly, or where the revised small scale land-based dredging proposals have a potential impact on planning policy (with respect to the additional dredging proposals only – not previously undertaken development), the changes have been summarised in Table 3.1.

Details of policy alterations relating to specific environmental topics have been discussed within relevant chapters of the ES.

Table 3.1: Planning Update Summary Table

	Document	Item	Details of Changes
National	Planning Policy Wales (PPW)		PPW sets out the land use planning policies of the WG. The 2011 ES references PPS Edition 4 (February 2011), however the most current version of the document is Edition 7 (July 2014).
		Ch4	Planning for Sustainability PPW Chapter 4 identifies the basic principles that define WAG's approach to planning policy for sustainable development including 19 policy objectives that should govern all development plans, policies and proposals. The additional dredging proposals are still considered to meet the objectives of PPW Chapter 4 in particular by maximising the efficiency and use of the harbour area for all end users. Maintenance dredging will mean that the use of the harbour for tourism, as a source of employment and by the public is promoted and help it to become a driver for local regeneration.
		Ch5	Conserving and Improving Natural Heritage and the Coast The key objectives identified within PPW Edition 4 Chapter 5 remain unchanged. The additional dredging proposals (as informed by this ES Addendum) are still considered to be in line with the guidance in this chapter. Additional HRA screening will be completed to ensure that local statutory designated sites (e.g. the of-shore Liverpool Bay SPA) are protected.
		Ch6	Conserving the Historic Environment The additional dredging proposals are still considered to meet the objectives of PPW Chapter 6. Dredging will not take place in the immediate vicinity of the City of Ottawa wreck.
		Ch7	Supporting the Economy The wording of the WG's objectives within PPW Chapter 7 have changed from Edition 4, however the issues remain similar. In particular, the additional dredging proposals will "<i>deliver physical regeneration and employment opportunities to disadvantaged communities</i>". The additional dredging proposals (as informed by this ES Addendum) are still considered to be in line with the guidance in this chapter.
		Ch8	Transport The key paragraphs in PPW Chapter 8 relating to development with transport implications remain similar in Edition 7. The additional dredging proposals (as informed by this ES Addendum) are still considered to be in line with the guidance in this chapter. Undertaking adequate maintenance dredging in the harbour area will allow maximum access by all necessary water craft used for both private/public leisure and employment.

Document		Item	Details of Changes
		Ch11	Tourism, Sport and Recreation The additional dredging proposals will help to meet the objective of promoting “a more sustainable pattern of development, creating and maintaining networks of facilities and open spaces in places well served by sustainable means of travel, in particular within urban areas”. The proposals will encourage more, and a wider range of, boats into the harbour area aiding its use as a leisure facility to be used by a large number of community
		Ch12	Infrastructure and Services The key principles identified within PPW Edition 4 Chapter 12 remain unchanged. The additional dredging proposals are still considered to be in line with the guidance in this chapter.
		Ch13	Minimising and Managing Environmental Risks and Pollution The key principles identified within PPW Edition 3 Chapter 13 remain unchanged. The additional dredging proposals are still considered to be in line with the guidance in this chapter. Suitable supplementary sediment testing has been
National	Technical Advice Notes (TANs)		TANs are topic based advice notes intended to supplement PPW and should be taken into account when preparing development plans.
		TAN 5, 11, 12, 13, 14, 15, 16, 18	TAN: 5 (Nature Conservation and Planning), 11 (Noise), 12 (Design), 13 (Tourism), 14 (Coastal Planning), 15 (Development and Flood Risk), 16 (Sport, Recreation and Open Space) and 18 (Transport) are unchanged from the original proposals. The revised Phase 3 proposals (as informed by this ES Addendum) are still considered to be in line with the guidance in these documents. TAN 22 (Sustainable Buildings) discussed in the December 2011 ES does not apply
		TAN 21	Waste According to this TAN, land use planning should help to “drive the management of waste up the waste hierarchy” and “support the economic and social benefits that can be realised from the management of waste as a resource within Wales”. The re-use of dredged sediments for local beach replenishment (where physical/chemical properties permit) or for other uses such as in local construction would be in line with the above guidance.
National	Wales Spatial Plan: ‘People, Places, Futures’ (2008)		The Wales Spatial Plan ‘People, Places, Futures’ (WSP) is a 20 year plan for the sustainable development of Wales. The town of Rhyl is located within north east Wales – Border and Coast region of the WSP. Within this region an over-riding aim is to identify areas prone to flooding and establish the most suitable responses including alternative uses and innovative solutions. The Wales Spatial Plan contains specific objectives relating to Denbighshire and Conwy. “For Conwy and Denbighshire, broadening the economic base and raising the profile of the counties’ environmental assets will be an important focus to provide high quality employment opportunities, building on the area’s strengths and fostering a unique sense of place.” The additional dredging proposals (as informed by this ES Addendum) are still considered to
National	Marine Policy Statement (MPS)		All 4 UK administrations adopted MPS in March 2011. By adopting the MPS the WG signed up to introduce marine plans for Wales. Under the Marine and Coastal Access Act (MCAA) 2009 all public authorities taking authorisation or enforcement decisions that affect or might affect the UK marine area must consider the MPS. The Marine Policy Statement sets out the policies that will help achieve sustainable development in the UK marine area. It provides the framework for preparing marine plans and for taking decisions that affect the marine environment. Marine plans will provide more detailed policy and spatial guidance at a country or regional level.
Regional	Shoreline Management Plan (SMP)		Rhyl still falls under the North West England and North Wales Shoreline Management Plan SMP2, sub-cell 11a Management Unit 417 with the coastal defence policy “hold the line”. The additional dredging proposals (as informed by this ES Addendum) are still in line with

Document	Item	Details of Changes
Local	Denbighshire Local Development Plan (LDP)	Denbighshire County Council formally adopted the LDP at a meeting of the County Council on 4th June 2013. This now replaces the Denbighshire Unitary Development Plan (UDP) discussed in the 2011 ES. The LDP provides guidelines as to what can be built and where throughout the County over a 15 year period. The new Denbighshire LDP covers the period 2006 – 2021. This document contains local planning policies, which sit within the framework of national planning policies set out by the WG. These policies are designed to take forward the Local Development Plan objectives, spatial strategy and vision for this County; 'Denbighshire by 2021'. Policies are grouped under five key themes in line with the Wales Spatial Plan: Respecting Distinctiveness (RD), Building Sustainable Communities (BSC), Promoting a Sustainable Economy (PSE), Valuing Our Environment (VOE) and Achieving Sustainable Accessibility (ASA). The Local Development Plan forms part of a range of plans, policies and programmes which have an influence over development in Denbighshire. The LDP states that <i>"the coastal resorts of Rhyl and Prestatyn will be re-positioning themselves within the tourism market to take advantage of growth sectors such as short breaks and activity tourism. ... The coastal strips of both towns will be protected for tourism purposes and the development of appropriate outdoor activity will be supported"</i>. The additional dredging proposals will help act towards achieving the above. The additional dredging proposals (as informed by this ES Addendum) are considered to be in
	Policy RD 1	<i>"Policy RD 1 - Sustainable development and good standard design</i> <i>Development proposals will be supported within development boundaries provided that all the following criteria are met:</i> <i>i) Respects the site and surroundings in terms of the siting, layout, scale, form, character, design, materials, aspect, micro-climate and intensity of use of land/buildings and spaces around and between buildings; and</i> <i>iii) Protects and where possible enhances the local natural and historic environment; and</i> <i>vi) Does not unacceptably affect the amenity of local residents, other land and property users or characteristics of the locality by virtue of increased activity, disturbance, noise, dust, fumes, litter, drainage, light pollution etc., and provides satisfactory amenity standards itself; and</i> <i>viii) Does not have an unacceptable effect on the local highway network as a result of congestion, danger and nuisance arising from traffic generated and incorporates traffic management/calming measures where necessary and appropriate. A transport assessment and travel plan will be required where appropriate; and</i> <i>ix) Has regard to the adequacy of existing public facilities and services; and</i> <i>x) Does not prejudice land or buildings safeguarded for other uses, or impair the development and use of adjoining land; and</i> <i>xi) Satisfies physical or natural environmental considerations relating to land stability, drainage and liability to flooding, water supply and water abstraction from natural watercourse; and</i>
	Policy PSE 1	<i>"North Wales Coast Strategic Regeneration Area</i> <i>In the North Wales Coast Strategic Regeneration Area the Council will support proposals which:</i> <i>•enable the retention, enhancement and development of tourism related facilities; or</i> <i>• Address existing problems of deprivation in a manner which is consistent with the principles of sustainable development"</i>.
	Policy PSE 13	<i>"Coastal Tourism Protection Zones</i> <i>Within the coastal tourism protection zones shown on the proposals maps proposals which would result in the loss of tourism facilities will not be supported"</i>.
	Policy PSE 14	<i>" Outdoor activity tourism</i> <i>Development proposals that expand or reinforce the tourism offer of the County in the outdoor activity sector will be supported provided the following criteria are met:</i> <i>.....iii) necessary mitigation measures are included and the proposals would not have an unacceptable impact on the local community...</i>

Document		Item	Details of Changes
		Policy VOE 1	<i>Key Areas of importance</i> <i>The following areas will be protected from development that would adversely affect them. Development proposals should maintain and, wherever possible, enhance these areas for their characteristics, local distinctiveness, and value to local communities in Denbighshire:</i> • <i>Statutory designated sites for nature conservation;</i> • <i>Local areas designated or identified because of their natural landscape or biodiversity value;</i> • <i>Sites of built heritage; and</i> • <i>Historic Landscape, Parks and Gardens.</i>
		Policy VOE 5	<i>“Conservation of natural resources.</i> <i>Development proposals that may have an impact on protected species or designated sites of nature conservation will be required to be supported by a biodiversity statement which must have regard to the County biodiversity aspiration for conservation, enhancement and restoration of habitats and species.</i> <i>Where the overall benefits of a development outweigh the conservation interest of a locally protected nature site, mitigation and enhancement measures in or adjacent to these sites should be an integral part of the Scheme.</i> <i>If necessary, measures required to mitigate likely adverse effects on the qualifying features of statutory designated sites should be put in place prior to the commencement of development. Measures required to offset any likely adverse effects will be secured by planning conditions and/ or planning obligations.</i> <i>Planning permission will not be granted for development proposals that are likely to cause significant harm to the qualifying features of internationally and nationally designated sites of nature conservation, priority habitats, priority species, regionally important geodiversity sites, or to species that are under threat”.</i>
Local	Conwy Local Development Plan (LDP)		Conwy formally adopted the LDP in October 2013. It sets out the key challenges facing Conwy, identifies the Vision, Objectives and the Spatial Strategy for development in the area over the period 2007 to 2022. The LDP will be used by the Council to guide and control development providing the basis by which planning applications will be determined. The LDP replaces existing Structure Plans and Local Plans which previously provided the policy framework for the Conwy Plan Area (these were adopted in March 1999). The new Denbighshire LDP covers the period 2007 – 2022. This document contains local planning policies, which sit within the framework of national planning policies set out by the WG. Spatial Policies and Supporting Development Management Policies are grouped within key themes: Development Principles; The Housing Strategy; The Economic Strategy; Tourism; Community Facilities and Services; The Natural Environment; Cultural Heritage; Sustainable; Transport; and Minerals and Waste. The additional dredging proposals (as informed by this ES Addendum) are considered to be in line with the content of the LDP. The following policies are particularly relevant:

Document	Item	Details of Changes
	Policy DP/1	<i>“Sustainable Development Principles</i> <i>1. Development will only be permitted where it is demonstrated that it is consistent with the principles of sustainable development. All developments are required to:</i> <i>a) Accord with national guidance in line with Policy DP/6 - ‘National Guidance’;</i> <i>d) Conserve or enhance the quality of buildings, sites and places of historic, archaeological or architectural importance in line with Strategic Policy CTH/1 - ‘Cultural Heritage’;</i> <i>e) Conserve or enhance the quality of biodiversity and wildlife habitats, and safeguard protected species in line with Strategic Policy NTE/1 – ‘The Natural Environment’;</i> <i>f) Take account of and address the risk of flooding and pollution in the form of noise, lighting, vibration, odour, emissions or dust in line with Policies DP/2 and DP/3 - ‘Promoting Design Quality and Reducing Crime’;</i> <i>2. Development proposals should also where appropriate:</i> <i>b) Include measures to manage traffic and minimise congestion arising in line with Strategic Policy STR/1;</i> <i>e) Promote sustainable economic development in line with Strategic Policy EMP/1 - ‘Meeting the Employment Need’;</i> <i>h) Protect the quality of natural resources including water, air and soil in line with Strategic Policy NTE1;</i> <i>i) Reduce waste production and manage waste re-cycling in line with Strategic Policy MWS/1 - ‘Minerals and Waste’.”</i>
	Policy DP/6	<i>“National Planning Policy and Guidance</i> <i>Development proposals must comply with national planning policy and guidance.</i>
	Policy TOU/1	<i>“Sustainable Tourism</i> <i>The Council will promote a sustainable tourism economy by:</i> <i>a) Supporting, in principle, proposals for new high quality all-year round sustainable tourism development that diversifies the economy and encourages cross-boundary links with neighbouring authorities, in line with Policy TOU/2 – ‘New Sustainable Tourism and Recreational Development’;....</i> <i>e) Improve connectivity by supporting the delivery of improved links at Foryd Harbour, improvements to the Wales Coastal Path and through the Public Rights of Way Improvement Plan in line with Strategic Policy STR/1 – ‘Sustainable Transport, Development and Accessibility’ and Policy TOU/2”</i>
	Policy NTE/1	<i>“The Natural Environment</i> <i>In seeking to support the wider economic and social needs of the Plan Area, the Council will seek to regulate development so as to conserve and, where possible, enhance the Plan Area’s natural environment, countryside and coastline. This will be achieved by:</i> <i>a) Safeguarding the Plan Area’s biodiversity, geology, habitats, history and landscapes through the protection and enhancement of sites of international, national, regional and local importance, in line with Policy DP/6 – National Planning Policy and Guidance’;....</i> <i>c) Where appropriate and necessary, improving the quality of statutory and non-statutory landscapes and areas of biodiversity value affected by development, through management agreements, habitat connectivity, improved planting, landscape and maintenance specifications, in line with the Development Principle Policies and Policy NTE/3 – ‘Biodiversity’;</i> <i>d) Working with developers to safeguard protected species and enhance their habitats in line with Policies DP/6 and NTE/3;</i> <i>g) Protecting the Coastal Zone in line with Policy NTE/5 – ‘The Coastal Zone’.</i> <i>i) Preventing, reducing or remedying all forms of pollution including air, light, noise, soil and water, in line with Policy DP/6.”</i>

Document	Item	Details of Changes
	Policy NTE/3	"Biodiversity 1. New development should aim to conserve and, where possible, enhance biodiversity through: a) Sensitive siting; avoiding European protected sites or those of national or local importance; b) Sensitive layout and design which avoids impacts or mitigates through an agreed programme for any identified adverse impact on biodiversity; c) Creating, enhancing and managing wildlife habitats and natural landscapes including connectivity; d) Integrating biodiversity measures into the built environment; e) Contributing to achieving targets in the Conwy Local Biodiversity Action Plan (LBAP); f) Providing for a management agreement with the Local Planning Authority to secure the retention and long term future of biodiversity interests where applicable.... 3. The Council will refuse proposals which would have a negative impact on a European Site, protected or priority species or habitat unless the impact is adequately mitigated and appropriate remediation and enhancement measures are proposed and secured by planning conditions or obligations."
	Policy NTE/5	"The Coastal Zone A Coastal Zone is defined on the Proposals Map. Development in the Coastal Zone, outside settlement boundaries, will only be permitted where the development: a) Specifically requires a coastal location; b) Does not adversely affect the open character of the zone; c) Does not adversely affect the nature conservation value of the zone with any effects identified mitigated for; d) Does not detract from the tourism value or facilities; e) Does not interfere with natural coastal processes; f) Does not impede the function of any existing coastal defence structures; g) Accords with the Development Principles of the Plan."
	Policy CTH/1	"Cultural Heritage The council is committed to protecting and, where appropriate, enhancing its cultural and heritage assets. This will be achieved by: d) Protecting buildings and structures of local importance in line with Policy CTH/3 – 'Buildings and Structures of Local Importance'; e) Enhancing heritage assets through heritage and regeneration initiatives."
	Policy STR/3	"Mitigating Travel Impact 1. New developments will be required to mitigate the undesirable effects of travel such as; noise, pollution, impact on amenity and health and other environmental impacts. 2. Where a proposed development is likely to have significant transport, social or environmental implications, the Council will require developers to submit a Transport Assessment and a Travel Plan with the planning application. A Road Safety Audit may also be required... 4. The Council may also require developers to submit a Transport Statement for other development proposals where there is need to understand the traffic impact of the proposal."
Local	Supplementary Planning Guidance Notes (SPGN)	The SPGNs SPG 13 (Conservation Areas), SPG 15 (Archaeology) and SPG 18 (Nature Conservation and Species Protection) were developed by DCC to establish more detailed planning guidance on certain topics. These remain unchanged since the 2011 ES and the additional dredging proposals (as informed by this ES Addendum) are still considered to be in line with the SPG notes.

	Document	Item	Details of Changes
Loca	Other Supplementary Planning Guidance (SPG)		The supplementary planning guidance (West Rhyl Regeneration Strategy Development Brief (March 2006), Denbighshire County Council Vision for 2025, Denbighshire Economic Growth Strategy (2007-2013), Rhyl Going Forward (2004)) discussed in the 2011 ES is somewhat out of date now (with references to the UDP), however the additional dredging proposals (as informed by this ES Addendum) are considered to be in line with the overarching principles of this supplementary guidance. The West Rhyl Regeneration Area SPG Draft Consultation was published in August 2012. This SPG has been prepared on behalf of Denbighshire County Council (DCC) to deliver the West Rhyl Regeneration objectives and support and guide development in the area – to explain how the Denbighshire UDP policies will be applied within West Rhyl SPG area.

Source: As listed

4 Coastal Processes

4.1 Introduction

Please refer to Chapter 5 in the 2011 ES for the original Coastal Processes section.

This Chapter presents an update assessment of the impacts the small-scale land based dredging operation being undertaken at Rhyl Harbour is anticipated to have upon coastal processes, including hydrodynamics, geomorphology and water quality (although water quality is covered in more detail in Chapter 6).

The extension to the dredging area has altered from the original 2011 ES. The extended area is presented in Appendix A.4. The proposed additional area to be dredged will have a level of -0.50 m AOD

Whilst the depths and areas have not been amended the quantity to be trimmed or removed has been amended to maintain flows and ensure safe navigation and usage of the harbour. Appendix A.3 and A.4 gives details of these changes which has reduced the quantity of material to be removed from 22,000 tonnes to 17,000 tonnes

4.2 Legislation, Guidance and Planning Policy Changes

There have been no changes to Technical Advice Note (TAN) 15 Development and Flood Risk.

The Denbighshire UDP has been superseded by the LDP. The changes included in the plan are summarised as follows:

- **Theme: Valuing Our Environment** - "Development in Denbighshire also needs to ensure that it can adapt to the impacts of climate change, such as increased flood risk, extreme weather events and rise in sea levels, by ensuring that new development is located away from those areas that are susceptible to flooding."

Since the 2011 ES, Conwy County Borough Council have adopted the Conwy Local Development Plan (2013) this includes spatial policies for the Natural Environment and also the Coastal Zone.

4.3 Assessment Methodology

The significance criteria for the magnitude of impacts of hydrodynamics and sediment regimes remain the same as for the 2011 ES, these being:

- **Negligible:** No measurable change in hydrodynamic or sediment regime;
- **Minor:** Short terms changes to the hydrodynamics and sediment transport patterns that could have a negative impact on local processes in the Foryd Estuary;
- **Moderate:** Changes to the hydrodynamics and sediment transport patterns that could have a negative impact on local processes outside of the Scheme boundary; and
- **Major:** Significant changes to the hydrodynamics and sediment transport patterns that could have a negative impact on regional process.

4.4 Baseline Summary

The baseline for the hydrodynamic and sediment regimes has been taken from the previous 2011 ES and also information provided for the West Rhyl Coastal Defences Scheme. Within the Foryd Harbour site modelling has been undertaken by ABPmer and Hyder. Although these models do not contain this extended dredged area the results can be interpolated to identify how the area will be altered. It should also be noted

that the proposed depths of dredging of the extended site are relatively small and these are unlikely to be seen in the model owing to the vertical accuracies. This addendum will assess the changes to the hydrodynamics and sediment regimes in relation to the impacts of the extended dredging area only.

4.5 Impacts/Effects Prior to Mitigation

4.5.1 Construction

There are no additional construction impacts associated with this addendum.

4.5.2 Operation

During the operation of the scheme there is likely to be a reduction in the current velocities in the area. This may have a **minor adverse impact** on the local coastal processes owing to the removal of the channel in the inner harbour. The reduced current velocities could result in small scale deposition of sediments within the harbour resulting in the need for ongoing management. However this impact is highly dependent on the volume of material to be removed that year. At present it is considered that this would be approximately 17,000 tonnes which would not have a significant reduction on the current speeds.

The increase in dredging area will have an impact on the future funding costs. Should dredging not be undertaken there is a possibility that the bed levels could increase resulting in an increase of current speeds and wave action along the frontage. The previous 2011 ES's impact of **minor adverse** therefore does not change.

4.6 Mitigation Measures

In general, mitigation measures during construction remain unchanged from those proposed in the 2011 ES.

Where sand extraction or trimming of banks is proposed, the Contractor should minimise the release of sediments during the works. This will be mitigated against by:

- Undertaking the works at low water to reduce the volumes of material that could be released into suspension; and
- The contractor should agree site traffic routes from the sand extraction area to the temporary stockpile.

In addition to the above, the following mitigation measures are proposed:

- Ongoing monitoring of the bed levels will need to be undertaken and notice to Mariners issued should the channels and bed levels change;
- Ongoing monitoring of the bed levels to be undertaken to ensure that the levels do not drop below a critical level; and
- Future maintenance costs will need to be agreed in advance to ensure the harbour does not become inaccessible.

4.7 Residual Impacts

There are no significant residual impacts identified from the changes to the small scale land-based dredging proposals during the construction and operational phases.

4.8 Summary

The additional material to be dredged within Foryd Harbour is unlikely to have any further impacts associated with it compared to the original 2011 ES. The overall changes to the coastal processes for this work are considered to be negligible compared to the accepted ES.

Monitoring undertaken during the dredging undertaken under the 2015 Marine License has identified there is no significant change to the coastal process and there is a buildup of material rather than a reduction in bed level.

5 Hydrology, Flood Risk and Drainage

5.1 Introduction

Please refer to Chapter 6 in the 2011 ES for the original Flood Risk, Drainage and Hydrology section.

This Chapter provides an assessment of the potential effects of the Scheme with respect to hydrology and flood risk from both tidal and fluvial waters and drainage.

The extension to the dredging area has altered from the original 2011 ES. The extended area is presented in Appendix A.4. The proposed additional area to be dredged will have a level of -0.50 m AOD. This area remains the same as the 2015 ES Addendum.

5.2 Legislation, Guidance and Planning Policy Changes

There have been no changes to the Water Framework Directive (2000/60/EC), Flood and Coastal Water Management Act, 2010, Land Drainage Act, 1991 or Planning Policy Wales: TAN 15: Development and Flood Risk.

The Denbighshire UDP has been superseded by the LDP. The changes included in the plan are as follows:

Theme: Valuing Our Environment - *“Development in Denbighshire also needs to ensure that it can adapt to the impacts of climate change, such as increased flood risk, extreme weather events and rise in sea levels, by ensuring that new development is located away from those areas that are susceptible to flooding.”*

Since the 2011 ES Conwy County Borough Council has adopted a new local development plan. This plan includes the following statement in relation to flood risk: *“Much of the coastal area, particularly in the Urban Development Strategy Area, is at risk from flooding and there is a need to prevent inappropriate development in areas at risk. This risk is likely to increase in the future as a result of climate change and a rise in sea level. A restrictive approach is therefore applied to new development in areas at risk in line with Policy DP/6 - ‘National Planning Policy and Guidance’.”*

The guidance relating to climate change has been updated since the 2010 ES. The 2010 ES included an allowance of sea level rise based on the 2006 DEFRA guidance for NW England. This has since been superseded by UKCP09 guidance. This latest guidance identifies that the sea level rise predictions for this frontage have been reduced.

5.3 Assessment Methodology

The significance criteria for the magnitude of impacts of flood risk remain the same as in the 2011 ES previously, these being:

- **Major** – Significant increase in flooding which could affect a wide area;
- **Moderate** – Increase in local flooding; and
- **Minor** – Localised increase in flooding which is unlikely to be significant.

5.4 Baseline Summary

The current baseline of the frontage has not been re-assessed for the extended dredging area. It is considered that the information provided in the 2011 ES is still applicable. Since the approval of the previous ES there have been changes to the extreme water levels for the Rhyl frontage. These changes, owing to the change in climate change guidance, have resulted in the lowering of the extreme water levels. Therefore it is considered that the existing baseline is now a conservative baseline.

5.4.1 Future baseline

Since the 2011 ES there has been an update to the climate change guidance under UKCP09. These changes would increase the water levels by 0.69 m. These increases in water levels have been used within the recent schemes for the frontage, with the other scheme incorporating previous sea level rise guidance. Owing to this addendum being related to the additional dredging only the changes to the future baseline have not being included therefore presenting a conservative baseline.

5.4.2 The 1 in 1000 year Extreme Tidal Flood Level

The previous ES indicated that the 1 in 1000 year extreme tidal event has less of an impact compared to the 1 in 200 year event. This is still the case and therefore is not considered further.

5.5 Impacts/Effects Prior to Mitigation

5.5.1 Construction

There are no additional construction impacts associated with this addendum

5.5.2 Operation

During the operation of the harbour the extended dredging area is unlikely to have any additional impacts to those previously identified in the 2011 ES. Depending on the volumes of material dredged in the area there may be a **beneficial temporary impact** on the area given the additional volume of water storage being made available.

5.6 Mitigation Measures

The mitigation measures during operation remain unchanged from those proposed in the 2011 ES. The key mitigation measures associated with the additional dredging will be to ensure that a flood management plan is in place for the area and that flood warning systems are managed.

5.7 Residual Impacts (Post Mitigation)

The residual impacts remain as identified in the 2011 ES which identified that flood warning systems for the site are required.

5.8 Summary

The additional material to be dredged within Foryd Harbour is unlikely to have any further impacts associated with it compared to the original 2011 ES. The overall changes to the flood risk for this work are considered to be negligible compared to the accepted ES.

6 Water, Land and Sediment Quality

6.1 Introduction

Please refer to Chapter 7 in the 2011 ES for the original Water, Land and Sediment Quality section.

The small scale land-based dredging of sediment from Foryd Harbour will be carried out on an annual basis (with more frequent minor dredging activities occurring as required to keep the harbour area operating efficiently) in order to improve both its accessibility and future usage.

The coastal location of the dredging area adjacent to designated bathing waters and other sensitive watercourses, in addition to its current and future use as an active Harbour, place a high importance of water quality effects associated with the dredging process. The key proposal (differing from the original proposals) relates to the dredging of sand and shingle from the additional area shown in Appendix A.4.

In this Chapter supplementary impacts and details of additional mitigation measures (where necessary) are identified and residual effects are detailed.

6.2 Legislation, Guidance and Planning Policy Changes

The 2011 ES referred to the following:

6.2.1 European

European: Water Framework Directive (WFD): No significant change.

Bathing Water Directive: The Bathing Waters Directive (BWD) (EU Directive 76/1160/EEC) is being replaced step-wise by Directive 2006/7/EC in 2014. Designated bathing waters in Wales are monitored for sewage pollution indicators by NRW during the bathing season, which runs from 1st May to 30th September. There are two designated Bathing Waters in the Scheme vicinity; the Kinnel Bay and Rhyl Bathing Waters. The revised directive sets more stringent water quality standards and puts a stronger emphasis on beach management and public information. Changes are required to the microbiological parameters measured, and changes the compliance measurement from pass/fail to a four class system (poor/sufficient/good/excellent). All bathing waters have to be classed as 'sufficient' by 2015. Bathing water profiles also have to be developed for all bathing waters with a general description to be displayed at each bathing location. The BWD also applies to the Glanfyddion Cut, Clwyd Estuary and the North Wales coastal (WFD ID: GB641011650000) WFD waterbodies.

Shellfish Waters Directive: The Shellfish Waters Directive (2006/113/EC) was repealed in 2013 by the EC Water Framework Directive (2000/60/EC). This provides at least the same level of protection to designated shellfish waters (which the Water Framework Directive classifies as protected areas).

6.2.2 National

Planning Policy Wales (PPW) Edition 3: This has now been replaced by Edition 7 (July 2014) although chapter 13 Minimising and Managing Environmental Risks and Pollution still applies.

6.2.3 Local

Denbighshire UDP: This has been replaced by the Denbighshire LDP although no policies specifically relate to water/sediment quality in the context of this project. The same assessment methodology has been used as was applied to the original chapter.

Since the 2011 ES, Conwy County Borough Council has adopted the Conwy Local Development Plan (2013)

although again no policies specifically relate to water/sediment quality in the context of this project.

6.3 Assessment Methodology

The same assessment methodology has been used as was applied to the original chapter as summarised in Table 6.1.

Table 6.1: Definition Severity of Effects and Significance

Effect	Adverse/ Beneficial	Description and Examples
Major	Adverse	Short term (acute) risks to human health Short term risk of pollution of sensitive water resources or ecosystem Catastrophic damage to crops/buildings/infrastructure Generation of significant quantities of waste sediment or soils for landfill
	Beneficial	Remediation of significant, widespread elevated levels of soil or sediment contamination Remediation of significant, widespread sensitive water resource contamination Re-use of significant quantities of excavated sediment or soils on-site to avoid disposal to landfill
Moderate	Adverse	Medium/long term (chronic) risks to human health Medium/long term risk of pollution of sensitive water resource or ecosystem Significant damage to crops/buildings/infrastructure Contamination of off-site soils Generation of sediment and soils waste for landfill
	Beneficial	Remediation of localised high levels of contamination Remediation of significant, localised sensitive water resource contamination Re-use of excavated sediment and soils on-site to avoid disposal to landfill
Minor	Adverse	Easily preventable, permanent health effects on humans Pollution of non-sensitive water resources Minor, low-level and localised contamination of on-site sediments or soils Localised, easily preventable damage to crops/buildings/infrastructure on or off site
	Beneficial	Remediation of localised moderate levels of contamination Remediation of non-sensitive water resource contamination Minor improvements to overall sediment/soil/water quality
Negligible	n/a	No discernible effects

6.4 Baseline Summary

The baseline for the water, land and sediment quality has been taken from the previous 2011 ES and also the information provided for the West Rhyl Coastal Defences Scheme. The site baseline is generally unchanged from the 2011 ES, with the exception that the development proposed in the 2011 ES has now been completed.

Additional geotechnical and geochemical information on the sediment in question has been obtained since the 2011 ES to support the removal of sand material (presented in Appendix D).

Sand/sediment grading was completed by Jacobs while chemical testing on sand/sediment quality was carried out by Chemtest (UKAS and MCerts accredited laboratory).

The additional geotechnical analysis identified that the material to be dredged is a sand and shingle mix.

The additional chemical testing of samples taken from a location shown on a drawing detailed in A.4 showed

that none of the contaminants tested exceeded CEFAS (Centre for Environment, Fisheries & Aquaculture Science) Action Level 1. Heavy metal concentrations were low and organic contaminant concentrations were below detection limits, as were organotins, PCBS (poly chlorinated biphenyls), DDT and dieldrin.

According to CEFAS: *“Action Levels are used as part of a ‘weight of evidence’ approach to assessing dredged material and its suitability for disposal to sea. These values will be used in conjunction with a range of other assessment methods e.g. bioassays, as well as historical data and knowledge regarding the dredging site, the material's physical characteristics, the disposal site characteristics and other relevant data, to make management decisions regarding the fate of dredged material....*

In general, contaminant levels in dredged material below Action Level 1 are of no concern and are unlikely to influence the licensing decision”.

While the dredged material is not to be disposed to sea, the Action Levels are considered to be the most applicable criteria for the initial assessment of dredged sediments.

6.5 Impacts/Effects Prior to Mitigation

It should be noted that the proposed depths of dredging of the extended site are relatively small. This addendum will assess the changes to water and sediment quality in relation to the impacts of the extended dredging area only.

6.5.1 Construction

There are no additional construction impacts associated with this addendum.

6.5.2 Operation

The additional area of dredging operations may result in the increased temporary disturbance of sediment or contaminants under the water table beyond what was anticipated in the 2011 ES. This could temporarily increase the suspended solids levels and turbidity and reduce dissolved oxygen of waters in the Clwyd Estuary affecting the ability of the WFD waterbodies to meet their targets and has the potential to impact on local bathing waters. However, the low concentrations of contaminants identified in site sediments to date will limit the potential water quality impacts as will the timing of the dredging (to occur prior to the main bathing water season each year). These effects would therefore be **temporary minor adverse** in nature.

The additional dredging area will also increase the potential for spills of fuel and/or lubricant from plant operating below mean high water. Again effects are considered to be **temporary minor adverse**.

Other criteria than CEFAS Action Levels will apply to the sediment going forward depending on its final end use (it is the responsibility of the person/s accepting the sediment to determine suitability for re-use on land), however the low levels of contamination identified mean that from a geochemical perspective, re-use should not be limited by poor chemical quality. The re-use of this material in other local schemes will potentially prevent the use of other virgin materials over larger distances which may have an overall ongoing **moderate beneficial impact**.

6.6 Mitigation Measures

The majority of mitigation measures detailed within the 2011 ES are considered to be adequate to address the additional impacts detailed above.

Supplementary geotechnical and geochemical sediment testing prior to each annual event is recommended to ensure that there is no change in sediment quality over the years. This data will also be required by the Contractor excavating, transporting and receiving the dredged sediments for onwards recycling.

A stringent system of vehicle maintenance must be implemented during construction works in the additional area to include frequent vehicle washing and checks for drips or fuel leakage and also to ensure that all reasonable and practicable steps have been taken to prevent the pollution of the water environment. This would be covered within an Operational Environmental Management Plan (EMP) for the site. Going forward, following the creation of a Harbour Authority, it will be the responsibility of the Harbour Authority to implement a site wide Operational EMP covering day-to-day operations of the harbour (which will include maintenance dredging operations) and suitable emergency procedures in the event of pollution.

6.7 Residual Impacts (Post Mitigation)

By following the additional mitigation measures detailed above and within the 2011 ES, residual impacts to water and sediment quality are envisaged to be **negligible** in the long term.

6.8 Summary

The additional material to be dredged within Foryd Harbour is unlikely to have any further impacts on water, land and sediment quality to the original 2011 proposals. The overall changes are considered to be **negligible** compared to the accepted proposals.

7 Navigation

7.1 Introduction

Please refer to Chapter 8 in the 2011 ES for the original Navigation section.

This Chapter provides an assessment of the potential impacts of the Scheme and any associated mitigation measures required with respect to navigation.

The inclusion of the supplementary small-scale land based dredging area will be assessed in this chapter as the only change from the original. It is considered that although the construction methods have altered they will not have any different impacts on the navigational features of the harbour.

7.2 Legislation, Guidance and Planning Policy Changes

As previously identified in the 2011 ES there is no specific legislation governing the assessment of navigational impacts in the marine environment. There are however codes of practice and regulations governing navigational aids.

The sand extraction will fall under the Marine Licence which is managed by NRW.

7.3 Assessment Methodology

The assessment methodology is unchanged from the 2011 ES, with the significance criteria as summarised in Table 7.1.

Table 7.1: Navigation Impact Significance Criteria

Impact (potential frequency of occurrence)	Risk (probability of occurrence)		
	Low	Medium	High
Low	Negligible	Minor	Moderate
Medium	Minor	Moderate	Moderate/Major
High	Moderate	Moderate/Major	Major

7.4 Baseline Summary

In recent years Rhyl Harbour has undergone extensive remodeling to improve access and mooring for both commercial boats, leisure craft and to provide an emergency landing stage for the RNLI.

The main remodeling of the Harbour and approach channel was undertaken as part of the public square and pedestrian/cycling Foryd bridge construction contracts. These works were undertaken under two separate marine licences with ongoing annual dredging under a separate licence.

As part of the planning and marine licence applications, consent was sought to dredge the harbour in order for it to remain safe over its lifetime. The plan in Appendix A.6 is the plan which was submitted for planning and the marine licence as part of the 2011 ES for the construction works. This plan was based on deep water channels to allow access 3 hours each side of high tide and from consideration of the modelling.

Following discussion with Harbour users and the Harbour Master the plan has been amended slightly to suit the actual problems encountered on site. The revised plan is also attached in Appendix A.6.

7.5 Local Harbour Users

The main users of the harbour were identified within an assessment undertaken as part of the West Rhyll Coastal Defence Scheme and were referred to in the previous ES Addendum. There have been no additional users of the harbour identified for this addendum.

Communication with all Harbour users is essential prior and during the dredging with land based plant process. All communication with Mariners will be done through the Harbour Master and discussions held at the monthly Harbour forum. The programme of proposed works will be discussed and agreed with all parties involved.

The extended dredging area will allow DCC to provide additional space for small craft and enable more of the existing moorings to be used. This increase will enhance the usage of the harbour in the future.

7.6 Impacts/Effects Prior to Mitigation

7.6.1 Construction

There are no additional construction impacts associated with this addendum.

7.6.2 Operation

The dredging will be undertaken at low water and therefore will have a **minor adverse impact** on the navigation of the harbour.

The additional area provided by the dredging will result in a **moderate beneficial impact** to the area. The increase in usage will allow Denbighshire County Council and Conwy County Council to bring in additional tourism and revenue.

7.7 Mitigation Measures

In general, mitigation measures during construction remain unchanged from those proposed in the 2011 ES these being:

- A programme of works will be produced prior to the construction phase being undertaken and agreed with the harbour users. The timing of the works will also need to be considered to determine if the works can be undertaken at a time of reduced harbour usage. A Notice to Mariners during construction will advise on the works being carried out at low tide.
- A Notice to Mariners will be produced should there be any significant change to the flows or position of the channel along the Foryd Harbour after the dredging works have been undertaken.
- Ongoing monitoring of the Estuary will be undertaken to determine the build-up or loss of sediment to determine when and where dredging is required.
- The marker posts will be monitored on a regular basis to ensure that there is no scour or movement occurring as a result of current flows or boat collisions.

7.8 Residual Impacts (Post Mitigation)

There are no significant residual impacts identified from the changes to the small scale land-based dredging proposals during the construction and operational phases.

7.9 Summary

The above effects on navigation have been considered due to the new extent of dredging. The additional material to be dredged within Foryd Harbour is unlikely to have any further negative impacts associated with it

compared to the original 2011 ES. The dredging will provide an additional benefit to the area. In order to limit these issues good communication between all parties is essential; this is helped by the employment of a Harbour Master. Attached is the monitoring results undertaken during the previous 2015 dredge licence

8 Biodiversity

8.1 Introduction

Please refer to Chapter 9 in the 2011 ES for the original Biodiversity section.

Within the 2011 ES Chapter 9, potential impacts of the proposed Rhyl Harbour Public Square and Extended Quay Wall on terrestrial and aquatic ecology, bird assemblages and protected sites were assessed. However as the operational small-scale dredging activities have altered since the ES was written, additional impacts on the ecological features within the zone of influence have been assessed within this chapter.

In accordance with Regulation 61 of The Conservation of Habitats and Species Regulations 2010, the HRA screening assessment update can be found in Appendix C.

8.2 Legislation, Guidance and Planning Policy Changes

A summary of all policy changes that have occurred since the 2011 ES has been provided within Table 8.1.

Table 8.1: Summary of Policy Changes

Document Cited in 2011 ES	Changes Relevant to Flora and Fauna
Regulation 61 of The Conservation of Habitats and Species Regulations 2010	Remains current and unchanged
Planning Policy Wales Edition 3 (July 2010) Chapter 5 – Conserving and Improving Natural Heritage and the Coast	Planning Policy Wales (Edition 6, February 2014) Chapter 5 - Conserving and Improving Natural Heritage and the Coast – Document has been updated but the overall context remains the same
Since the 2011 ES, Conwy County Borough Council has adopted the Conwy Local Development Plan (2013)	The Natural Environment Appendix 1 contains details in section 4.6.2 relation to 'Biodiversity' and the LBAP NTE/3 Biodiversity NTE/4 The Landscape and Protecting Special Areas NTE/ 5 The Coastal Zone

8.3 Assessment Methodology

See the 2011 ES Chapter 9, for a full description of the assessment methodology.

The significance criteria remain unchanged from the original submission as summarised in Table 8.2.

Table 8.2: Significance of Biodiversity Impact Assessment Criteria (Table 9.3 in 2011 ES)

Impact Significance Level		Magnitude of Impact			
		High	Medium	Low	Neutral
Value of ecological receptor	International	Major	Major	Moderate	Negligible
	National	Major	Moderate	Moderate	Negligible
	Regional and County	Moderate	Moderate	Minor	Negligible
	District	Moderate	Minor	Minor	Negligible

Impact Significance Level		Magnitude of Impact			
		High	Medium	Low	Neutral
	Parish (Local)	Minor	Minor	Negligible	Negligible
	Site (within zone of influence only)	Negligible	Negligible	Negligible	Negligible

8.4 Baseline Summary

The existing baseline for statutory and non-statutory designated nature conservations sites, birds, otter, and aquatic ecology is described in the 2011 ES and summarised in Table 8.3.

Table 8.3: Biodiversity Baseline Summary

Ecological Feature	Description	Distance from Construction/Operational Footprint	Importance and Value
Statutory Nature Conservation Site			
Liverpool Special Protected Area (SPA)	The SPA extends from Moelfre in north-east Anglesey, to the west of the proposed Scheme, to Rossall Point near Fleetwood, to the east of the proposed Scheme. The SPA lies entirely within the 12-mile limit of English and Welsh Territorial Waters and the landward boundary is formed by the mean low water mark. The SPA is designated for its over-wintering populations of red-throated diver (<i>Gavia stellata</i>) and common scoter (<i>Melanitta nigra</i>) that is	In the vicinity of the proposed dredging area	International
Dee Estuary European Marine Site	The Dee Estuary is designated as a SAC, SPA, Ramsar site and SSSI. Together these designated sites make up the Dee Estuary European Marine Site. The primary reasons for the selection of the estuary as a European Marine Site are the habitats it supports, including intertidal mudflats and sandflats, glassworts (<i>Salicornia</i> sp.) and other annuals colonising mud and sand, and Atlantic salt meadows (<i>Glaucopuccinellietalia</i>	Approximately 8km east of Rhyl,	International
Non-Statutory Designated Nature Conservation Sites			
North Wales Coast Important Bird Area (IBA)11,	Site stretches from Little Ormes Head to Rhyl, extending approximately 6km out into the sea. This IBA has been selected by BirdLife International because of the over-wintering bird use of the area. Common scoter is included in the	Adjacent to proposed Scheme	Higher
Clwyd Estuary and Floodplain Wildlife Site.	This includes the sand bars and intertidal mudflats at the river's mouth, the lower sections of the river and its flood meadows, and Brickfield Pond and Marine Lake. The site is designated for its populations of wildfowl and wading birds, with lapwing (<i>Vanellus vanellus</i>) and curlew (<i>Numenius arquata</i>) being of	In the vicinity of the proposed dredging area	County

Ecological Feature	Description	Distance from Construction/Operational Footprint	Importance and Value
Kinmel Dunes Local Nature Reserve	The site is a rare habitat in the locality, and supports a variety of native maritime plants and bird species including skylark (<i>Alauda arvensis</i>), kestrel (<i>Falco tinnunculus</i>) and ringed plover (<i>Charadrius hiaticula</i>).	Approximately 500 m west of the Clwyd Estuary.	County
Horton's Nose Wildlife Site	A Local Priority Habitat within Conwy (coastal sand dunes and vegetated shingle).	In the vicinity of the proposed dredging area	County
The Dee Estuary IBA and RSPB reserve	Supports wintering and passage wildfowl it spans a large area along the North Wales coast	Approximately 8km east of Rhyl	Regional
River Clwyd	Otters are known to be widespread along the River Clwyd and the River Dee to the east. River Clwyd supports populations of salmonids and other fish and shellfish species of value to Foraging otter. No evidence of otter activity was found within the survey area. Habitats within the survey area offer little in the way of cover for otter to remain undetected with the exposed sandy/muddy banks and the built-up nature of the area. Notable fish species recorded in the River Clwyd are Atlantic salmon, sea trout and European eel.		Otter: within the study area, Parish value The migratory populations of Atlantic salmon within the Clwyd Estuary are considered to be important. The populations of sea trout and European eel are considered to be of National importance.

The future baseline, in terms of potential impacts due to climate change, is assessed within the 2011 ES. The potential impacts are as follows:

Potential direct (general) impacts to habitats and species:

- Changes in coastal erosion as a result of sea level rise;
- Changes to hydrodynamic regime within coastal waters;
- A change in species and habitats diversity, impacting the species and the habitats for which the sites are designated;
- Risk of erosion and coastal flooding may be increased which may impact on designated sites, notably Horton's Nose Candidate Wildlife Site;
- If existing coastal defences are left to deteriorate further, rising sea levels and erosion would result in a reduction of available roosting and feeding habitat; and
- Climate change has the potential to impact on aquatic biodiversity.

For further details on the potential future baseline, the 2011 ES, Volume 1, Chapter 9 should be consulted.

8.5 Impacts/Effects Prior to Mitigation

This section considers the potential impacts of the construction and operational phases, only where they differ from the 2011 ES.

8.5.1 Construction Impacts

There is not considered to be any change to the construction impacts due to the revised small-scale maintenance dredging proposals.

8.5.2 Operational Impacts

The 2011 ES assessed the works as having potential to impact on water quality through sediment re-suspension and mobilisation, which in turn could have impacts on aquatic ecology. The excavation operation of approximately 17,000 tonnes annually of material as part of the revised proposals could result in a temporary increase in water turbidity as a result of increased suspended sediment; however this will be at a minimum as the extraction of the material will take place at low tide. It is considered that the additional impact on water quality will be localised and temporary and will result in a **negligible** impact on aquatic ecology within the local area.

It is necessary for the site works to adhere to Environment Agency Guidelines in relation to pollution prevention (PPG5) and best practice methods of working. Emergency pollution control measures would be outlined in the Environmental Management Plan (EMP).

There is potential for hydrocarbons to enter the Clwyd Estuary as a result of dredging work within the harbour area where heavy plant will be present at low tide periods. Measures would include procedures such as: the deployment of absorbent pads or booms in the event of a spill. All vehicles and plant would be re-fuelled in the contractor's compound away from the shoreline. In addition, daily vehicle checks and maintenance would be completed to identify any leaks or damage to machinery. All lubricating oils will be vegetable based and mineral oil shall be prohibited. Work will also be undertaken at low tide therefore minimising the potential impacts for hydrocarbons from plant materials entering the water.

With the implementation of the above measures the residual impacts are likely to be **negligible**; therefore no likely significant effects on European sites are anticipated in relation to water quality.

In addition, dredging under the new license will take place at the beginning of March 2019 this is outside the peak adult migration of salmon which is between June and September and outside the wintering bird season (October-March) hence no likely impacts are anticipated. Following consultation with the DCC wildlife officer the dredging has been brought forward to March to avoid the bird nesting season. As levels are to be reduced the impact on borrowing invertebrates is considered to be negligible.

8.6 Mitigation Measures

Measures for the mitigation of potential hydrocarbon leaks and spills from excavation plant which would limit impacts on marine life are proposed within the 2011 ES Chapter 9, including the creation of a site EMP and there are no additional mitigation measures that are recommended.

To minimise disturbance to the marine environment the following mitigation should be put in place:

- The unnecessary revving of engines is to be avoided and equipment not in use is to be switched off.
- Plant and vehicles are to be properly maintained to meet the manufacturers' noise levels and any silencers or bearings which become defective must be replaced as soon as possible.
- Vehicles are to manoeuvre in a circular manner to minimise the use of reversing alarms. When required reverse warning systems must incorporate broadband noise.

8.7 Residual Impacts (Post Mitigation)

With the implementation of the above mitigation measures, the residual impacts are considered to be **negligible**.

8.7 Summary

The impacts to the protected sites listed above will not be affected by the small-scale dredging proposals provided all mitigation measures are enforced during the excavation operation.

9 Cultural Heritage

9.1 Introduction

Please refer to Chapter 10 in the 2011 ES for the original Cultural Heritage section.

The following chapter has been prepared to assess potential cultural heritage impacts resulting from the additional small-scale land based dredging works. The potential for construction and operational impacts on designated and non-designated heritage assets will be assessed.

9.2 Legislation, Guidance and Planning Policy Changes

The overarching legislation in relation to archaeology in Britain is provided by:

- The Ancient Monuments and Archaeological Areas Act 1979; and
- The Planning (Listed Buildings and Conservation Areas) Act 1990.

Planning Policy Wales (PPW) Edition 7 (July 2014): Planning Policy Wales (PPW) established the land-use planning policies of the WG. Chapter 6 of PPW covers planning policies and their relation to the conservation of the historic environment.

PPW is supplemented by Technical Advice Notes and circulars 60/96, 61/96 and 1/98 provide more detailed information about planning and the historic environment in relation to archaeology, historic buildings and conservation areas, respectively. This guidance was updated as part of the discussion and consultation for the new Heritage Bill for Wales, part of the WG's legislative programme announced in July 2011.

Denbighshire County Council: LDP 2006 – 2021 (Adopted 4th June 2013): No policy on heritage.

Since the 2011 ES, Conwy County Borough Council have adopted the Conwy Local Development Plan (2013) this includes policies on 'Cultural Heritage' detailed in Section 4.7 of the document.

9.3 Assessment Methodology

The assessment will follow the agreed methodology set out in the 2011 ES Cultural Heritage chapter as summarised in Table 9.1.

Table 9.1: Guideline Matrix for Assessing the Significance of Impacts on Cultural Heritage Assets

Magnitude	Sensitivity			
	Negligible	Low	Medium	High
High	Negligible	Moderate	Major	Severe/Major
Medium	Negligible	Minor	Moderate	Major
Low	Negligible	Negligible	Minor	Moderate
Negligible	Negligible	Negligible	Negligible	Minor

9.4 Baseline Summary

A baseline of historic environment data is provided in the original 2011 ES. This section will only provide a short summary of pertinent information for the purpose of contextualising potential impacts of the dredging operation.

There are no world heritage sites, scheduled monuments, registered battlefields or landscapes, parks and gardens of special interest within the study area. River Street Conservation Area will have no view of the

proposed dredging area although the Grade II listed Foryd Bridge is located immediately adjacent to the scheme. Within 500 m of the proposed scheme there are a number of sites relating to maritime losses and wrecking events, harbour structures, buildings and find spots. Two wrecks are located within the tidal river – *The Alice* and the *City of Ottawa*.

9.5 Impacts/Effects Prior to Mitigation

9.5.1 Construction Impacts

There is not considered to be any change to construction impacts from the revised small scale land-based dredging proposals.

9.5.2 Operational Impacts

Two assets have been identified within close proximity to the dredging operations, the Grade II listed Foryd Bridge and wreck of the *City of Ottawa* that may be subject to setting effects. Both are considered to be of high sensitivity.

The dredging operation will be visible from the bridge. However, views from the bridge are wide reaching and the works will take up only a small arc of that open expansive view. It is unlikely that the works will detract from the enjoyment of visiting the bridge, and it will not impact on the character of the listed structure. The bridge is visually striking landmark structure. The works will be seen behind it in views from the south, but given the scale of the bridge in the foreground will ensure that it remains the dominant feature in these views. It is therefore considered that the impact on the bridge will be of **negligible** magnitude, comprising an impact of minor adverse significance along with the works being temporary and having no lasting visual impact.

The hulk of the *City of Ottawa* is located within the harbour area and is only visible at low to mid tide, when the wreck can be viewed from several vantage points along the quayside. The works will not impact on the understanding, character and appreciation of the wreck and therefore it is predicted that an adverse effect of **negligible** magnitude will take place. This impact is considered to be of minor adverse significance in relation to this assessment. With the dredging maintenance proposals, there is the possibility for change to the local hydrological and sedimentological regime; therefore the potential exists for altering the baseline of known cultural heritage assets. However, the 2011 ES found that hydrological/sedimentological changes would be **negligible** and given that the dredging area will exclude the surroundings of the *City of Ottawa* there is not anticipated to be any change to this impact.

9.6 Mitigation Measures

Operational impacts should include the monitoring of the baseline condition of those wrecks (such as the *City of Ottawa* and *The Alice*) which may be indirectly affected by the shift in coastal processes. Secondary impacts will be prevented where practicably possible through avoidance of cultural heritage assets with the implementation of measures such as fencing off and temporary exclusion zones during the dredging operations.

9.7 Residual Impacts (Post Mitigation)

There are no changes to the significant residual impacts identified within the 2011 ES.

9.8 Summary

The additional material to be dredged within Foryd Harbour is unlikely to have any further impacts associated with it compared to the original 2011 ES.

10 Landscape and Visual

10.1 Introduction

Please refer to Chapter 11 in the 2011 ES for the original Landscape section.

This chapter provides a summary of the landscape and visual assessment of the proposed small-scale land based dredging operations proposed at Rhyl Harbour. This has been produced as an addendum to the landscape and visual amenity chapter of the 2011 ES.

10.2 Legislation, Guidance and Planning Policy Changes

The legislation, guidance and policy context for the Scheme remains the same as the 2011 ES apart from the following changes:

- The Denbighshire LDP 2006-2021 was adopted on 4th June 2013 and replaces the previous Denbighshire UDP
- The assessment methodology guidelines produced by the Landscape Institute were updated in April 2013 (GLVIA3).
- The Conwy Local Development Plan Revised Deposit 2011 (LDP) was formally adopted in

March 2012. Two policies are material to the issue of landscape and visual impact. Policy NTE/5 - Landscape Character Areas – summarises the general principle, and notes that:

“Development will only be permitted where:

- I. It respects and retains or enhances the local character and distinctiveness of the individual Landscape Character Areas (as shown on the Proposals Map) in which it is located; and*
- II. All proposals will be considered against the Development Principles and other policies in the Plan designed to protect the environment and landscape character”.*

The Landscape Institute has issued guidance on the transition from the second to the third edition of the guidelines for landscape and visual impact assessment. This states that an assessment that has already started using GLVIA2 should be completed using that edition unless otherwise dictated by the client or professional. As this report is an addendum to the original assessment it is considered that for clarity the original guidelines should be used

10.3 Assessment Methodology

The original assessment (in the 2011 ES) was carried out in accordance with the methodology set out in the publication *“Guidelines for Landscape and Visual Impact Assessment”* (Second Edition). When applied to landscape and visual issues “significance” is an assessment of the scale or magnitude of the effect considered with the sensitivity of the location (including the immediate visual context) and the receptor: it is applied to the following broad categories either side of a “not significant/insignificant” designation in incremental steps towards the polar adverse or beneficial categories.

The following significance categories are used for the assessment of the effects:

- Major adverse impact – where the Scheme would cause a significant deterioration in the existing view/landscape;
- Moderate adverse impact – where the Scheme would cause a noticeable deterioration in the existing view/landscape character;
- Minor adverse impact – where the Scheme would cause a barely perceptible deterioration in the existing view/landscape character;

- Not significant/insignificant – no discernible deterioration or improvement in the existing view/landscape character;
- Minor beneficial impact – where the Scheme would cause a barely perceptible improvement in the existing view/landscape character;
- Moderate beneficial impact – where the Scheme would cause a noticeable improvement in the existing view/landscape character; and
- Major beneficial impact – where the Scheme would cause a significant improvement in the existing view/landscape character.

10.4 Baseline Summary

The current baseline has been re-assessed for the extended dredging area. It is considered that the information provided in the 2011 ES is still applicable. Therefore it is considered that the existing baseline is now a conservative baseline.

10.5 Impacts/Effects Prior to Mitigation

10.5.1 Construction

There is not considered to be any change to construction impacts from the revised small-scale land based dredging proposals.

10.5.2 Operational

During the operation of the dredging activity there will be **minor adverse impact** on the landscape and visual aspect owing to the material that will be temporarily stockpiled at the picnic area adjacent the dunes and quay wall (as detailed in A.5). The presence of the stockpile may have the potential to obscure the view from the public square and the closure of a section of boardwalk will temporarily reduce access to the dunes.

The decision to stockpile at the picnic area means boats held within the boatyard will not have to be relocated in order to ensure adequate space for the stockpile of dredged material. The **minor adverse impact** due to the temporary visual 'overcrowding' in the boatyard has now been removed.

The impacts listed above only affect the site for the duration of the dredging operation. It is not considered that there will be any other impacts relating to landscape and visual impact that will differ from the information stated in the 2011 ES.

10.6 Mitigation measures

In general, mitigation measures during construction remain unchanged from those proposed in the 2011 ES.

Where sand extraction is proposed, the Contractor should minimise the visual impact during the works. This will be mitigated against by:

- Completing the works as efficiently as possible and transport the stockpiled material off site immediately.

In addition to the above, the following mitigation measures are proposed:

- Monitoring of the stockpile level during the dredging activity;
- Compensation costs (if any) must be agreed with Mariners for the duration of the works if they are unable to gain access to boats moored in the harbor.

10.7 Residual Impacts (Post Mitigation)

There are no significant residual impacts identified from the changes to the dredging proposals during the construction and operational phases.

10.8 Summary

The additional material to be dredged within Foryd Harbour is unlikely to have any further impacts associated with it compared to the original 2011 ES.

11 Socio-Economic and Community

Please refer to Chapter 12 in the 2011 ES for the original Human Aspects section.

Operational impacts were anticipated to be mostly ***moderate/major beneficial*** in the 2011 ES in relation to the local economy, regeneration, harbour users and the public. Maintenance dredging of the channel was taken into account in the original assessment and the additional dredging area and timescales of the dredging activities are not considered to change the outcome of the initial assessment. As for the original ES Chapter, temporary adverse impacts relating to the dredging activities will be far outweighed by the long term beneficial impacts of improved harbour maintenance and management, with the potential for the creation of local jobs in harbour maintenance activities.

Harbour users are unable to use harbour as intended and have requested the harbour to be dredged as it is affected commercial boat livelihoods.

Overall, therefore, an amendment to the Socio-Economic and Community Chapter has been scoped out of this addendum.

12 Transportation, Traffic and Access

12.1 Introduction

Please refer to Chapter 13 in the 2011 ES for the original Transportation, Traffic and Access section.

This Chapter presents an update assessment of the impacts the small scale land-based dredging operations proposed at Rhyl Harbour are anticipated to have upon transport, traffic and access.

12.2 Legislation, Guidance and Planning Policy Changes

The original submission considered the planning policy context of the Scheme at regional and local level. The Denbighshire LDP 2006-2021 was adopted on 4th June 2013 and replaces the previous Denbighshire UDP.

Since submission in 2011, the Colwyn Borough Local Plan, which covers the period 1996 to 2006, was adopted by Conwy County Borough Council on 31st March 1999. The LP superseded this with the Conwy Deposit Local Plan in March 2012 details relating to this chapter can be found in section 4.8.2 'Sustainable Transport Strategy.'

12.3 Assessment Methodology

The following basic steps were undertaken to assess the additional impacts from the increased maintenance dredging area:

- Calculate the total number of construction vehicles;
- Identify times of day the vehicles will be travelling; and
- Identify vehicle routes (see Appendix A.5).

The impact of additional traffic during construction was then assessed using the above information and the matrix provided in Table 13.1 as was used in the 2011 ES.

Table 13.1: Impact Severity Matrix

Magnitude of Impact	Sensitivity of Receptor		
	Low	Medium	High
Low	Negligible	Minor	Moderate
Moderate	Minor	Moderate	Major
High	Moderate	Major	Major

12.4 Baseline Summary

The baseline in the 2011 ES considered:

- **The existing Highway Network:** A548 Foryd Road, A548 Wellington Road, Southlands Road, A548 Southlands Road/ Horton's Nose Lane Junction.
- **Off Highway Network:** Access via bus, rail, walking and cycling accessibility.
- **External and Internal access to the site**

12.5 Impacts/Effects Prior to Mitigation

The total estimated amount of material to be dredged is 17,000 tonnes per year. Depending on the height and timing of low tide it is anticipated approximately 1,200 tonnes of excavated material will be removed at each

low tide, equating to 40 vehicle movements per truck over the period of the works. Sand transportation vehicles will be filled to their full capacity to ensure maximum efficiency.

Details of staff numbers and working shift patterns are not currently available. However, excavation and vehicle movements will be dependent upon the timings of low tide and is highly likely to occur outside of the traditional peak hour. Excavation will also take place outside of holiday periods and bank holidays. It is proposed to use a local contractor to undertake the work employing seven personnel to undertake the work. It anticipated these employees will be local so levels of traffic will be reduced to the minimum.

12.5.1 Operational Vehicles

Note: The exact type of vehicles and number of vehicle movements may alter to suit conditions however best estimates have been provided by DCC for the assessment of impacts.

Wagon / HGV

- Vehicle characteristics to be confirmed – used for transportation of dredged sand.

Lorry / HGV

- Vehicle characteristics to be confirmed.

Dump Trucks

- 3x 10T dump trucks used for transporting excavated material to the picnic area.

Low loader

- Used for transportation of operational vehicles to the site. Typical dimensions of the vehicle are set out in the 2011 ES document.

The operational vehicles used on site for excavation include:

- 220 Tracked Excavator to load sand onto HGV's and excavate at low tide. 300 Tracked excavator will be used to excavate the dredge material from the Harbour and trim banks. These vehicles have a typical width of 2.8 m.

12.5.2 Operational Impacts/Effects

In summary, the impact of vehicle movements during the construction period is anticipated to be **temporary but of minor adverse significance**, based on the base traffic count data obtained from both DCC and CCBC and the significance criteria. Although there is anticipated to be a minor/moderate increase in overall vehicle movements, Therefore there is considered to be no overall change in the impact from the 2011 ES.

It is considered that the impact of temporary construction workforce movements during the construction period would be **temporary but of minor adverse significance**.

Following the dredging works, the Scheme is not expected to generate any vehicle movements and traffic levels would be expected to return to the original baseline levels. Any fluctuation in traffic levels would be as a result of background traffic growth or increased harbour usage. The principal impacts likely to occur during the excavation phase are:

- Increased noise and vibration from the presence of site vehicles exporting materials from the site in addition to potential dust generation and transmission;
- Increased demand for parking in the study area resulting from the presence of excavation workers; and
- Possible restriction/interruption of access to the properties and facilities along Horton's Nose Lane during the dredging period.

12.6 Mitigation Measures

Mitigation measures identified in the 2011 ES remain appropriate. In summary the mitigation measures for the works are:

- Access for HGVs/low loaders/dump trucks will be restricted during certain hours of the day to avoid school opening and closing times;
- HGV/low loaders/dump trucks drivers will be advised on the suitable routes for the Scheme;
- Construction traffic and deliveries will be restricted to between 09.00 and 15.30;
- The number of vehicle movements during the day will be monitored to ensure they are not all arriving to site at once; and
- The compound will be secure and manned by appropriate staff at all times. It is proposed that access and egress to the site will be controlled by Banksmen.

12.7 Residual Impacts (Post Mitigation)

The residual impacts for the dredging operation transport are considered to be as follows:

- The impacts from temporary HGV traffic during hours of dredging operation are anticipated to be
- **temporary moderate adverse**; and
- The impacts from operational workforce traffic are expected to be **temporary minor adverse**.

12.8 Summary

Once completed, the dredging operations will not generate any traffic and will have no impact upon the highway network.

13 Noise and Vibration

13.1 Introduction

Please refer to Chapter 14 in the 2011 ES for the original Noise section. This chapter considers the potential noise and vibration impacts during the dredging works.

The following are considered in this assessment:

- Noise from excavation activities; and
- Noise from construction traffic.

The principal change to the work which has the potential to generate different or added noise or vibration impacts will be caused by additional vehicle movements from the extra area of dredging.

13.2 Legislation, Guidance and Planning Policy Changes

A number of policy and guidance documents have been revised since 2011. Table 13.1 provides a summary of relevant changes.

Table 14.1: Summary of Changes to Legislation Guidance and Planning Policy Relevant to Noise

Document Cited in 2011 ES	Changes Relevant to Noise and Vibration
BS 5228:2009 Code of Practice for Noise and Vibration Control on Construction and Open Sites' (Parts 1 and 2).	Part 1 was amended in 2014, however the changes have not affected the validity of the assessment.
Design Manual for Roads and Bridges (DMRB) Volume 11 Section 3 Part 7 Highways Agency (HA) 213/08 Noise and Vibration (2008).	Superseded by Design Manual for Roads and Bridges (DMRB) Volume 11 Section 3 Part 7 HD 213/11 Revision 1 Noise and Vibration (2011). The application of this document relates to operational effects of changes in traffic flows on the road network. As operational effects are scoped out of this assessment the revision does not
Planning policy Wales Edition 3 July 2010	Superseded by Planning Policy Wales Edition 6 February 2014. There remain no specific policies relating to construction noise. Chapter 13 Minimising and Managing Environmental Risks and Pollution Section 13.13.2 remains unchanged from Edition 3.
Denbighshire Unitary development Plan 1996 – 2011	Superseded by Denbighshire County Council Local Development Plan 2006 – 2021 adopted June 2013. Policy RD1 – Sustainable development and good standard design, states that: “Development proposals will be supported within development boundaries provided..... vi) Does not unacceptably affect the amenity of local residents, other land and property users or characteristics of the locality by virtue of increased activity, disturbance, noise, dust, fumes, litter, drainage, light pollution etc.. and
BS 8233:1999 Code of Practice for Sound Insulation and Noise Reduction for Buildings.	Revised in 2014i, however the changes made have not affected the validity of the assessment

13.3 Assessment Methodology

- **Major**- Generation of daytime façade noise levels exceeding 75dB LAeq, 1 h
- **Moderate**- Generation of daytime façade noise levels that are in the range of 65 to 75dB LAeq, 1h
- **Minor**- Generation of daytime façade noise levels that are in the range of 55 to 65dB LAeq, 1 h
- **Negligible**- Generation of daytime façade noise levels that are below 55dB LAeq, 1 h

Note: Where LAeq = the equivalent continuous A-weighted sound pressure level (SPL), being the single number that represents the total sound energy measured over that period.

Source: Cascade Consulting

Night time working for the additional dredging activity will not be undertaken. .

13.4 Baseline Summary

Baseline noise measurements were carried out in the vicinity of the proposed works between 17 and 18 May 2010 and are reported in the 2011 ES. There are no updates to traffic baseline data to the information detailed in the 2011 ES.

13.5 Impacts/Effects Prior to Mitigation

13.5.1 Construction Impacts

There are not considered to be any significant construction phase effects relating to noise and vibration for the excavation activity.

13.5.2 Operational Impacts

The potential noise and vibration impacts generated by dredging activity and transport of excavated material off site are detailed within the 2011 ES and may be considered valid for the amended works.

13.5.3 Extraction and Loading of Fill

An inventory of construction plant which is likely to be deployed for extraction of sand fill has been provided by the contractor. Each plant item has been provided with an estimated percentage operating time for any given hour of construction activity. In the absence of detailed contractor's information at this stage in the project, professional judgement has been used in the assignment of this percentage. The assumed operating times should be regarded as conservative. It has been assumed for prediction of noise break-out that the two excavators will operate simultaneously and that two dumper trucks would be present at the excavation site at any one time. As plant noise levels have not been provided, reference noise levels from Annex C of BS 5228–1:2009+A1:2014 have been assigned to the plant. The assumed noise levels are provided in Table 10.9.

Construction Activity	Item of Plant	Number of Plant Items Operating Concurrently	Noise Level at 10 m (dBA)	BS 5228 – 1:2009 Reference	% On-time
Extraction of Sand	360 Degree Tracked Excavator	2	79	C2.29	75
	10 Tonne Dumper Truck	2	87*	C2.31	75

13.6 Mitigation Measures

Mitigation measures identified in the 2011 ES remain appropriate. In summary the mitigation measures for the works are:

To minimise the noise and vibration caused by the traffic impacts, the delivery hours will be restricted to between 09.30 and 15.00. The arrival of delivery vehicles to the site must be properly co-ordinated to prevent parking on local streets, while awaiting access to the site. There should be no deliveries to the site before 09.00. Vehicle movements both on the site and during the dredging activities should be managed to avoid excessive reversing movements whenever possible, by optimising the site layout and working methodologies.

In general, good public relations and extensive consultation with DCC and CCBC will be essential to help minimise the impact of the dredging operation. Local residents in particular will need to be advised that any higher levels of noise will only be for a short period of time and so it will be necessary to publicise and adhere to a stated works schedule. Also careful consideration should be given to effects on residents in adjoining properties or the immediate locality, if there are any changes to the construction programme, this should be publicised through direct consultation with the local residents.

There should be a dedicated contact number for local residents to phone if they have any queries or complaints. A DCC Environmental Health Officer was consulted as part of this ES Addendum in relation to noise and vibration caused by dredging activities and there were no additional concerns raised other than detailed in the original 2011 ES.

13.7 Residual Impacts (Post Mitigation)

There are no significant residual impacts identified from the changes to the dredging proposals during the construction and operational phases.

13.8 Summary

The additional material to be dredged within Foryd Harbour is unlikely to have any further impacts associated with noise and vibration compared to the original 2011 ES.

14 Other Aspects

14.1 Cumulative Impacts

The project with the potential to contribute to cumulative impacts identified within the 2011 ES was Phase 3 of the West Rhyl Coastal Defence Scheme has been completed. The scheme covered by the 2011 ES including the public square, harbour building and extended quay wall has also been completed.

To date two retail units have been built there are no extant development proposals or plans for the Ocean Plaza development on the Rhyl seafront.

Therefore the changes to cumulative impacts relating to the revised land-based dredging proposals are considered to be negligible and are not considered further.

14.2 Air Quality

Air quality was scoped out of the original 2011 ES. Excavated dredge material will be temporarily stored at the picnic area prior to moving off site. There is potential for sand particles to enter the atmosphere during this process however this will be temporary and material will only be stockpiled on site for an insignificant amount of time. No significant residual impacts are predicted; therefore 'Air Quality' will as scoped out of this ES Addendum.

15 References

- APBmer (2010) Overtopping Report Amended (Final) ABP Report No: R1594
- ABPmer (2010) West Rhyl Coastal Defence Scheme – Interpretive report. ABPmer Report No: R1652
- BS 5228:2009 Code of Practice for Noise and Vibration Control on Construction and Open Sites' (Parts 1 and 2).
- BS 6472:2008 Guide to Evaluation of Human Exposure to Vibration in Buildings.
- BS 7385 Part 2:1993 Evaluation and Measurement for Vibration in Buildings. Guide to Damage Levels from Groundborne Vibration.
- BS 8233:1999 Code of Practice for Sound Insulation and Noise Reduction for Buildings. Calculation of Road Traffic Noise, DoT 1988.
- Cascade Consulting, West Rhyl Coastal Defence Scheme EIA, 2010, Volumes 1-3
- Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora
- Denbighshire County Council Supplementary Planning Guidance Notes 13 (Conservation Areas), SPG 15 (Archaeology) and SPG 18 (Nature Conservation and Species Protection)
- Denbighshire County Council (2011) Foryd Harbour Public Square and Extended Quay Wall – Environmental Statement
- Denbighshire County Council Vision for 2025 Denbighshire Economic Growth Strategy (2007-2013)
- Denbighshire Local Development Plan (LDP), adopted June 2013
- Design Manual for Roads and Bridges (DMRB) Volume 11 Section 3 Part 7 Highways Agency (HA) 213/08 Noise and Vibration (2008).
- EC Water Framework Directive (2000/60/EC)
- Environmental Impact Assessment Directive 85/337/EEC OR 2011/92/EU??
- HR Wallingford (2008) Conwy Tidal Flood Risk Assessment Report EX 4667
- Landscape Institute, GLVIA2 and GLV1A3, Guidelines for Landscape and Visual Impact Assessment, April 2013
- Hyder (2011) Modelling report Denbighshire County Council Foryd Harbour - Phase 2 New Quay Wall
- Marine and Coastal Access Act (MCAA) 2009
- Marine Policy Statement (MPS), adopted March 2011 Marine Works (EIA) Regulations 2007
- North West England and North Wales Shoreline Management Plan (SMP2), 2010 Planning Policy Wales, Edition 6, February 2010
- Rhyl Going Forward (2004)
- Shellfish Waters Directive (2006/113/EC)
- Technical Advice Notes: TAN: 5 (Nature Conservation and Planning), 11 (Noise), 12 (Design), 13 (Tourism), 14 (Coastal Planning), 15 (Development and Flood Risk), 18 (Transport) and 21 (Waste)
- The Bathing Waters Directive (BWD) (EU Directive 76/1160/EEC) being replaced stepwise by Directive 2006/7/EC in 2014
- The Conservation of Habitats and Species Regulations 2010 The Habitats Directive 1992
- The Wales Spatial Plan 'People, Places, Futures'15 (WSP) (2008)
- OSPSAR Guidelines for the Management of Dredged Material. Agreement 2014-16

Appendix A - Figures

A.1 Location in Context of Wider Area and Protected Sites



10401/EI/09/02A



Conwy Council
Planning Services
10401/EI/09/02A



Pennaeth Prifffyrdd ac Isadeiledd Conwy a Sir Ddinbych
Head of Highways & Infrastructure Conwy & Denbighshire
ADRAN PRIFFFYRDD AC ISADEILEDD
DEPARTMENT OF HIGHWAYS AND INFRASTRUCTURE

- Proposed Foryd Harbour Public Space & Day Walk
- North Wales International Bird Area
- Denbighshire International Bird Area
- National Nature Reserve
- Local Nature Reserve
- County Boundary

10401
NTS
SH9980
APS
EP

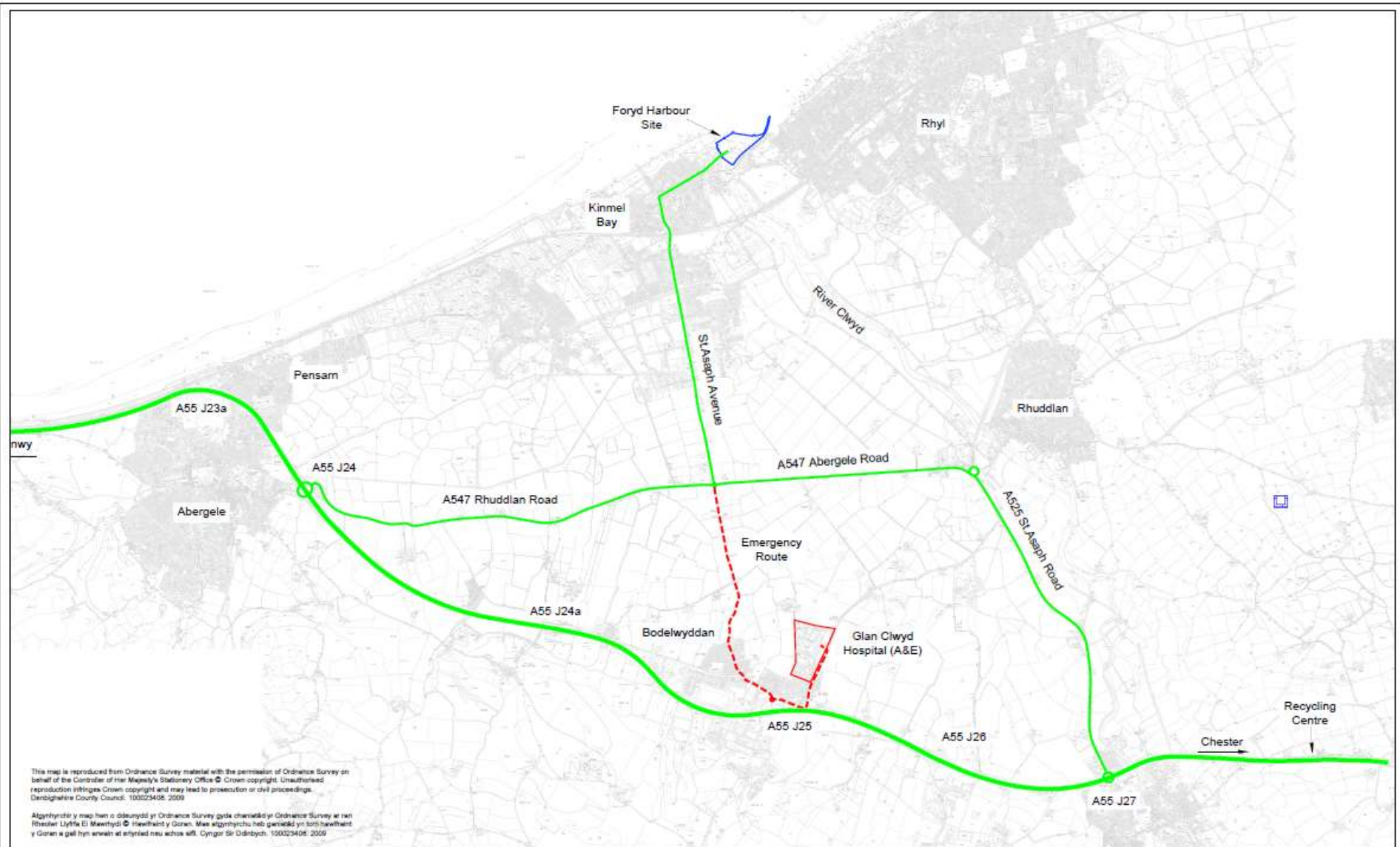
10401	A	Original Drawing	07.12.12
DATE	NTS		
PROJECT	SH9980		
DATE	APS		
DATE	EP		

**FORYD HARBOUR PHASE 2
RHYL**
**ENVIRONMENTAL IMPACT ASSESSMENT
NON STATUTORY DESIGNATED
NATURE CONSERVATION SITES
(FIGURE 9.2)**
10401/EI/09/02A

Rhyl Harbour Public Square and Extended Quay Wall

Environmental Statement Addendum - Maintenance Land Based Dredging

A.2 Site Location Plan



CONWY
CONWY AND DISTRICT COUNCIL
CONWY AND DISTRICT COUNCIL

CYNGOR Sir Ddinbych
Denbighshire
COUNCIL

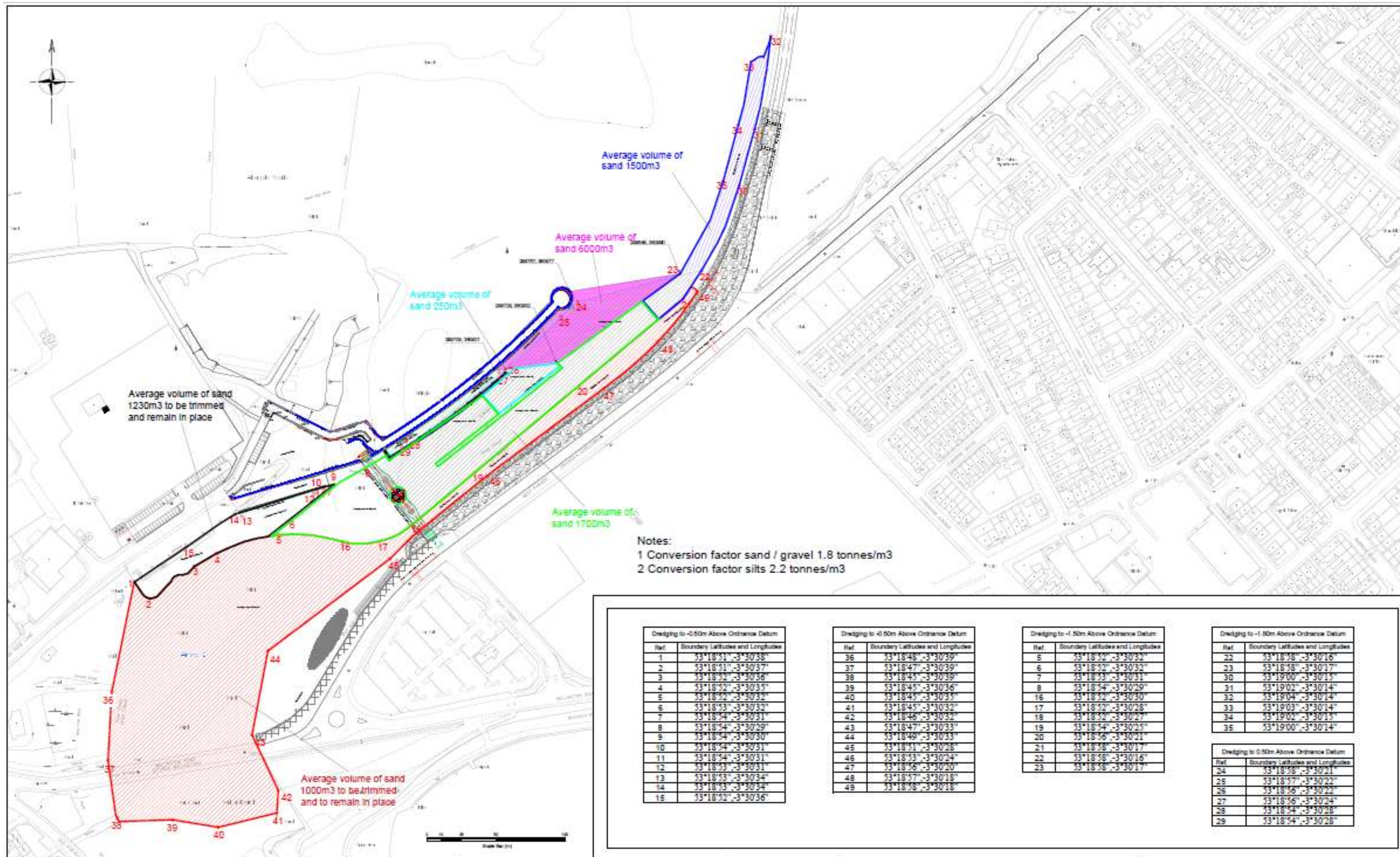
Pennwrdd Penrhod ac Iarllwrdd Conwy a Sir Ddinbych
Head of Highways & Infrastructure Conwy & Denbighshire
ADUR YNFFURD AC IARLLWRDD
DEPARTMENT OF HIGHWAYS AND INFRASTRUCTURE

10401	A	Overall Estimate	26/04/18	FORFYD HARBOUR, RHYL PROGRAMME OF WORKS
NTS	B	Construction Issue	26/07/18	
SH9980	C	Addition of Recycling Centre	26/07/18	CONWY J23a
4PS				
E1				
		CONSTRUCTION	30/01/18	SCHEME LOCATION AND TRAFFIC ROUTES
				H4/10401/CB/01/01C

A.3 Original Rhyl Harbour Dredging Proposals



A.4 Revised Rhyl Harbour Dredging Proposals



Ref	Boundary Latitude and Longitude
1	53°18'51"-3°30'38"
2	53°18'51"-3°30'37"
3	53°18'52"-3°30'36"
4	53°18'52"-3°30'35"
5	53°18'52"-3°30'32"
6	53°18'53"-3°30'32"
7	53°18'54"-3°30'31"
8	53°18'54"-3°30'29"
9	53°18'54"-3°30'30"
10	53°18'54"-3°30'31"
11	53°18'54"-3°30'31"
12	53°18'53"-3°30'31"
13	53°18'53"-3°30'34"
14	53°18'53"-3°30'34"
15	53°18'52"-3°30'36"

Ref	Boundary Latitude and Longitude
36	53°18'45"-3°30'39"
37	53°18'47"-3°30'39"
38	53°18'45"-3°30'39"
39	53°18'45"-3°30'36"
40	53°18'45"-3°30'35"
41	53°18'45"-3°30'32"
42	53°18'45"-3°30'32"
43	53°18'47"-3°30'33"
44	53°18'49"-3°30'33"
45	53°18'51"-3°30'28"
46	53°18'53"-3°30'24"
47	53°18'56"-3°30'20"
48	53°18'57"-3°30'18"
49	53°18'58"-3°30'18"

Ref	Boundary Latitude and Longitude
5	53°18'52"-3°30'32"
6	53°18'52"-3°30'32"
7	53°18'53"-3°30'31"
8	53°18'54"-3°30'29"
16	53°18'52"-3°30'30"
17	53°18'52"-3°30'28"
18	53°18'52"-3°30'27"
19	53°18'54"-3°30'25"
20	53°18'56"-3°30'21"
21	53°18'58"-3°30'17"
22	53°18'58"-3°30'16"
23	53°18'58"-3°30'17"

Ref	Boundary Latitude and Longitude
22	53°18'58"-3°30'16"
23	53°18'58"-3°30'17"
30	53°19'00"-3°30'15"
31	53°19'02"-3°30'14"
32	53°19'04"-3°30'14"
33	53°19'03"-3°30'14"
34	53°19'02"-3°30'15"
35	53°19'00"-3°30'14"

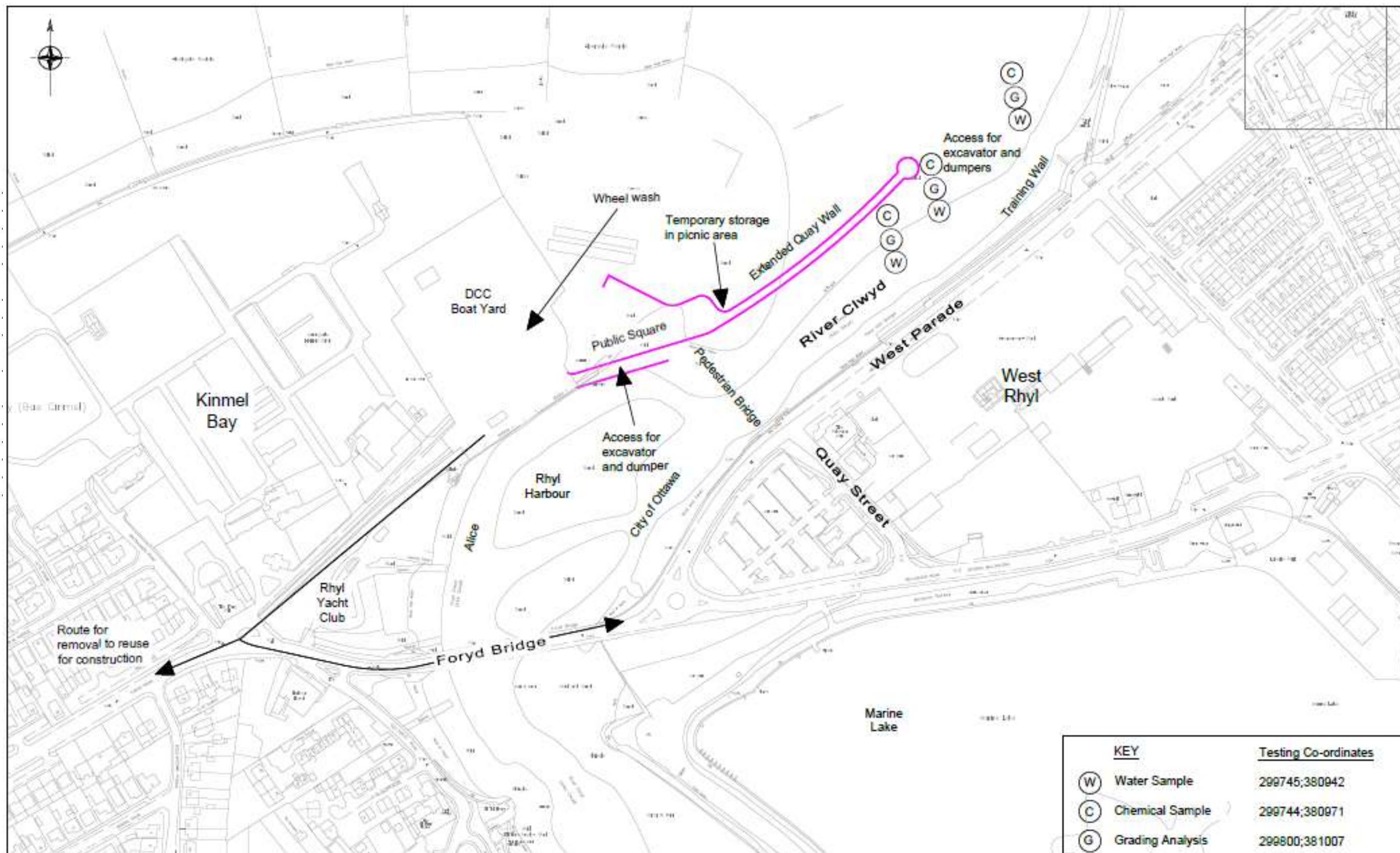
Ref	Boundary Latitude and Longitude
24	53°18'58"-3°30'21"
25	53°18'57"-3°30'22"
26	53°18'56"-3°30'22"
27	53°18'56"-3°30'24"
28	53°18'54"-3°30'28"
29	53°18'54"-3°30'28"

H4/14409/D/04E CONWY CYNGOR Sir Ddinbych Denbighshire COUNTY COUNCIL Penmaen Pryddallan, Llandudno, Conwy & Denbighshire DEPARTMENT OF HIGHWAYS AND INFRASTRUCTURE	14409 1: 1250 @ A1 SH9980 SB EP	A. Original Drawing B. Dredging Area added in colour pink C. Extra Dredging Area added 36-49 D. Volume of material required to be dredged E. Volumes amended	07/12/11 08/07/14 08/07/14 01/12/14 01/02/18	FORYD HARBOUR PHASE 2 RHYL ENVIRONMENTAL IMPACT ASSESSMENT EXTENT OF DREDGING (FIGURE 2.10)
	ISSUE			
	01/02/18			
	H4/14409/D/04E			
	01/02/18			

Rhyl Harbour Public Square and Extended Quay Wall

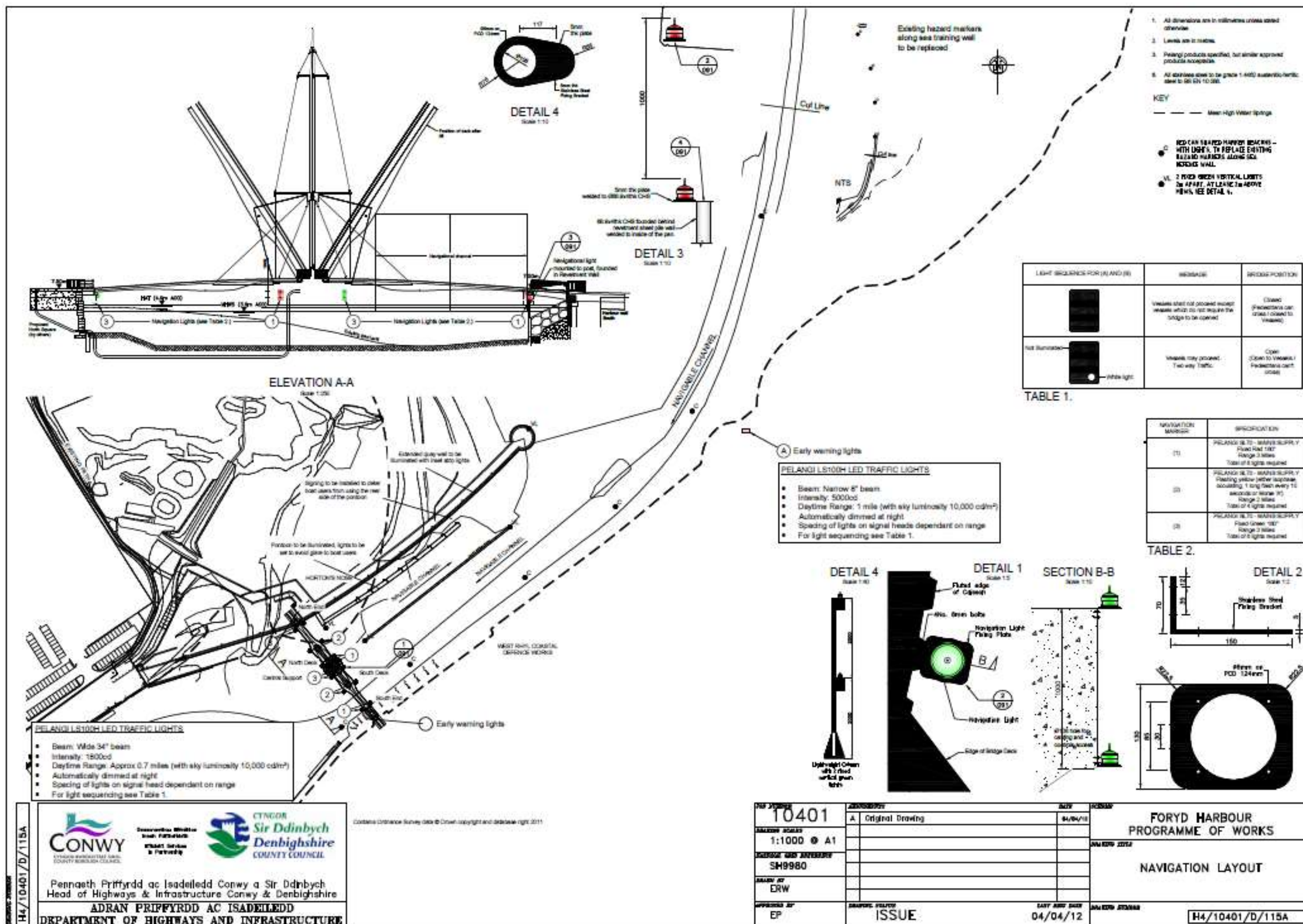
Environmental Statement Addendum - Maintenance Land Based Dredging

A.5 Proposed Site Layout displaying Vehicle Movements, Stock Pile Area



H4/14409/D/03C	Cyngor sir ddinbych denbighshire County Council PENNAETH PRIFYRDD A GWASANAETHAU AMGYLCHEDDOL HEAD OF HIGHWAYS AND ENVIRONMENTAL SERVICES ADRAN PRIFYRDD A GWASANAETHAU AMGYLCHEDDOL DEPARTMENT OF HIGHWAYS AND ENVIRONMENTAL SERVICES	This map is reproduced from Ordnance Survey material with the permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationary Office. Crown copyright. Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings. Denbighshire County Council, 100023409, 2012 Allynbyrch y map hwn o ddwydd y Ordnance Survey gyda chaniatâd y Ordnance Survey ar ran Rheolwr Llyfrfa G. Haeffordd y Gorn. Mae allynbyrch hwn genned yn lloft haeffordd y Gorn a gall hyn arwain at wlydd neu achos aiff. Cyngor Sir Ddinbych, 100023409, 2012	14409 1:2500 @A3 SJ0682 SB EP	Original Drawing Sample Locations added to drawing Sample Locations updated	01/02/18 18/12/14 01/02/18	RHYLL HARBOUR EMPOWERMENT ORDER, MARINE LICENCE TO DREDGING MARINE LICENCE AND SAND EXCAVATION
			ISSUE 01/02/18		H4/14409/D/03C	

A.6 Navigation Plans



Appendix B - Consultation Documents



Re: Rhyl Harbour Extent of new Dredging Area [:J

Paul Mead to Claire Wyn-Jones

11/12/2014 19:18

Cc Andy Clark, Eric Price

Claire,

I won't be around tomorrow I am afraid so it will have to be Monday.

I have always tried to let the Marine Consents process deal with the dredging works and not have the planning process duplicating other controls. Hope this will be the case now to avoid unnecessary work.

Thanks,

Paul Mead BA(Hons) Dip TP MRTPI

Rheolwr Datblygu
Development Manager

Gwasanaethau Cynllunio a Gwarchod y Cyhoedd
Planning and Public Protection Service
Caledfryn, Ffordd y Ffair/Smithfield Road, Ddinbych/Denbigh LL163RJ

Ffon / Phone - 01824 706712

Ffacs / Fax - 01824 706709

E-bost / E-mail: paul.mead@sirddinbych.gov.uk / paul.mead@denbighshire.gov.uk

Gwefan / Web Site: www.sirddinbych.gov.uk / www.denbighshire.gov.uk

Claire Wyn-Jones

Paul, We are in the process of applying for a Mari...

10/12/2014 17:34:42

From: Claire Wyn-Jones/Highways and Environment Service/DCC
To: Paul Mead/EN/DCC@DCC
Cc: Eric Price/EN/DCC@DCC, Andy Clark/DSO/DCC@DCC
Date: 10/12/2014 17:34
Subject: Rhyl Harbour Extent of new Dredging Area

Paul,

We are in the process of applying for a Marine Licence For Dredging with the NRW so I am currently preparing an addendum to the original EIA produced for Rhyl Harbour in order to account for the extended dredging area. I have attached a plan both for the original area and the original plus extended area.

The addendum will also be submitted in support of applying for a Harbour Empowerment Order.

Dredging will take place at low tide and is below mean high water level. Approximately 22,000 tonnes of material will be excavated and this will take place on an annual basis as part of a maintenance dredging regime.

Will the new extent of dredging area have any impact on the application in terms of planning?

I will call and see you tomorrow if you are in?

Kind regards,

Claire

[attachment "Original extent of dredging.pdf ' deleted by Paul Mead/EN/DCC] [attachment "Marine Licence Sand Excavation Plan-Layout1.pdf' deleted by Paul Mead/EN/DCC] [attachment "E1_05_01 C - Copy-A1 Layout.pdf' deleted by Paul Mead/EN/DCC]

Claire Wyn-Jones, BEng (Hons) PgDip
Peiriannydd Technegydd/TechnicianEngineer
Uned Gwaith/ Works Unit
Priffyrdd a Gwasanaethau Amgylcheddol/ Highways and Environmental Services
Ffon/Tel: 01824 706938
Symudol/Mobile:07748920149
E-bost: claire.wyn-jones@sirddlnbych.gov.uk/ E-mail:claire.wyn-jones@denbighshire.gov.uk

Appendix C - HRA Screening Letter Report



**Marine
Management
Organisation**

Lancaster House
Hampshire Court
Newcastle Upon Tyne
NE4 7YH

T 0191 376 2563
www.marinemanagement.org.uk

Eric Price
By email only

Our reference: DC9829

03/11/2014

Dear Eric,

The Harbours Act 1964

Screening Opinion – Proposed Rhyl Harbour Empowerment Order

Thank you for your letter dated 21 August 2014 to the Marine Management Organisation ("the MMO") in which you gave notice under paragraph 3 of Schedule 3 to the Harbours Act 1964 ("the Act").

Background

It is our normal procedure to consider such requests in accordance with our obligations under the Act. The Act provides that the MMO must determine whether the proposed works relate to a project which falls within Annex I or Annex II of European Directive 2011/92/EU and, for the purposes of a project appearing to fall within Annex II, whether that project is a relevant project.

Should the MMO determine the project to be one which falls within Annex I or is a relevant project within Annex II, the MMO must consult with such bodies with environmental responsibilities as it considers appropriate before giving an opinion about the extent of the information to be included in an environmental statement.

MMO Screening Opinion

On reviewing the information supplied and having consulted with such bodies with environmental responsibilities as it considers appropriate, the MMO is of the opinion that the works proposed are capable of falling within:

Annex II (13) (a) – Any change or extension of projects listed in Annex I or this Annex, already authorised, executed or in the process of being executed, which may have significant adverse effects on the environment (change or extension not included in Annex I).



**INVESTORS
IN PEOPLE**

However, having regard to the size, scale and nature of the works, the MMO is of the opinion that the works as proposed do not constitute a relevant project and as such do not require an Environmental Impact Assessment.

Habitats Regulation Assessment screening

In addition to giving notice under the Act you also requested the MMO provide an indication of likely significant effect on Liverpool Bay SPA for the purposes of the Conservation of Habitats and Species Regulations 2010.

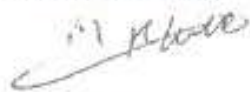
The MMO has considered the information provided and is of the opinion that the works are unlikely to have a significant effect on the Liverpool Bay Special Protection Area provided the mitigation described in the scoping report is adopted.

The MMO notes there is potential for impact on the Dee Estuary SAC and Gronant Dunes and Talacre Warren SSSI arising from coastal processes and would expect additional supporting information to be provided in support of any application to assist the MMO in its consideration.

The full consultation responses are attached to this letter for your information.

If you have any queries or require clarification on any of the above, then please do not hesitate to contact me.

Yours sincerely,



Mark Kirby
Inshore Licensing Team

D 0191 376 2563

E mark.kirby@marinemanagement.org.uk

1.9 Habitat Regulations Assessment Update

1.9.1 Introduction

The 'Habitats Regulation Assessment' can be found in the 2011 ES Volume 2 Section 9.1 and was undertaken in November 2011 by Jane Walsh Ltd. The findings of this report concluded that there would be no likely significant effects on European Sites. The new proposed extent of dredging area is shown on Drawing No. H4/14409/D/04 in Appendix 5 and any potential impacts that may arise from this activity will be noted and considered in accordance with the EC Habitats Directive. The HRA has been revised in order to account for this addition area to be dredged.

The Habitats Regulations Assessment (HRA) refers to the assessment of the potential effects of a development on one or more European sites (Natura 2000 site(s)) or their key features (species or habitats), which include Special Protection Areas (SPAs); Special Areas of Conservation (SACs), along with potential SPAs (pSPAs), candidate SACs (cSACs) and Ramsar sites, which are described below;

- SPAs are classified under the European Council Directive on the conservation of wild birds, for the protection of wild birds (including those listed in Annex 1) and their habitats;
- SACs are designated under the Habitats Directive, targeting particular habitats (Annex 1) and/or species (Annex II), identified as being of European importance; and
- Ramsar sites support important wetland habitats and are listed under the Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention 1971).

There are two European sites within the vicinity of the proposed dredging area, which are the:

- **Liverpool Bay SPA:**

Liverpool Bay SPA qualifying species in the vicinity of the proposed scheme are red throated diver and common scoter. The main area for both of these species is known to be around Colwyn Bay which is located approximately 5.0 km west.

The site is designated for the populations of non-breeding red-throated diver (*Gavia stellata*), migratory non-breeding population of common scoter (*Melanitta nigra*); and non-breeding assemblage of over 20,000 waterfowl. The SPA is approximately 0.8 km from the scheme. The site extends from Moelfre on the north-east Anglesey coast (to the west of the proposed scheme), to Rossall Point near Fleetwood (to the east of the proposed scheme); and

Dee Estuary SAC, SPA, Ramsar Site: The Dee Estuary site lies approximately 8.0 km east of Rhyl, and is designated as a SAC, SPA, Ramsar Site and Site of Special Scientific Interest (SSSI). The areas of these designated sites which are subject to tidal influence form the Dee Estuary European Marine Site.

Dee Estuary SPA's qualifying features are the following:

- ☐ Wintering bar-tailed godwit;
- ☐ Breeding common tern;
- ☐ Breeding little tern;
- ☐ Passage of the sandwich tern;
- ☐ Passage of redshank;
- ☐ Wintering shelduck;
- ☐ Wintering teal;
- ☐ Wintering pintail;
- ☐ Wintering oystercatcher;
- ☐ Wintering grey plover;
- ☐ Wintering knot
- ☐ Wintering dunlin;
- ☐ Wintering black-tailed godwit;
- ☐ Wintering grey plover;
- ☐ Wintering curlew; and
- ☐ Internationally important assemblage of regularly occurring waterbirds.

1.9.2 Legislative Background

In accordance with Article 6(3) of the Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora ('Habitats Directive'); 'Article 6 Assessments' are required where a plan (or project), not directly connected with or necessary to the management of a Natura 2000 site(s), may give rise to significant effects upon a Natura 2000 site(s).

The requirement for Article 6 Assessments has been transposed in to United Kingdom (UK) law under Regulation 61(2) of the Conservation of Habitats and Species Regulations 2010 ('Habitats Regulations') (S.I. 2010/490) and is commonly referred to as an 'Appropriate Assessment' or 'Habitats Regulations Assessment'. 'Appropriate Assessment' is taken to mean an assessment which is "appropriate to its purpose under the Habitats Directive and Habitats Regulations" and is not to be confused with the second of the Article 6 Assessments with the same name (Department for Communities and Local Government (DCLG), 2006).

In the UK, Ramsar sites are also required to undergo an assessment when a plan/project is considered likely to have a significant effect upon a site or key features of the site (Welsh Assembly Government, 2001). Herein Ramsar sites are also referred to as Natura 2000 sites.

1.9.3 New Dredging Proposals

It is anticipated approximately 22,000 tonnes of sand will require removal from the harbour and approach channel per year. It is expected that this work will be undertaken in May 2015. The areas to be dredged along with estimated quantities are detailed on Drawing No. H4/14409/D/04. The works will be undertaken at low tide to avoid any contamination of the water with all plant located above the Mean High Water (MHW) level until they are able to commence the work.

Dredging will be completed by using three 10 tonne dumper trucks who will access the harbour via the boat slipway and loaded by a 30 tonne 'long reach' excavator which will access the harbour either from the beach adjacent to the quay wall turning circle, or the boat slipway.

Sand will be removed by area and excavating in cells to reduce sediment plumes. Depending on the height and timing of low tide it is anticipated in the region of 1,200 tonnes will be removed per tide equating to 40 vehicle movements per tide. The sand will be stored at the picnic area prior to being loaded onto HGV's to be taken to a recycling center...

Material will be stockpiled at the picnic area prior to onward transport to its point of use. It is expected the maximum stockpile size at any one time will be 1,000 tonnes.

1.9.4 Water Quality Issues

Pollution Prevention

It is necessary for the site works to adhere to Environment Agency Guidelines in relation to pollution prevention (PPG5) and best practice methods of working. Emergency pollution control measures would be outlined in the Environmental Management Plan (EMP).

There is potential for hydrocarbons to enter the Clwyd Estuary as a result of dredging work within the harbour area where heavy plant will be present at low tide periods. Measures would include procedures such as: the deployment of absorbent pads or booms in the event of a spill. All vehicles and plant would be re-fuelled in the contractor's compound away from the shoreline. In addition, daily vehicles checks and maintenance would be completed to identify any leaks or damage to machinery. All lubricating oils will be vegetable based and mineral oil shall be prohibited. Work will also be undertaken at low tide therefore minimising the potential impacts for hydrocarbons from plant materials entering the water.

With the implementation of the above measures the residual impacts are likely to be negligible; therefore no likely significant effects on European sites are anticipated in relation to water quality.

Effects of sediment re-suspension through dredging may be experienced however these are will be temporary and very localised and therefore it is unlikely that the sedimentation will have an impact on the key features of the Natura 2000 sites. The Dee Estuary SAC is designated for its upper shore plant assemblages so if you have the EIA from the Foryd Harbour scheme then it would be prudent to mention their absence (hopefully they are absent) in this section. If they are not then we may need to put in some mitigation for this.

In addition, dredging will take place at the beginning of May 2015 this is outside the peak adult migration of salmon which is between June and September and the season of outside of the wintering bird season (October-March) hence no likely impacts are anticipated.

1.9.5 Disturbance

The British Trust for Ornithology (BTO) found that noise from construction does impact on some species of wildfowl and waders. Evidence generally suggests that birds adjust to noise levels and habituation of birds to noise, light and traffic disturbance is reported to be considerable, becoming tolerant over a relatively short period of time.

The site of the proposed works is located within a broad scale spawning area for mackerel, sandeel, whiting, sole, plaice, cod and sprat and a potential nursery area for cod, tope shark, anglerfish, plaice, sandeel, spotted ray, sole, thornback ray and whiting.

The noise and disturbance from machinery may affect fish movements in and out of the harbour. Many species of fish rely on sound for navigation/feeding and have highly sensitive hearing apparatus. These organisms are large enough to enable them to swim away from troublesome background dredging noises but sudden high noise level blasts may affect them if they are in close proximity. The fish are also capable of swimming away from high turbidity dredge plumes.

Provided that works are conducted outside of the spawning period, the significance of the effect on fish is anticipated to be low and short term. The extent of the impact will be site specific as fish are generally very mobile and could avoid the area with ease.

Another potential effect caused by the dredging activity is the possibility if turbidity is high in the area of dredging; benthic communities have the potential to become smothered. When turbidity is high, suspended sediment can clog gills and filter feeding organisms impairing respiration and food gathering.

When sediment settles in the vicinity of the dredged area it can smother benthic organisms depending on the amount of sediment settling. Small and recently settled life stages are especially vulnerable to smothering as organisms must maintain contact with sediment water interface. The original sand/silt modelling was carried out by ABPmer and Hyder. Although these models do not contain this extended dredged area the results can be interpolated to identify how the area will be altered. It should also be noted that the proposed depths of dredging of the extended site are relatively small and these are unlikely to be seen in the model owing to the vertical accuracies. This addendum will assess the changes to the hydrodynamics and sediment regimes in relation to the impacts of the extended dredging area only.

Changes in sedimentation regime and characteristics (including the increased settlement of fine material and changes in grain size), may result in changes in benthic community structure.

Shifts to finer sediments could be accompanied by a shift in benthic food webs from suspension-to-deposit feeding species.

Fine silt and clay particles have slow fall velocities and are therefore transported much further than sand particles. If 'clean' sandy sediments are dredged the turbidity plume will be spatially confined and will cease once the dredging operation is complete.

Benthic impacts are usually confined to areas affected by dense plumes, with the extent and severity of

impact most pronounced at low energy locations when water exchange and wave actions are limited.

Bird feeding could be disrupted if suspended sediments become deposited and impact on benthic species that form their main prey hence why the dredging works will be carried out in April in order to have no impact on bird species. Similarly localised feeding by fish on benthic organisms could be affected by the smothering of benthic species in the intertidal and subtidal zones.

1.9.2 Conclusions

The proposed extent of dredging in Foryd Harbour or any in combination effects are considered unlikely to have significant effects on any of the European sites or their qualifying features.

Works will be programmed at a time when the over wintering birds have left the SPA's and surrounding areas and the sedimentation is anticipated to have balanced itself prior to the time they return from migration

Below is an extract from a letter received from the Marine Management Organisation (MMO) dated 3rd November 2014 with regards to the screening opinion for the Proposed Harbour Empowerment Order relating to Habitat Regulations Assessment Screening:

'In addition to giving notice under the Act you also requested the MMO provide an indication of likely significant effect on Liverpool Bay SPA for the purposes of the Conservation of Habitats and Species Regulations 2010.

The MMO has considered the information provided and is of the opinion that the works are unlikely to have a significant effect on the Liverpool Bay Special Protection Area provided the mitigation described in the scoping report is adopted'

Appendix D – Water Land and Sediment Quality Supplementary Data 2018

D.1 Location 1 – Sand / Gravel Results



Denbighshire County Council
County Offices
Wynnstay Road
Ruthin
LL15 1YN

Date: 15 March 2018
Test Report Ref: STR 581126

Order No: PO2168703

Page 1 of 2

Contract: Foryd Harbour, Rhyl

LABORATORY TEST REPORT

TEST REQUIREMENTS:

To determine the chemical analysis of a sample as per client request.

SAMPLE DETAILS:

Certificate of sampling received:	No
Laboratory Ref. No:	S71094
Client Ref. No:	Location 1 Water
Date and Time of Sampling:	Unknown
Date of Receipt at Lab:	14/02/2018
Date of Start of Test:	05/03/2018
Sampling Location:	Location 1
Name of Source:	Foryd Harbour, Rhyl
Method of Sampling:	Unknown
Sampled By:	Client
Material Description:	Water
Target Specification:	N/A

Results:

See Attached

Comments:

The work was carried out by our competent, sub contracted laboratory.

Report checked and approved by:

S Parry-Didcote

Sharon Parry-Didcote

Aggregate Team Coordinator

STR Ref: Test Report Ref: STR 581126Page 2 of 2

Total Metals		
Iron	ug/l	2100
Dissolved Metals		
Arsenic	ug/l	< 5
Cadmium	ug/l	< 1
Chromium	ug/l	< 5
Copper	ug/l	< 5
Mercury	ug/l	< 0.1
Nickel	ug/l	< 5
Lead	ug/l	< 1
Selenium	ug/l	7
Zinc	ug/l	6
Anions		
Chloride	mg/l	1370
Inorganics		
Ammoniacal Nitrogen as N	mg/l	0.3
Miscellaneous		
pH	pH units	7.7
Phenols		
Total Phenols	ug/l	< 1
Polyaromatic hydrocarbons		
Naphthalene GCMS	ug/l	0.02
Acenaphthylene GCMS	ug/l	0.01
Acenaphthene GCMS	ug/l	0.02
Fluorene GCMS	ug/l	0.01
Phenanthrene GCMS	ug/l	0.04
Anthracene GCMS	ug/l	< 0.01
Fluoranthene GCMS	ug/l	0.07
Pyrene GCMS	ug/l	0.06
Benzo (a) anthracene GCMS	ug/l	0.03
Chrysene GCMS	ug/l	0.04
Benzo (b) fluoranthene GCMS	ug/l	0.05
Benzo (k) fluoranthene GCMS	ug/l	0.05
Benzo (a) pyrene GCMS	ug/l	0.05
Indeno (1,2,3-cd) pyrene GCMS	ug/l	0.04
Dibenzo(a,h)anthracene GCMS	ug/l	0.02
Benzo(ghi)perylene GCMS	ug/l	0.05
Total PAH(16) GCMS	ug/l	0.58
BTEX		
Benzene	ug/l	< 1.00
Toluene	ug/l	< 1.00
Ethylbenzene	ug/l	< 1.00
Xylenes	ug/l	< 1.00
MTBE	ug/l	< 1.00

STR REF - Test Report Ref: STR 581126 Page 3 of 3

TPH CWG		
>C5-C6 Aliphatic	ug/l	< 1.0
>C6-C8 Aliphatic	ug/l	< 1.0
>C8-C10 Aliphatic	ug/l	< 5.0
>C10-C12 Aliphatic	ug/l	< 5.0
>C12-C16 Aliphatic	ug/l	< 5.0
>C16-C21 Aliphatic	ug/l	< 5.0
>C21-C35 Aliphatic	ug/l	< 5.0
>C35-C40 Aliphatic	ug/l	< 5.0
Total (>C5-C40) Aliphatic	ug/l	< 5.0
>C5-C7 Aromatic	ug/l	< 1.0
>C7-C8 Aromatic	ug/l	< 1.0
>C8-C10 Aromatic	ug/l	< 5.0
>C10-C12 Aromatic	ug/l	< 5.0
>C12-C16 Aromatic	ug/l	< 5.0
>C16-C21 Aromatic	ug/l	< 5.0
>C21-C35 Aromatic	ug/l	< 5.0
>C35-C40 Aromatic	ug/l	< 5.0
Total (>C5-C40) Aromatic	ug/l	< 5.0
Total (>C5-C40) Ali/Aro	ug/l	< 5.0

Denbighshire County Council
County Offices
Wynnstay Road
Ruthin
LL15 1YN

Date: 06 March 2018
Test Report Ref: STR 581127

Order No: PO2168703

Page 1 of 1

Contract: Foryd Harbour, Rhyll

LABORATORY TEST REPORT

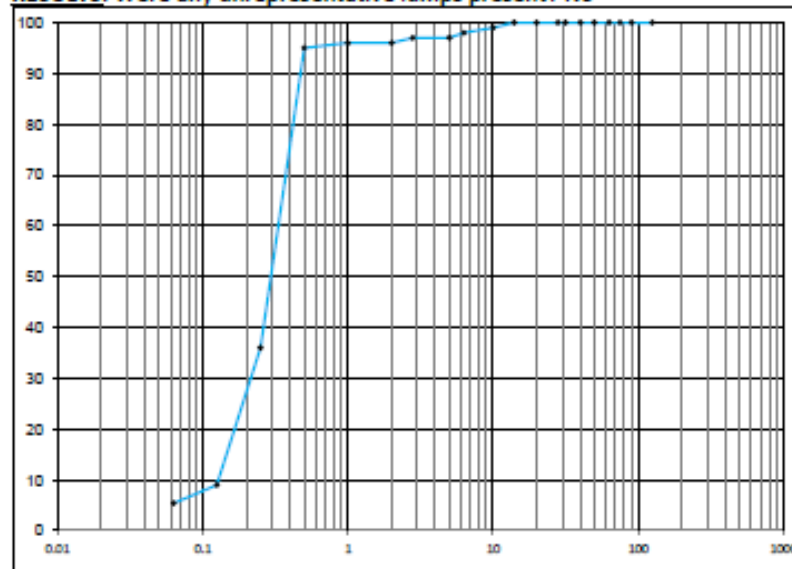
TEST REQUIREMENTS:

To determine the Particle Size Distribution (PSD) of an aggregate sample-
washing and sieving method in accordance with BS EN 933-1: 2012.

SAMPLE DETAILS:

Certificate of sampling received: **No** Name of Source: **Foryd Harbour, Rhyll**
Laboratory Ref. No: **S71094** Method of Sampling: **Unknown**
Client Ref. No: **Location 1 Sand / Sc** Sampled By: **Client**
Date and Time of Sampling: **Unknown**
Date of Receipt at Lab: **14/02/2018**
Date of Start of Test: **28/02/2018**
Sampling Location: **Location 1**
Material Description: **Sand / Soil**

RESULTS: Were any unrepresentative lumps present? No



BS Test Sieve Size	Percentage By Mass Passing	Specification Limit
125.0 mm	100	
90.0 mm	100	
75.0 mm	100	
63.0 mm	100	
50.0 mm	100	
40.0 mm	100	
31.5 mm	100	
28.0 mm	100	
20.0 mm	100	
14.0 mm	100	
10.0 mm	99	
6.3 mm	98	
5.0 mm	97	
2.8 mm	97	
2.0 mm	96	
1.0 mm	96	
0.500 mm	95	
0.250 mm	36	
0.125 mm	9	
0.063 mm	5.4	

Comments:

None

Report checked and approved by:

S Parry-Didcote

Sharon Parry-Didcote

Aggregate Team Coordinator

Denbighshire County Council
County Offices
Wynnstay Road
Ruthin
LL15 1YN

Date: 15 March 2018
Test Report Ref: STR 581135

Order No: PO2168703

Page 1 of 1

Contract: Foryd Harbour, Rhyl

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the Water Content of aggregates by – drying in a ventilated oven according to BS EN 1097-5: 2008

SAMPLE DETAILS:

Certificate of sampling received:	No
Laboratory Ref. No:	571094
Client Ref. No:	Location 1 Sand / Soil
Date and Time of Sampling:	Unknown
Date of Receipt at Lab:	14/02/2018
Date of Start of Test:	28/02/2018
Sampling Location:	Location 1
Name of Source:	Foryd Harbour, Rhyl
Method of Sampling:	Unknown
Sampled By:	Client
Material Description:	Sand / Soil
Target Specification:	N/A

RESULTS:

Water Content (%) = 20.5

Comments:

None

Report checked and approved by:

S Parry-Didcote

Sharon Parry-Didcote

Aggregate Team Coordinator

Denbighshire County Council
County Offices
Wynnstay Road
Ruthin
LL15 1YN

Date: 15 March 2018
Test Report Ref: STR 581140

Order No: PO2168703

Page 1 of 1

Contract: Foryd Harbour , Rhyl

LABORATORY TEST REPORT

TEST REQUIREMENTS:

To determine the Permeability of a sample by the Constant Head
Method in accordance with BS 1377: 1990: Part 5.

SAMPLE DETAILS:

Certificate of sampling received:	No
Laboratory Ref. No:	S71094
Client Ref. No:	Location 1 Sand / Soil
Date and Time of Sampling:	Unknown
Date of Receipt at Lab:	14/02/2018
Date of Start of Test:	07/03/2018
Sampling Location:	Location 1
Name of Source:	Foryd Harbour, Rhyl
Method of Sampling:	Unknown
Sampled By:	Client
Material Description:	Sand / Soil
Target Specification:	N/A

RESULTS:

Diameter of Permeameter Cell:	115 mm
Height of Permeameter Cell:	450mm
De aerated water used?	Yes / No
Proportion and size of material removed before preparing test sample:	21% >10mm
Method of placing and compacting:	Hand tamping / Placing under water
Dry Density:	1.557Mg/m ³
Coefficient of Permeability k at 20°C:	2.780x10 ⁻⁰⁵ m/sec

Comments:

None

Report checked and approved by:

S Parry-Didcote

Sharon Parry-Didcote

Aggregate Team Coordinator

Denbighshire County Council
County Offices
Wynnstay Road
Ruthin
LL15 1YN

Date: 15 March 2018
Test Report Ref: STR 581141

Order No: PO2168703

Page 1 of 1

Contract: Foryd Harbour, Rhyl

LABORATORY TEST REPORT

TEST REQUIREMENTS:

To determine the Dry Density and Moisture Content Relationship of soil
2.5kg Rammer Method in accordance with BS 1377: 4: 1990 Clause 3.3

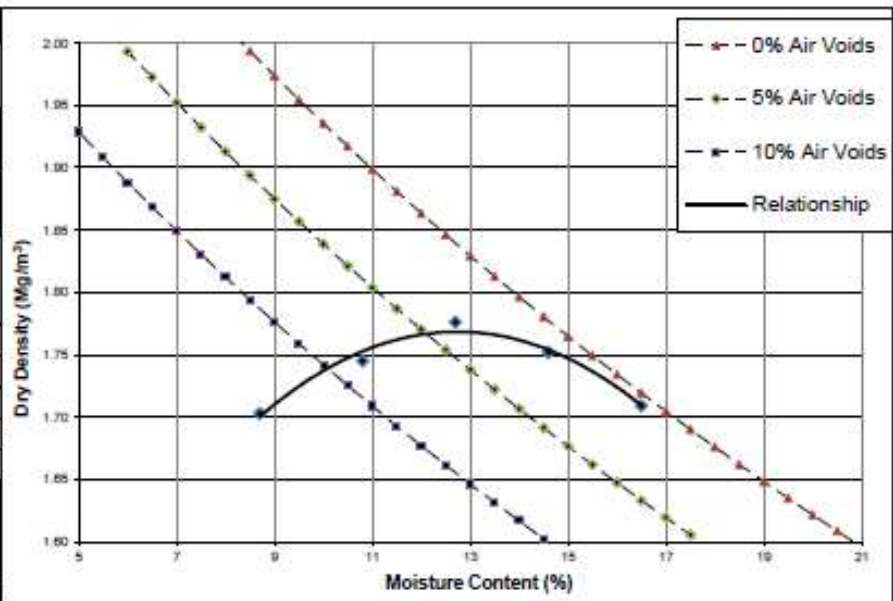
SAMPLE DETAILS:

Certificate of sampling received:	No	Name of Source:	Foryd Harbour, Rhyl
Laboratory Ref. No:	S71094	Method of Sampling:	Unknown
Client Ref.:	Location 1 Sand / Soil	Sampled By:	Client
Date and Time of Sampling:	Unknown	Unrepresentative lumps present?	No
Date of Receipt at Lab:	14/02/2018	Sample Preparation Procedure:	3.3.4.1
Date of Start of Test:	05/03/2018	Sample Preparation Method:	Single
Sampling Location:	Location 1		
Soil Description:	Sand / Soil		

RESULTS:

Particle Density: 2.4Mg/m³
(Assumed)

Retained on 37.5mm Sieve:	0 %
Retained on 20mm Sieve:	0 %
Moisture Content (%)	Dry Density Mg/m ³
8.7	1.70
10.8	1.75
12.7	1.78
14.6	1.75
16.5	1.71
Optimum Moisture Content (%)	Maximum Dry Density Mg/m ³
13	1.78



Comments:

None

Report checked and approved by:

S Parry-Didcote
Sharon Parry-Didcote
Aggregate Team Coordinator

D.2 Location 1 – Water Results



Denbighshire County Council
County Offices
Wynnstay Road
Ruthin
LL15 1YN

Date: 15 March 2018
Test Report Ref: STR 581123

Order No: PO2168703

Page 1 of 2

Contract: Foryd Harbour, Rhyl

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the chemical analysis of a sample as per client request.

SAMPLE DETAILS:

Certificate of sampling received:	No
Laboratory Ref. No:	571094
Client Ref. No:	Location 1 Sand/Soil
Date and Time of Sampling:	Unknown
Date of Receipt at Lab:	14/02/2018
Date of Start of Test:	05/03/2018
Sampling Location:	Location 1
Name of Source:	Foryd Harbour, Rhyl
Method of Sampling:	Unknown
Sampled By:	Client
Material Description:	Sand/Soil
Target Specification:	N/A

Results:

See Attached

Comments:

The work was carried out by our competent, sub contracted laboratory.

Report checked and approved by:

S Parry-Didcote

Sharon Parry-Didcote
Aggregate Team Coordinator

Trefelin Bangor Gwynedd LL57 4LH T +44 (0)1248 355269 F +44 (0)1248 351563 E postmaster@celtest.com W www.celtest.com

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Metals		
Arsenic	mg/kg	10.6
Cadmium	mg/kg	< 0.5
Chromium	mg/kg	17.0
Copper	mg/kg	7.7
Lead	mg/kg	14.1
Mercury	mg/kg	< 0.5
Nickel	mg/kg	10.5
Selenium	mg/kg	< 1.0
Vanadium	mg/kg	31.9
Zinc	mg/kg	51.9
Anions		
Water Soluble Sulphate	mg/l	198
Inorganics		
Hexavalent Chromium	mg/kg	< 0.8
Total Sulphur	%	0.02
Total Potential Sulphate	%	0.06
Oxidisable sulphide (SO4)	% SO4	< 0.01
Acid Soluble Sulphate (SO4)	%	0.08
Water Soluble Boron	mg/kg	1.1
Miscellaneous		
Moisture Content	%	19.2
pH	pH units	8.5
Phenols		
Total Phenols	mg/kg	< 6
Polyaromatic hydrocarbons		
Naphthalene	mg/kg	< 0.1
Acenaphthylene	mg/kg	< 0.1
Acenaphthene	mg/kg	< 0.1
Fluorene	mg/kg	< 0.1
Phenanthrene	mg/kg	0.2
Anthracene	mg/kg	< 0.1
Fluoranthene	mg/kg	0.2
Pyrene	mg/kg	0.1
Benzo(a)anthracene	mg/kg	0.2
Chrysene	mg/kg	< 0.1
Benzo (b) fluoranthene	mg/kg	0.2
Benzo(k)fluoranthene	mg/kg	< 0.1
Benzo (a) pyrene	mg/kg	0.2
Indeno (1,2,3-cd) pyrene	mg/kg	< 0.1
Dibenzo(a,h)anthracene	mg/kg	< 0.1
Benzo(g,h,i)perylene	mg/kg	< 0.1
Total PAH(16)	mg/kg	1.3
BTEX		
Benzene	ug/kg	< 10.0
Toluene	ug/kg	< 10.0
Ethylbenzene	ug/kg	< 10.0
Xylenes	ug/kg	< 10.0
MTBE	ug/kg	< 10.0
TPH CWG		
>C5-C6 Aliphatic	mg/kg	< 0.01
>C6-C8 Aliphatic	mg/kg	< 0.01
>C8-C10 Aliphatic	mg/kg	< 1.0
>C10-C12 Aliphatic	mg/kg	< 1.0
>C12-C16 Aliphatic	mg/kg	< 1.0
>C16-C21 Aliphatic	mg/kg	< 1.0
>C21-C35 Aliphatic	mg/kg	< 1.0
>C35-C40 Aliphatic	mg/kg	< 1.0

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D.3 Location 2 – Sand / Gravel Results



Denbighshire County Council
County Offices
Wynnstay Road
Ruthin
LL15 1YN

Date: 06 March 2018
Test Report Ref: STR 581128

Order No: PO2168703

Page 1 of 1

Contract: Foryd Harbour, Rhyl

LABORATORY TEST REPORT

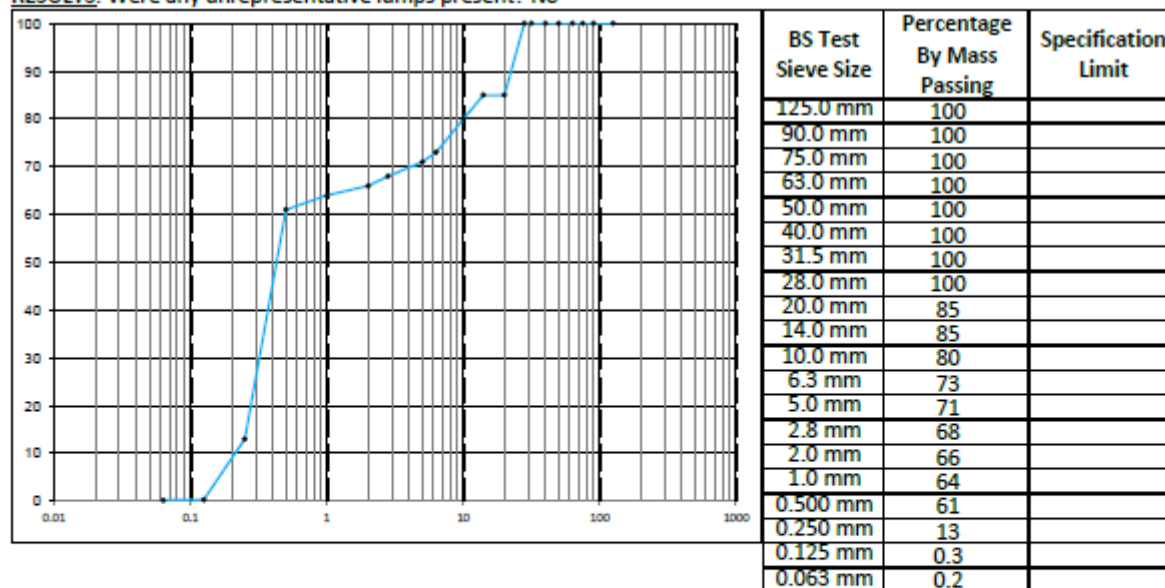
TEST REQUIREMENTS:

To determine the Particle Size Distribution (PSD) of a aggregate sample-
washing and sieving method in accordance with BS EN 933-1: 2012.

SAMPLE DETAILS:

Certificate of sampling received:	No	Name of Source:	Foryd Harbour, Rhyl
Laboratory Ref. No:	S71094	Method of Sampling:	Unknown
Client Ref. No:	Location 2 Sand / Sc	Sampled By:	Client
Date and Time of Sampling:	Unknown		
Date of Receipt at Lab:	14/02/2018		
Date of Start of Test:	28/02/2018		
Sampling Location:	Location 2		
Material Description	Sand / Soil		

RESULTS: Were any unrepresentative lumps present? No



Comments:

None

Report checked and approved by:

S Parry-Didcote

Sharon Parry-Didcote

Aggregate Team Coordinator

Denbighshire County Council
County Offices
Wynnistay Road
Ruthin
LL15 1YN

Date: 15 March 2018
Test Report Ref: STR 581129

Order No: PO2168703

Page 1 of 3

Contract: Foryd Harbour, Rhyl

LABORATORY TEST REPORT

TEST REQUIREMENTS:

To determine the chemical analysis of a sample as per client request.

SAMPLE DETAILS:

Certificate of sampling received:	No
Laboratory Ref. No:	571094
Client Ref. No:	Location 2 Sand / Soil
Date and Time of Sampling:	Unknown
Date of Receipt at Lab:	14/02/2018
Date of Start of Test:	05/03/2018
Sampling Location:	Location 2
Name of Source:	Foryd Harbour, Rhyl
Method of Sampling:	Unknown
Sampled By:	Client
Material Description:	Sand / Soil
Target Specification:	N/A

Results:

See Attached

Comments:

The work was carried out by our competent, sub contracted laboratory.

Report checked and approved by:

S Parry-Didcote

Sharon Parry-Didcote
Aggregate Team Coordinator

STR Ref: Test Report Ref: STR 581129Page 2 of 3

Metals		
Arsenic	mg/kg	10.4
Cadmium	mg/kg	< 0.5
Chromium	mg/kg	12.7
Copper	mg/kg	< 5.0
Lead	mg/kg	8.2
Mercury	mg/kg	< 0.5
Nickel	mg/kg	6.2
Selenium	mg/kg	< 1.0
Vanadium	mg/kg	27.3
Zinc	mg/kg	28.3
Anions		
Water Soluble Sulphate	mg/l	49
Inorganics		
Hexavalent Chromium	mg/kg	< 0.8
Total Sulphur	%	< 0.01
Total Potential Sulphate	%	0.02
Oxidisable sulphide (SO4)	% SO4	< 0.01
Acid Soluble Sulphate (SO4)	%	0.03
Water Soluble Boron	mg/kg	< 0.5
Miscellaneous		
Moisture Content	%	10.5
pH	pH units	8.9
Phenols		
Total Phenols	mg/kg	< 6
Polyaromatic hydrocarbons		
Naphthalene	mg/kg	< 0.1
Acenaphthylene	mg/kg	< 0.1
Acenaphthene	mg/kg	< 0.1
Fluorene	mg/kg	< 0.1
Phenanthrene	mg/kg	< 0.1
Anthracene	mg/kg	< 0.1
Fluoranthene	mg/kg	< 0.1
Pyrene	mg/kg	< 0.1
Benzo(a)anthracene	mg/kg	< 0.1
Chrysene	mg/kg	< 0.1
Benzo (b) fluoranthene	mg/kg	< 0.1
Benzo(k)fluoranthene	mg/kg	< 0.1
Benzo (a) pyrene	mg/kg	< 0.1
Indeno (1,2,3-cd) pyrene	mg/kg	< 0.1
Dibenzo(a,h)anthracene	mg/kg	< 0.1
Benzo(g,h,i)perylene	mg/kg	< 0.1
Total PAH(16)	mg/kg	< 0.4
BTEX		
Benzene	ug/kg	< 10.0
Toluene	ug/kg	< 10.0
Ethylbenzene	ug/kg	< 10.0
Xylenes	ug/kg	< 10.0
MTBE	ug/kg	< 10.0
TPH CWG		
>C5-C6 Aliphatic	mg/kg	< 0.01
>C6-C8 Aliphatic	mg/kg	< 0.01
>C8-C10 Aliphatic	mg/kg	< 1.0
>C10-C12 Aliphatic	mg/kg	< 1.0
>C12-C16 Aliphatic	mg/kg	< 1.0
>C16-C21 Aliphatic	mg/kg	< 1.0
>C21-C35 Aliphatic	mg/kg	< 1.0
>C35-C40 Aliphatic	mg/kg	< 1.0

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STR REF - Test Report Ref: STR 581129 Page 3 of 3

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Denbighshire County Council
County Offices
Wynnstay Road
Ruthin
LL15 1YN

Date: 15 March 2018
Test Report Ref: STR 581142

Order No: PO2168703

Page 1 of 1

Contract: Foryd Harbour, Rhyl

LABORATORY TEST REPORT

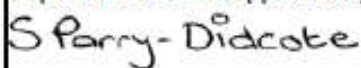
TEST REQUIREMENTS: To determine the Water Content of aggregates by – drying in a ventilated oven according to BS EN 1097-5: 2008

SAMPLE DETAILS:

Certificate of sampling received:	No
Laboratory Ref. No:	S71094
Client Ref. No:	Location 2 Sand / Soil
Date and Time of Sampling:	Unknown
Date of Receipt at Lab:	14/02/2018
Date of Start of Test:	28/02/2018
Sampling Location:	Location 2
Name of Source:	Foryd Harbour, Rhyl
Method of Sampling:	Unknown
Sampled By:	Client
Material Description:	Sand / Soil
Target Specification:	N/A

RESULTS:

Water Content (%) = 7.9

<u>Comments:</u> None	Report checked and approved by:  Sharon Parry-Didcote Aggregate Team Coordinator
---------------------------------	---

Denbighshire County Council
County Offices
Wynnstay Road
Ruthin
LL15 1YN

Date: 15 March 2018
Test Report Ref: STR 581147

Order No: PO2168703

Page 1 of 1

Contract: Foryd Harbour, Rhyl

LABORATORY TEST REPORT

TEST REQUIREMENTS:

To determine the Permeability of a sample by the Constant Head
Method in accordance with BS 1377: 1990: Part 5.

SAMPLE DETAILS:

Certificate of sampling received:	No
Laboratory Ref. No:	S71094
Client Ref. No:	Location 2 Sand / Soil
Date and Time of Sampling:	Unknown
Date of Receipt at Lab:	14/02/2018
Date of Start of Test:	09/03/2018
Sampling Location:	Location 2
Name of Source:	Foryd Harbour, Rhyl
Method of Sampling:	Unknown
Sampled By:	Client
Material Description:	Sand / Soil
Target Specification:	N/A

RESULTS:

Diameter of Permeameter Cell:	115 mm
Height of Permeameter Cell:	450mm
De aerated water used?	Yes / No
Proportion and size of material removed before preparing test sample:	14% >10mm
Method of placing and compacting:	Hand tamping / Placing under water
Dry Density:	1.592Mg/m ³
Coefficient of Permeability k at 20°C:	3.336x10 ⁻⁰⁵ m/sec

Comments:

None

Report checked and approved by:

S Parry-Didcote

Sharon Parry-Didcote
Aggregate Team Coordinator

Denbighshire County Council
County Offices
Wynnstay Road
Ruthin
LL15 1YN

Date: 15 March 2018
Test Report Ref: STR 581148

Order No: PO2168703

Page 1 of 1

Contract: Foryd Harbour, Rhyl

LABORATORY TEST REPORT

TEST REQUIREMENTS:

To determine the Dry Density and Moisture Content Relationship of soil
2.5kg Rammer Method in accordance with BS 1377: 4: 1990 Clause 3.3

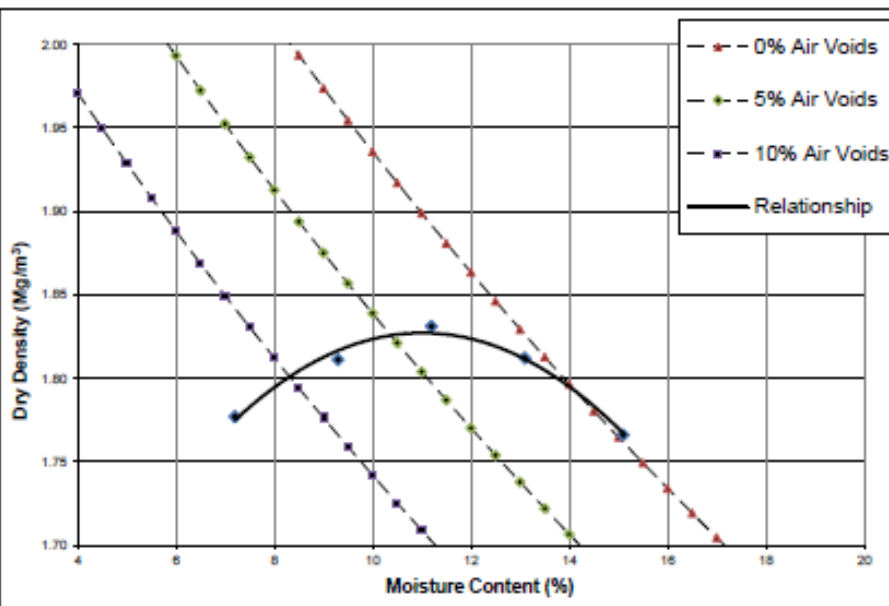
SAMPLE DETAILS:

Certificate of sampling received:	No	Name of Source:	Foryd Harbour, Rhyl
Laboratory Ref. No:	S71094	Method of Sampling:	Unknown
Client Ref. :	Location 2 Sand / Soil	Sampled By:	Client
Date and Time of Sampling:	Unknown	Unrepresentative lumps present?	No
Date of Receipt at Lab:	14/02/2018	Sample Preparation Procedure:	3.3.4.1
Date of Start of Test:	09/03/2018	Sample Preparation Method:	Single
Sampling Location:	Location 2		
Soil Description:	Sand / Soil		

RESULTS:

Particle Density: 2.4Mg/m³
(Assumed)

Retained on 37.5mm Sieve:	0 %
Retained on 20mm Sieve:	0
Moisture Content (%)	Dry Density Mg/m ³
7.2	1.78
9.3	1.81
11.2	1.83
13.1	1.81
15.1	1.77
Optimum Moisture Content (%)	Maximum Dry Density Mg/m ³
11	1.83



Comments:

None

Report checked and approved by:

S Parry-Didcote
Sharon Parry-Didcote
Aggregate Team Coordinator

D.4 Location 2 – Water Results



Denbighshire County Council
County Offices
Wynnstay Road
Ruthin
LL15 1YN

Date: 15 March 2018
Test Report Ref: STR 581124

Order No: PO2168703

Page 1 of 3

Contract: Foryd Harbour, Rhyl

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the chemical analysis of a sample as per client request.

SAMPLE DETAILS:

Certificate of sampling received:	No
Laboratory Ref. No:	571094
Client Ref. No:	Location 2 Water
Date and Time of Sampling:	Unknown
Date of Receipt at Lab:	14/02/2018
Date of Start of Test:	05/03/2018
Sampling Location:	Location 2
Name of Source:	Foryd Harbour, Rhyl
Method of Sampling:	Unknown
Sampled By:	Client
Material Description:	Water
Target Specification:	N/A

Results:

See Attached

Comments:

The work was carried out by our competent, sub contracted laboratory.

Report checked and approved by:

S Parry-Didcote

Sharon Parry-Didcote
Aggregate Team Coordinator

STR Ref: Test Report Ref: STR 581124Page 2 of 3

Total Metals		
Iron	ug/l	3140
Dissolved Metals		
Arsenic	ug/l	< 5
Cadmium	ug/l	< 1
Chromium	ug/l	< 5
Copper	ug/l	< 5
Mercury	ug/l	< 0.1
Nickel	ug/l	< 5
Lead	ug/l	< 1
Selenium	ug/l	6
Zinc	ug/l	< 5
Anions		
Chloride	mg/l	1040
Inorganics		
Ammoniacal Nitrogen as N	mg/l	0.2
Miscellaneous		
pH	pH units	7.7
Phenols		
Total Phenols	ug/l	< 1
Polyaromatic hydrocarbons		
Naphthalene GCMS	ug/l	0.02
Acenaphthylene GCMS	ug/l	< 0.01
Acenaphthene GCMS	ug/l	0.02
Fluorene GCMS	ug/l	< 0.01
Phenanthrene GCMS	ug/l	0.04
Anthracene GCMS	ug/l	0.01
Fluoranthene GCMS	ug/l	0.06
Pyrene GCMS	ug/l	0.05
Benzo (a) anthracene GCMS	ug/l	0.02
Chrysene GCMS	ug/l	0.03
Benzo (b) fluoranthene GCMS	ug/l	0.03
Benzo (k) fluoranthene GCMS	ug/l	0.03
Benzo (a) pyrene GCMS	ug/l	0.02
Indeno (1,2,3-cd) pyrene GCMS	ug/l	0.02
Dibenzo(a,h)anthracene GCMS	ug/l	< 0.01
Benzo(ghi)perylene GCMS	ug/l	0.03
Total PAH(16) GCMS	ug/l	0.39
BTEX		
Benzene	ug/l	< 1.00
Toluene	ug/l	< 1.00
Ethylbenzene	ug/l	< 1.00
Xylenes	ug/l	< 1.00
MTBE	ug/l	< 1.00

STR REF - Test Report Ref: STR 581124 Page 3 of 3

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D.5 Location 3 – Sand / Gravel Results



Denbighshire County Council
County Offices
Wynnstay Road
Ruthin
LL15 1YN

Date: 06 March 2018
Test Report Ref: STR 581130

Order No: PO2168703

Page 1 of 1

Contract: Foryd Harbour , Rhyl

LABORATORY TEST REPORT

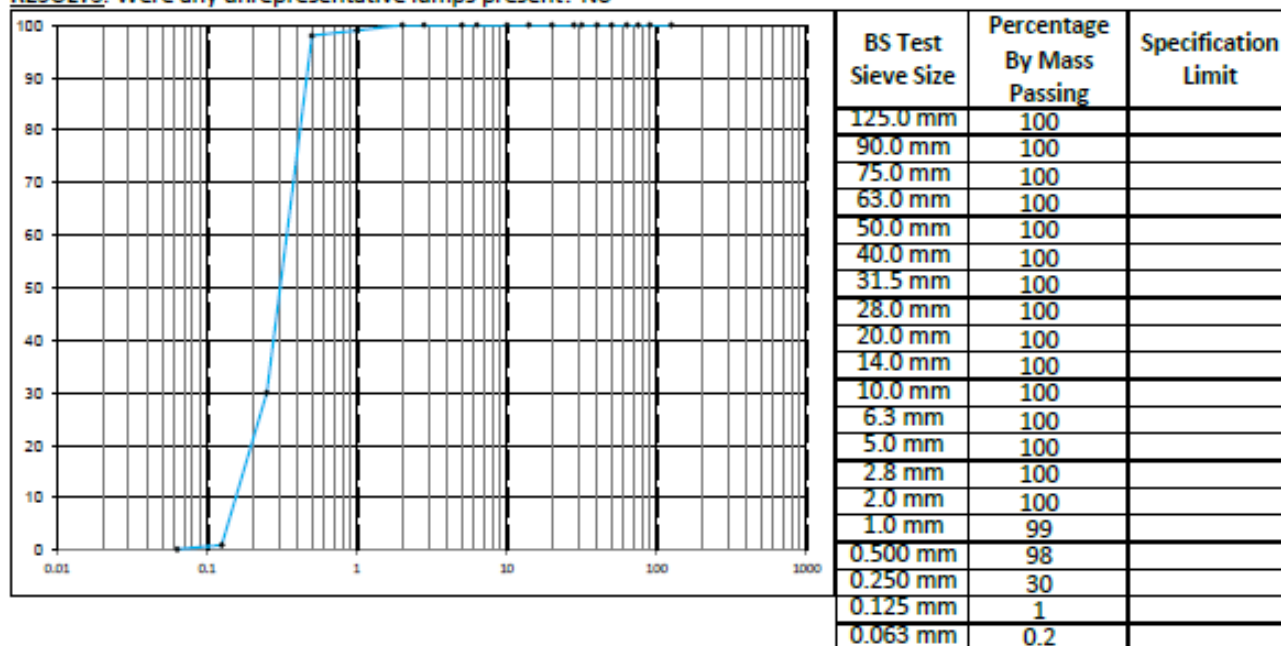
TEST REQUIREMENTS:

To determine the Particle Size Distribution (PSD) of a aggregate sample-
washing and sieving method in accordance with BS EN 933-1: 2012.

SAMPLE DETAILS:

Certificate of sampling received:	No	Name of Source:	Foryd Harbour, Rhyl
Laboratory Ref. No:	S71094	Method of Sampling:	Unknown
Client Ref. No:	Location 3 Sand / Sc	Sampled By:	Client
Date and Time of Sampling:	Unknown		
Date of Receipt at Lab:	14/02/2018		
Date of Start of Test:	28/02/2018		
Sampling Location:	Location 3		
Material Description	Sand / Soil		

RESULTS: Were any unrepresentative lumps present? No



Comments:

None

Report checked and approved by:

S Parry-Didcote

Sharon Parry-Didcote

Aggregate Team Coordinator

Denbighshire County Council
County Offices
Wynnstay Road
Ruthin
LL15 1YN

Date: 15 March 2018
Test Report Ref: STR 581131

Order No: PO2168703

Page 1 of 3

Contract: Foryd Harbour, Rhyl

LABORATORY TEST REPORT

TEST REQUIREMENTS:

To determine the chemical analysis of a sample as per client request.

SAMPLE DETAILS:

Certificate of sampling received:	No
Laboratory Ref. No:	571094
Client Ref. No:	Location 3 Sand / Soil
Date and Time of Sampling:	Unknown
Date of Receipt at Lab:	14/02/2018
Date of Start of Test:	05/03/2018
Sampling Location:	Location 3
Name of Source:	Foryd Harbour, Rhyl
Method of Sampling:	Unknown
Sampled By:	Client
Material Description:	Sand / Soil
Target Specification:	N/A

Results:

See Attached

Comments:

The work was carried out by our competent, sub contracted laboratory.

Report checked and approved by:

S Parry-Didcote

Sharon Parry-Didcote
Aggregate Team Coordinator

STR Ref: Test Report Ref: STR 581131Page 2 of 3

Metals		
Arsenic	mg/kg	13.3
Cadmium	mg/kg	< 0.5
Chromium	mg/kg	16.9
Copper	mg/kg	< 5.0
Lead	mg/kg	10.2
Mercury	mg/kg	< 0.5
Nickel	mg/kg	7.8
Selenium	mg/kg	< 1.0
Vanadium	mg/kg	32.3
Zinc	mg/kg	40.5
Anions		
Water Soluble Sulphate	mg/l	60
Inorganics		
Hexavalent Chromium	mg/kg	< 0.8
Total Sulphur	%	0.01
Total Potential Sulphate	%	0.04
Oxidisable sulphide (SO ₄)	% SO ₄	< 0.01
Acid Soluble Sulphate (SO ₄)	%	0.04
Water Soluble Boron	mg/kg	< 0.5
Miscellaneous		
Moisture Content	%	19.0
pH	pH units	8.8
Phenols		
Total Phenols	mg/kg	< 6
Polyaromatic hydrocarbons		
Naphthalene	mg/kg	< 0.1
Acenaphthylene	mg/kg	< 0.1
Acenaphthene	mg/kg	< 0.1
Fluorene	mg/kg	< 0.1
Phenanthrene	mg/kg	< 0.1
Anthracene	mg/kg	< 0.1
Fluoranthene	mg/kg	< 0.1
Pyrene	mg/kg	< 0.1
Benzo[a]anthracene	mg/kg	< 0.1
Chrysene	mg/kg	< 0.1
Benzo (b) fluoranthene	mg/kg	< 0.1
Benzo(k)fluoranthene	mg/kg	< 0.1
Benzo (a) pyrene	mg/kg	< 0.1
Indeno (1,2,3-cd) pyrene	mg/kg	< 0.1
Dibenzo(a,h)anthracene	mg/kg	< 0.1
Benzo(g,h,i)perylene	mg/kg	< 0.1
Total PAH(16)	mg/kg	< 0.4
BTEX		
Benzene	ug/kg	< 10.0
Toluene	ug/kg	< 10.0
Ethylbenzene	ug/kg	< 10.0
Xylenes	ug/kg	< 10.0
MTBE	ug/kg	< 10.0
TPH CWG		
>C5-C6 Aliphatic	mg/kg	< 0.01
>C6-C8 Aliphatic	mg/kg	< 0.01
>C8-C10 Aliphatic	mg/kg	< 1.0
>C10-C12 Aliphatic	mg/kg	< 1.0
>C12-C16 Aliphatic	mg/kg	< 1.0
>C16-C21 Aliphatic	mg/kg	< 1.0
>C21-C35 Aliphatic	mg/kg	< 1.0
>C35-C40 Aliphatic	mg/kg	< 1.0

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STR REF - Test Report Ref: STR 581131 Page 3 of 3

[illegible]

Denbighshire County Council
County Offices
Wynnstay Road
Ruthin
LL15 1YN

Date: 15 March 2018
Test Report Ref: STR 581149

Order No: PO2168703

Page 1 of 1

Contract: Foryd Harbour , Rhyl

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the Water Content of aggregates by – drying in a ventilated oven according to BS EN 1097-5: 2008

SAMPLE DETAILS:

Certificate of sampling received:	No
Laboratory Ref. No:	S71094
Client Ref. No:	Location 3 Sand / Soil
Date and Time of Sampling:	Unknown
Date of Receipt at Lab:	14/02/2018
Date of Start of Test:	28/02/2018
Sampling Location:	Location 3
Name of Source:	Foryd Harbour, Rhyl
Method of Sampling:	Unknown
Sampled By:	Client
Material Description:	Sand / Soil
Target Specification:	N/A

RESULTS:

Water Content (%) = 23.5

<u>Comments:</u> None	Report checked and approved by: <i>S Parry-Didcote</i> Sharon Parry-Didcote Aggregate Team Coordinator
---	---

Denbighshire County Council
 County Offices
 Wynnstay Road
 Ruthin
 LL15 1YN

Date: 15 March 2018
 Test Report Ref: STR 581154

Order No: PO2168703

Page 1 of 1

Contract: Foryd Harbour, Rhyl

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the Permeability of a sample by the Constant Head Method in accordance with BS 1377: 1990: Part 5.

SAMPLE DETAILS:

Certificate of sampling received:	No
Laboratory Ref. No:	S71094
Client Ref. No:	Location 3 Sand / Soil
Date and Time of Sampling:	Unknown
Date of Receipt at Lab:	14/02/2018
Date of Start of Test:	09/03/2018
Sampling Location:	Location 3
Name of Source:	Foryd Harbour, Rhyl
Method of Sampling:	Unknown
Sampled By:	Client
Material Description:	Sand / Soil
Target Specification:	N/A

RESULTS:

Diameter of Permeameter Cell:	115 mm
Height of Permeameter Cell:	450mm
De aerated water used?	Yes / No
Proportion and size of material removed before preparing test sample:	1% >10mm
Method of placing and compacting:	Hand tamping / Placing under water
Dry Density:	1.545Mg/m ³
Coefficient of Permeability k at 20°C:	2.224x10 ⁻⁰⁵ m/sec

<u>Comments:</u> None	Report checked and approved by: <i>S Parry-Didcote</i> Sharon Parry-Didcote Aggregate Team Coordinator
---------------------------------	---

Denbighshire County Council
County Offices
Wynnstay Road
Ruthin
LL15 1YN

Date: 15 March 2018
Test Report Ref: STR 581155

Order No: PO2168703

Page 1 of 1

Contract: Foryd Harbour, Rhyll

LABORATORY TEST REPORT

TEST REQUIREMENTS:

To determine the Dry Density and Moisture Content Relationship of soil
2.5kg Rammer Method in accordance with BS 1377: 4: 1990 Clause 3.3

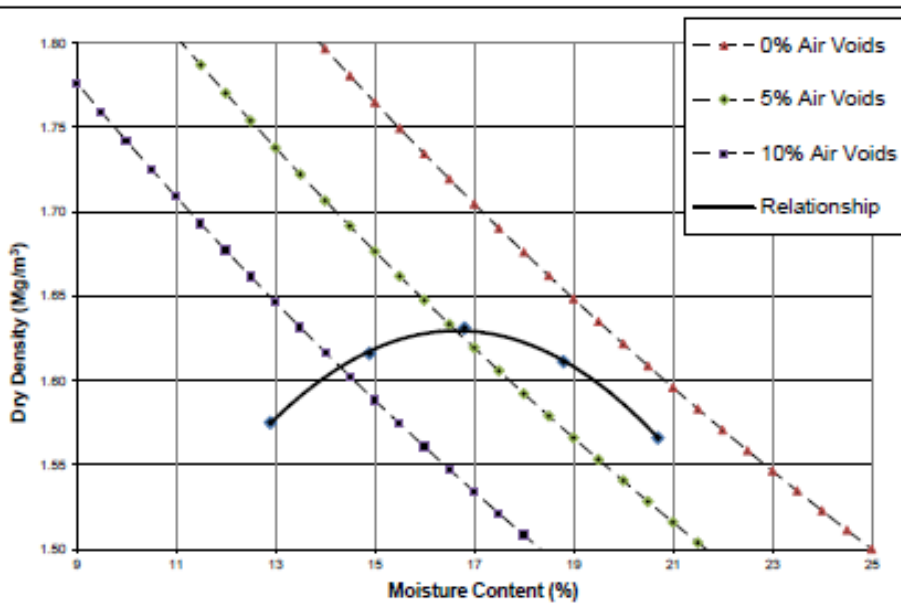
SAMPLE DETAILS:

Certificate of sampling received:	No	Name of Source:	Foryd Harbour, Rhyll
Laboratory Ref. No:	S71094	Method of Sampling:	Unknown
Client Ref. :	Location 3 Sand / Soil	Sampled By:	Client
Date and Time of Sampling:	Unknown	Unrepresentative lumps present?	No
Date of Receipt at Lab:	14/02/2018	Sample Preparation Procedure:	3.3.4.1
Date of Start of Test:	09/03/2018	Sample Preparation Method:	Single
Sampling Location:	Location 3		
Soil Description:	Sand / Soil		

RESULTS:

Particle Density: 2.4Mg/m³
(Assumed)

Retained on 37.5mm Sieve:	0 %
Retained on 20mm Sieve:	0 %
Moisture Content (%)	Dry Density Mg/m ³
12.9	1.58
14.9	1.62
16.8	1.63
18.8	1.61
20.7	1.57
Optimum Moisture Content (%)	Maximum Dry Density Mg/m ³
17	1.63



Comments:

None

Report checked and approved by:

S Parry-Didcote
Sharon Parry-Didcote
Aggregate Team Coordinator

D.6 Location 3 – Water Results



Denbighshire County Council
County Offices
Wynnstay Road
Ruthin
LL15 1YN

Date: 15 March 2018
Test Report Ref: STR 581125

Order No: PO2168703

Page 1 of 3

Contract: Foryd Harbour , Rhyl

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the chemical analysis of a sample as per client request.

SAMPLE DETAILS:

Certificate of sampling received:	No
Laboratory Ref. No:	571094
Client Ref. No:	Location 3 Water
Date and Time of Sampling:	Unknown
Date of Receipt at Lab:	14/02/2018
Date of Start of Test:	05/03/2018
Sampling Location:	Location 3
Name of Source:	Foryd Harbour, Rhyl
Method of Sampling:	Unknown
Sampled By:	Client
Material Description:	Water
Target Specification:	N/A

Results:

See Attached

Comments:

The work was carried out by our competent, sub contracted laboratory.

Report checked and approved by:

S Parry-Didcote

Sharon Parry-Didcote
Aggregate Team Coordinator

STR Ref: Test Report Ref: STR 581125Page 2 of 3

Total Metals		
Iron	ug/l	2270
Dissolved Metals		
Arsenic	ug/l	< 5
Cadmium	ug/l	< 1
Chromium	ug/l	< 5
Copper	ug/l	< 5
Mercury	ug/l	< 0.1
Nickel	ug/l	< 5
Lead	ug/l	< 1
Selenium	ug/l	< 5
Zinc	ug/l	< 5
Anions		
Chloride	mg/l	652
Inorganics		
Ammoniacal Nitrogen as N	mg/l	0.2
Miscellaneous		
pH	pH units	7.7
Phenols		
Total Phenols	ug/l	< 1
Polyaromatic hydrocarbons		
Naphthalene GCMS	ug/l	0.03
Acenaphthylene GCMS	ug/l	0.01
Acenaphthene GCMS	ug/l	0.03
Fluorene GCMS	ug/l	0.01
Phenanthrene GCMS	ug/l	0.05
Anthracene GCMS	ug/l	0.02
Fluoranthene GCMS	ug/l	0.05
Pyrene GCMS	ug/l	0.05
Benzo (a) anthracene GCMS	ug/l	0.03
Chrysene GCMS	ug/l	0.03
Benzo (b) fluoranthene GCMS	ug/l	0.04
Benzo (k) fluoranthene GCMS	ug/l	0.03
Benzo (a) pyrene GCMS	ug/l	0.04
Indeno (1,2,3-cd) pyrene GCMS	ug/l	0.02
Dibenzo(a,h)anthracene GCMS	ug/l	< 0.01
Benzo(ghi)perylene GCMS	ug/l	0.04
Total PAH(16) GCMS	ug/l	0.48
BTEX		
Benzene	ug/l	< 1.00
Toluene	ug/l	< 1.00
Ethylbenzene	ug/l	< 1.00
Xylenes	ug/l	< 1.00
MTBE	ug/l	< 1.00

STR REF - Test Report Ref: STR 581125 Page 3 of 3

[illegible]

Appendix E - Water Land and Sediment Quality Supplementary Data 2014



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CERTIFICATE OF TEST
TYSTYSGRIF PRAWF

0888

Authorised signatories:

W.H. Gosling (Technical Director)
H.D.M. John (Principal Engineer)
C.P. Bradley (Materials Engineer) /
J.A. Evans (Principal Technician)

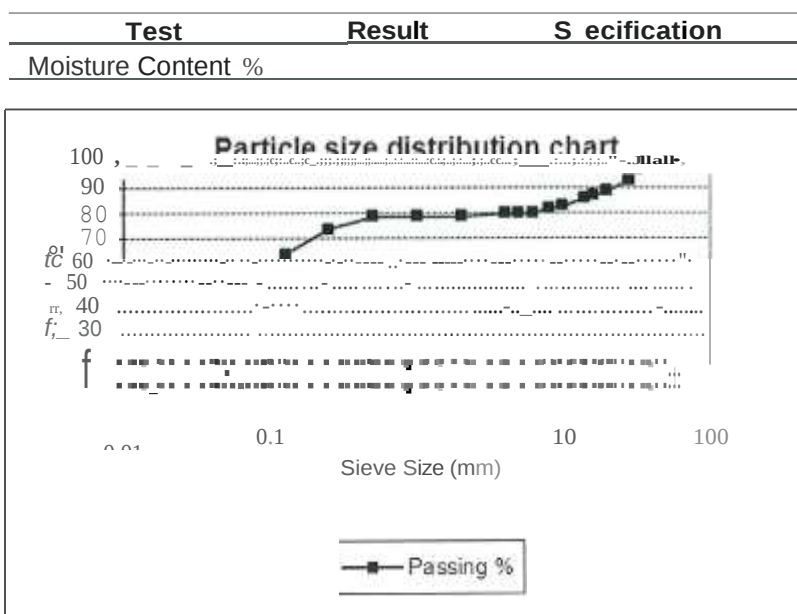
REPORT ON PARTICLE SIZE DISTRIBUTION

Page 1 of 1
Date 12/12/2014

Lab Ref No.	14W5039	Test No.	1	Site / Client Ref.	1
Scheme/ Site	Forvd Harbour, Rhyl				
Location	Sample 1				
Material	General Aaareate Grading				
Specification	General Aaqreaate Grading				
Contractor	Not Applicable		Aaareate Type	Nat.Sand/G ravel	
Source	On Site		Ticket No.	N/A	
Date Sampled	N/K	Time Sampled		Date Received	28/11/2014
Sampled By	Client			Date Tested - From	02/12/2014
Sample Type	Bulk			Date Tested - To	11/12/2014

TEST RESULTS

Sieve	Passing %	Specification
75mm	100	-
63mm	100	-
50mm	100	-
40mm	100	-
31.5mm	97	-
28mm	93	-
20mm	89	-
16mm	87	-
14mm	86	-
10mm	83	-
8mm	82	-
6.3mm	80	-
5mm	80	-
4mm	80	-
2mm	79	-
1mm	79	-
0.5mm	79	-
0.25mm	74	-
0.125mm	64	-



Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
Remarks:

Result for Information.

Certificate of Sampling Not Available .

Sampling Method Not sampled by Jacobs Staff.

Preparation Method BS EN 932-2:1999

Test Method BS EN 933-1:1997 : (Wet Sieving)
 BS EN 1097-5:1999 (Moisture Content)

Client Name **Denbighshire County Council**
 Environment Directorate
 Caledfryn
 Smithfield Road
 Denbigh

Postcode **LL16 3RJ**

FAO **Claire Wyn-Jones**

Signed



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JACOe s

CERTIFICATE OF TEST
TYSTYSGRIF PRAWF

Authorised signatories:

W H Gosling (Technical Director)
H D M. John (Principal Engineer)
C P Bradley (Materials Engineer)
J.A. Evans (Principal Technician)

REPORT ON PARTICLE SIZE DISTRIBUTION

Page 1 of 1

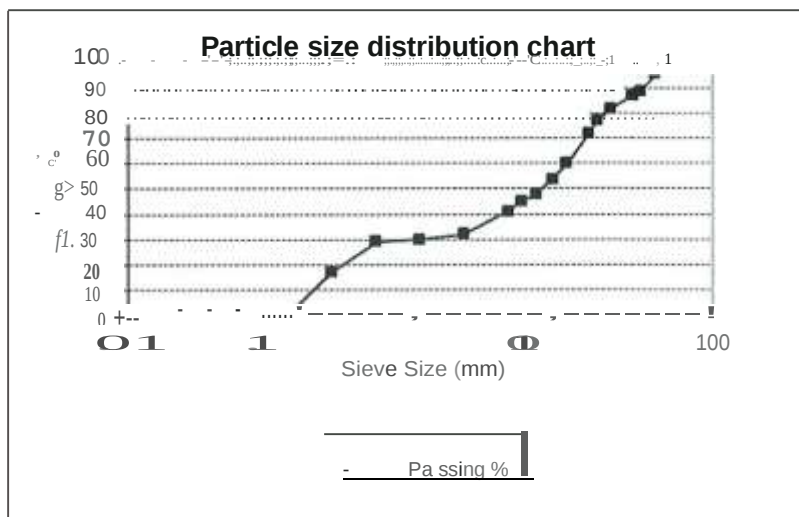
Date 12/12/2014

LabRef No.	14W5040	Test No.	1	Site / Client Ref.	2
Scheme / Site	Foryd Harbour, Rhyl				
Location	Sample 2				
Material	General Am:iregate Grading				
Specification	General Aggregate Grading				
Contractor	Not Applicable			Aaareaate Tvoe	Nat.Sand/Gravel
Source	On Site			Ticket No.	N/A
Date Sampled	N/K	Time Sampled		Date Received	28/11/2014
Sampled By	Client			Date Tested - From	02/12/2014
Sample Type	Bulk			Date Tested - To	11/12/2014

TEST RESULTS

Sieve	Passino %	Specification
75mm	100	-
63mm	100	-
50mm	100	-
40mm	96	-
31.5mm	89	-
28mm	87	-
20mm	82	-
16mm	77	-
14mm	72	-
10mm	60	-
8mm	54	-
6.3mm	48	-
5mm	45	-
4mm	41	-
2mm	32	-
1mm	30	-
0.5mm	29	-
0.25mm	17	-
0.125mm	0	-
0.063mm	0.3	-

Test	Result	Specification
Moisture Content %		



Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

Remarks:

Result for Information.

Certificate of Sampling Not Available.

Sampling Method Not sampled by Jacobs Staff.
Preparation Method BS EN 932-2:1999
Test Method BS EN 933-1:1997: (Wet Sieving)
BS EN 1097-5:1999 (Moisture Content)

Client Name **Denbighshire County Council**
Environment Directorate
Caledfryn
Smithfield Road
Denbigh
LL16 3RJ
Postcode
FAO Claire Wyn-Jones

Signed

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CERTIFICATE OF TEST TYSTYSGRIF PRAWF

Authorised signatories:

W H Gosling (Technical Director)
H D M. John (Principal Engineer)
C P Bradley (Materials Engineer) /
J A. Evans (Principal Technician)

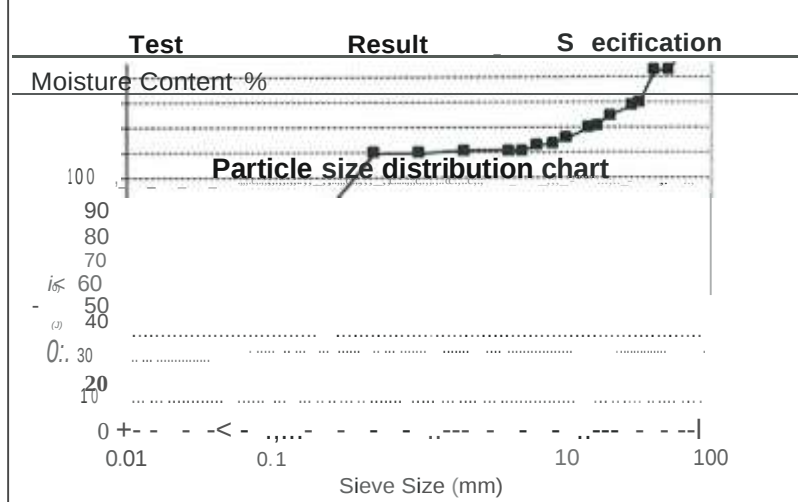
REPORT ON PARTICLE SIZE DISTRIBUTION

Page 1 of 1
Date 12/12/2014

LabRef No.	14W5041	Test No.	1	Site/ Client Ref.	3
Scheme / Site	Forvd Harbour. Rhyl				
Location	Sample 3				
Material	General Aaareaate Gradina				
Specification	General Aaareaate Gradina				
Contractor	Not Applicable			Aaareaate Tvoe	Nat.Sand/Gravel
Source	On Site			Ticket No.	N/A
Date Sampled	N/K	Time Sampled		Date Received	28/11/2014
Sampled By	Client			Date Tested - From	02/12/2014
Sample Type	Bulk			Date Tested - To	11/12/2014

TEST RESULTS

Sieve	Passing %	Specification
75mm	100	-
63mm	100	-
50mm	93	-
40mm	93	-
31.5mm	80	-
28mm	79	-
20mm	75	-
16mm	71	-
14mm	70	-
10mm	66	-
8mm	64	-
6.3mm	63	-
5mm	61	-
4mm	61	-
2mm	61	-
1mm	61	-
0.5mm	60	-
0.25mm	60	-
0.125mm	60	-
0.063mm	39	-



Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

Remarks:

Result for Information.

Certificate of Sampling Not Available.

Sampling Method Not sampled by Jacobs Staff.
Preparation Method BS EN 932-2:1999
Test Method BS EN 933-1:1997 : (Wet Sieving)
BS EN 1097-5:1999 (Moisture Content)

Client Name Denbighshire County Council
Environment Directorate
Caledfryn
Smithfield Road

Postcode
FAO

Denbigh
LL163RJ
Claire Wyn-Jones

Signed

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Final Report

Report Number: 14-15683 Issue-1

Initial Date of Issue: 09-Dec-14

Client: Denbighshire County Council

Client Address: Caledfryn
Smithfield Road
Denbigh
Denbighshire
LL16 3RJ

Contact(s): Claire Wyn-Jones

Project: Foryd Harbour Rhyl

Quotation No.: **Date Received:** 02-Dec-14

Order No.: **Date Instructed:** 02-Dec-14

No. of Samples: 2 **Results Due:** 08-Dec-14

Turnaround:
(Weekdays) 5

Date Approved: 09-Dec-14

Approved By:

Details: Darrell Hall, Laboratory Director

Project: Forvyd Harbour Rhyl

Client: Denbighshire County Council	Chemtest Job No.:		14-15683		
Quotation No.:	Chemtest Sample ID.:		76487		
Order No.:	Client Sample Ref.:		Soil		
	Client Sample ID.:		Foryd Harbour		
	Sample Type:		SOIL		
	Top Depth (m):				
	Bottom Depth(m):				
	Date Sampled:		28-Nov-14		
Determinand	Accred.	SOP	Units	LOD	
Moisture	N	2030	%	0.02	3.7
pH	U	2010			9.2
Boron (Hot Water Soluble)	U	2120	mg/kg	0.4	0.81
Sulphate (Total)	U	2430	%	0.01	0.027
Arsenic	U	2450	mg/kg	1	9.1
Cadmium	U	2450	mg/kg	0.1	0.10
Chromium	U	2450	mg/kg	1	9.1
Copper	U	2450	mg/kg	0.5	15
Nickel	U	2450	mg/kg	0.5	13
Lead	U	2450	mg/kg	0.5	38
Selenium	U	2450	mg/kg	0.2	< 0.20
Vanadium	U	2450	mg/kg	5	23
Zinc	U	2450	mg/kg	0.5	43
Mercury (Elemental)	N	2460	mg/kg	0.1	< 0.10
Chromium (Hexavalent)	N	2490	mg/kg	0.5	< 0.50
Aliphatic TPH >C5-C6	N	2675	mg/kg	0.1	< 0.10
Aliphatic TPH >C6-C8	N	2675	mg/kg	0.1	< 0.10
Aliphatic TPH >C8-C10	U	2675	mg/kg	0.1	< 0.10
Aliphatic TPH >C10-C12	U	2675	mg/kg	1	< 1.0
Aliphatic TPH >C12-C16	U	2675	mg/kg	1	< 1.0
Aliphatic TPH >C16-C21	U	2675	mg/kg	1	< 1.0
Aliphatic TPH >C21-C35	U	2675	mg/kg	1	< 1.0
Aliphatic TPH >C35-C44	U	2675	mg/kg	1	< 1.0
Total Aliphatic Hydrocarbons	U	2675	mg/kg	5	< 5.0
Aromatic TPH >C5-C7	N	2675	mg/kg	0.1	< 0.10
Aromatic TPH >C7-C8	N	2675	mg/kg	0.1	< 0.10
Aromatic TPH >C8-C10	U	2675	mg/kg	0.1	< 0.10
Aromatic TPH >C10-C12	N	2675	mg/kg	1	< 1.0
Aromatic TPH >C12-C16	U	2675	mg/kg	1	< 1.0
Aromatic TPH >C16-C21	U	2675	mg/kg	1	< 1.0
Aromatic TPH >C21-C35	N	2675	mg/kg	1	< 1.0
Aromatic TPH >C35-C44	N	2675	mg/kg	1	< 1.0

Project: Forvyd Harbour Rhyl

Client: Denbighshire County Council	Chemtest Job No.: 14-15683				
Quotation No.:	Chemtest Sample ID.: 76487				
Order No.:	Client Sample Ref.: Soil				
	Client Sample ID.: Forvyd Harbour				
	Sample Type: SOIL				
	Top Depth (m):				
	Bottom Depth(m):				
	Date Sampled: 28-Nov-14				
Determinand	Accred.	SOP	Units	LOD	
Total Aromatic Hydrocarbons	U	2675	mg/kg	5	< 5.0
Total Petroleum Hydrocarbons	U	2675	mg/kg	10	< 10
Naphthalene	U	2700	mg/kg	0.1	< 0.10
Acenaphthylene	U	2700	mg/kg	0.1	< 0.10
Acenaphthene	U	2700	mg/kg	0.1	< 0.10
Fluorene	U	2700	mg/kg	0.1	< 0.10
Phenanthrene	U	2700	mg/kg	0.1	< 0.10
Anthracene	U	2700	mg/kg	0.1	< 0.10
Fluoranthene	U	2700	mg/kg	0.1	< 0.10
Pyrene	U	2700	mg/kg	0.1	< 0.10
Benzo[a]anthracene	U	2700	mg/kg	0.1	< 0.10
Chrysene	U	2700	mg/kg	0.1	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.1	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.1	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.1	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.1	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.1	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.1	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2	< 2.0
Organotin (total as TBTO)	N	2730	µg/kg	10	< 10
Benzene	U	2760	µg/kg	1	< 1.0
Toluene	U	2760	µg/kg	1	< 1.0
Ethylbenzene	U	2760	µg/kg	1	< 1.0
m & p-Xylene	U	2760	µg/kg	1	< 1.0
o-Xylene	U	2760	µg/kg	1	< 1.0
PCB 28	U	2810	mg/kg	0.01	< 0.010
PCB 52	U	2815	mg/kg	0.01	< 0.010
PCB 101	U	2815	mg/kg	0.01	< 0.010
PCB 118	U	2815	mg/kg	0.01	< 0.010
PCB 153	U	2815	mg/kg	0.01	< 0.010
PCB 138	U	2815	mg/kg	0.01	< 0.010
PCB 180	U	2810	mg/kg	0.01	< 0.010

Project: Forvd Harbour Rhyl

Client: Denbighshire County Council	Chemtest Job No.: 14-15683				
Quotation No.:	Chemtest Sample ID.: 76487				
Order No.:	Client Sample Ref.: Soil				
	Client Sample ID.: Foryd Harbour				
	Sample Type: SOIL				
	Top Depth (m):				
	Bottom Depth(m):				
	Date Sampled: 28-Nov-14				
Determinand	Accred.	SOP	Units	LOD	
Total PCBs (7 Congeners)	N	2815	mg/kg	0.1	< 0.10
Alpha-Lindane	N	2840	mg/kg	0.2	< 0.20
Gamma-Lindane	N	2840	mg/kg	0.2	< 0.20
Beta-Lindane	N	2840	mg/kg	0.2	< 0.20
Delta-Lindane	N	2840	mg/kg	0.2	< 0.20
Heptachlor	N	2840	mg/kg	0.2	< 0.20
Aldrin	N	2840	mg/kg	0.2	< 0.20
Heptachlor Epoxide	N	2840	mg/kg	0.2	< 0.20
Gamma-Chlordane	N	2840	mg/kg	0.2	< 0.20
Alpha-Chlordane	N	2840	mg/kg	0.2	< 0.20
Endosulfan I	N	2840	mg/kg	0.2	< 0.20
4,4-DDE	N	2840	mg/kg	0.2	< 0.20
Dieldrin	N	2840	mg/kg	0.2	< 0.20
Endrin	N	2840	mg/kg	0.2	< 0.20
4,4-DDD	N	2840	mg/kg	0.2	< 0.20
Endosulfan II	N	2840	mg/kg	0.2	< 0.20
Endrin Aldehyde	N	2840	mg/kg	0.2	< 0.20
4,4-DDT	N	2840	mg/kg	0.2	< 0.20
Endosulfan Sulphate	N	2840	mg/kg	0.2	< 0.20
Methoxychlor	N	2840	mg/kg	0.2	< 0.20
Endrin Ketone	N	2840	mg/kg	0.2	< 0.20
Total Phenols	U	2920	mg/kg	0.3	< 0.30

Results Summary - Water

Project: Forvyd Harbour Rhyl

Client: Denbighshire County Council	Chemtest Job No.:		14-15683		
Quotation No.:	Chemtest Sample ID.:		76486		
Order No.:	Client Sample Ref.:		Water		
	Client Sample ID.:		Foryd Harbour		
	Sample Type:		WATER		
	Top Depth (m):				
	Bottom Depth(m):				
	Date Sampled:		28-Nov-14		
Determinand	Accred.	SOP	Units	LOD	
pH	U	1010			8.2
Chloride	U	1220	mg/l	1	1600
Ammoniacal Nitrogen	U	1220	mg/l	0.01	0.10
Sulphate	U	1220	mg/l	1	230
Arsenic (Dissolved)	U	1450	µg/l	1	4.8
Boron (Dissolved)	U	1450	µg/l	20	380
Cadmium (Dissolved)	U	1450	µg/l	0.08	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1	20
Copper (Dissolved)	U	1450	µg/l	1	10
Mercury (Dissolved)	U	1450	µg/l	0.5	2.9
Nickel (Dissolved)	U	1450	µg/l	1	< 1.0
Lead (Dissolved)	U	1450	µg/l	1	< 1.0
Selenium (Dissolved)	U	1450	µg/l	1	11
Zinc (Dissolved)	U	1450	µg/l	1	8.4
Iron (Total)	N	1450	µg/l	20	240
TPH >C5-C10	N	1670	µg/l	0.1	< 0.10
TPH >C10-C20	N	1670	µg/l	0.1	< 0.10
TPH >C20-C30	N	1670	µg/l	0.1	< 0.10
TPH >C30-C40	N	1670	µg/l	0.1	< 0.10
Total TPH >C5-C40	N	1670	µg/l	10	< 10
Naphthalene	U	1700	µg/l	0.1	0.44
Acenaphthylene	U	1700	µg/l	0.1	< 0.10
Acenaphthene	U	1700	µg/l	0.1	< 0.10
Fluorene	U	1700	µg/l	0.1	< 0.10
Phenanthrene	U	1700	µg/l	0.1	< 0.10
Anthracene	U	1700	µg/l	0.1	< 0.10
Fluoranthene	U	1700	µg/l	0.1	< 0.10
Pyrene	U	1700	µg/l	0.1	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.1	< 0.10
Chrysene	U	1700	µg/l	0.1	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.1	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.1	< 0.10

Results Summary - Water

Project: Forvd Harbour Rhyl

Client: Denbighshire County Council	Chemtest Job No.:		14-15683		
Quotation No.:	Chemtest Sample ID.:		76486		
Order No.:	Client Sample Ref.:		Water		
	Client Sample ID.:		Foryd Harbour		
	Sample Type:		WATER		
	Top Depth (m):				
	Bottom Depth(m):				
	Date Sampled:		28-Nov-14		
Determinand	Accred.	SOP	Units	LOD	
Benzo[a]pyrene	U	1700	µg/l	0.1	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.1	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.1	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.1	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2	< 2.0
Benzene	U	1760	µg/l	1	C < 1.0
Toluene	U	1760	µg/l	1	C < 1.0
Ethylbenzene	U	1760	µg/l	1	C < 1.0
m & p-Xylene	U	1760	µg/l	1	C < 1.0
o-Xylene	U	1760	µg/l	1	C < 1.0
Total Phenols	U	1920	mg/l	0.03	< 0.030

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request. The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Chemtest Sample ID:	Sample Ref:	Sample ID:	Sampled Date:	Containers Received:	Deviation Code(s):
76486	Water	Foryd Harbour	28-Nov-2014	Coloured Winchester 1000ml	C
76486	Water	Foryd Harbour	28-Nov-2014	Plastic Bottle 1000ml	C

Report Information

Key

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVCOs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at our Coventry laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container

Sample Retention and Disposal

All soil samples will be retained for a period of 60 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

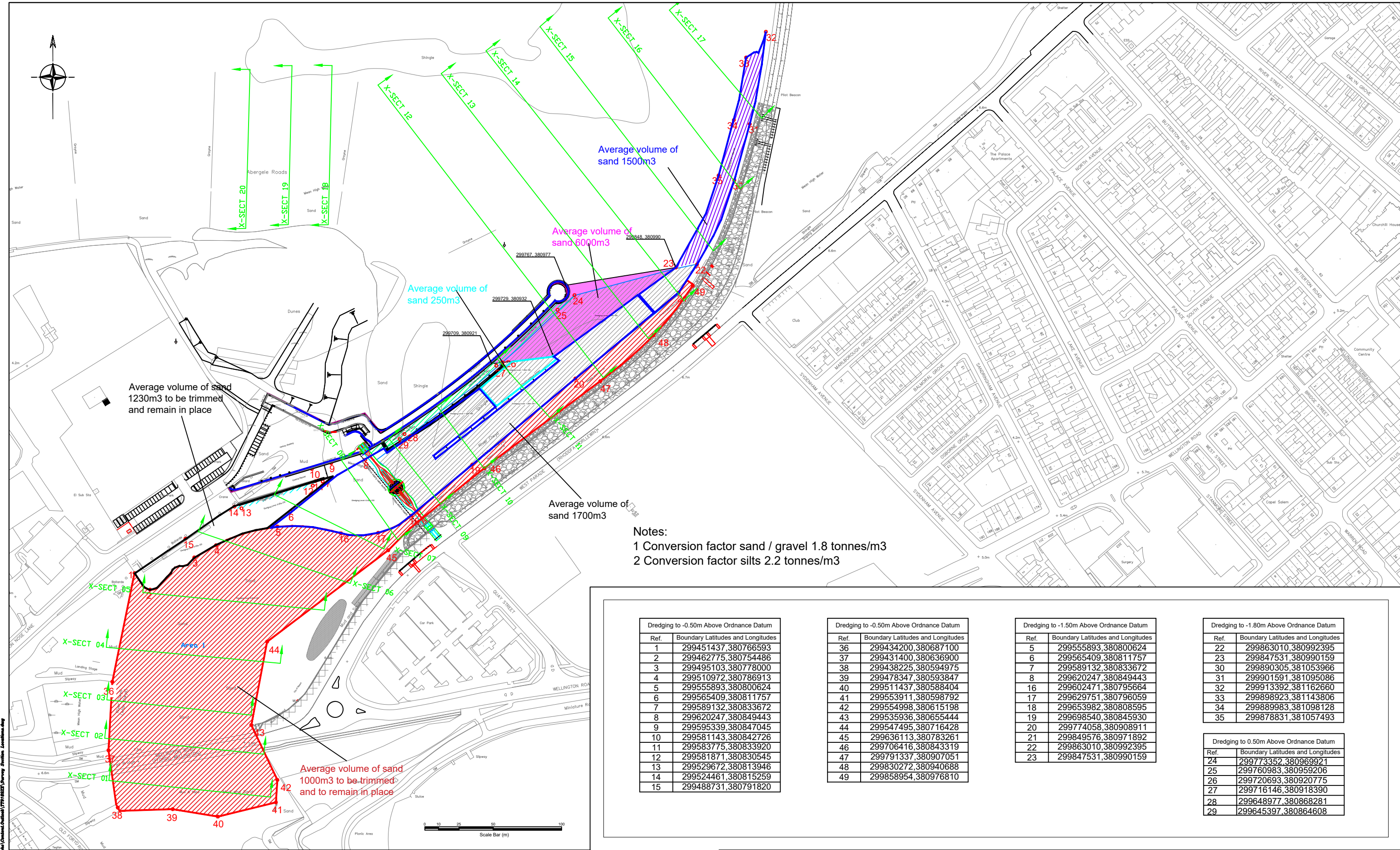
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Appendix F – Monitoring Results

Drawing number H4/14409/D/04E giving locations for monitoring cross sections (highlighted in green).

Example cross sections included detailing monitoring results from 2015 (monitoring for previous marine license).



Notes:
1 Conversion factor sand / gravel 1.8 tonnes/m3
2 Conversion factor silts 2.2 tonnes/m3

Dredging to -0.50m Above Ordnance Datum	
Ref.	Boundary Latitudes and Longitudes
1	299451437,380766593
2	299462775,380754486
3	299495103,380778000
4	299510972,380786913
5	299555893,380800624
6	299565409,380811757
7	299589132,380833672
8	299620247,380849443
9	299595339,380847045
10	299581143,380842726
11	299583775,380833920
12	299581871,380830545
13	299529672,380813946
14	299524461,380815259
15	299488731,380791820

Dredging to -0.50m Above Ordnance Datum	
Ref.	Boundary Latitudes and Longitudes
36	299434200,380687100
37	299431400,380636900
38	299438225,380594975
39	299478347,380593847
40	299511437,380588404
41	299553911,380598792
42	299554998,380615198
43	299535936,380655444
44	299547495,380716428
45	299636113,380783261
46	299706416,380843319
47	299791337,380907051
48	299830272,380940688
49	299858954,380976810

Dredging to -1.50m Above Ordnance Datum	
Ref.	Boundary Latitudes and Longitudes
5	299555893,380800624
6	299565409,380811757
7	299589132,380833672
8	299620247,380849443
16	299602471,380795664
17	299629751,380796059
18	299653982,380808595
19	299698540,380845930
20	299774058,380908911
21	299849576,380971892
22	299863010,380992395
23	299847531,380990159

Dredging to -1.80m Above Ordnance Datum	
Ref.	Boundary Latitudes and Longitudes
22	299863010,380992395
23	299847531,380990159
30	299890305,381053966
31	299901591,381095086
32	299913392,381162660
33	299898923,381143806
34	299889983,381098128
35	299878831,381057493

Dredging to 0.50m Above Ordnance Datum	
Ref.	Boundary Latitudes and Longitudes
24	299773352,380969921
25	299760983,380959206
26	299720693,380920775
27	299716146,380918390
28	299648977,380868281
29	299645397,380864608

CYNGOR BWRDEISTREF SIROL
COUNTY BOROUGH COUNCIL

CYNGOR
Sir Ddinbych
Denbighshire
COUNTY COUNCIL

Owasonaethau Effeithlon
mewn Partneriaeth
Efficient Services
in Partnership

Pennaeth Prifffyrdd ac Isadeiledd Conwy a Sir Ddinbych
Head of Highways & Infrastructure Conwy & Denbighshire

ADRAN PRIFFFYRDD AC ISADEILLEDD
DEPARTMENT OF HIGHWAYS AND INFRASTRUCTURE

JOB NUMBER
14409

DRAWING SCALES
1: 1250 @ A1

NATIONAL GRID REFERENCE
SH9980

DRAWN BY
SB

APPROVED BY
EP

AMENDMENTS

A	Original Drawing	07/12/11
B	Dredging Area added in colour pink	06/07/14
C	Extra Dredging Area added 36-49	06/07/14
D	Volume of material required to be dredged	01/12/14
E	Volumes amended	01/02/18

DRAWING STATUS
ISSUE

LAST EDIT DATE
01/02/18

SCHEME
FORYD HARBOUR PHASE 2
RHYL

DRAWING TITLE
ENVIRONMENTAL IMPACT ASSESSMENT

**EXTENT OF DREDGING
(FIGURE 2.10)**

DRAWING NUMBER
H4/14409/D/04E

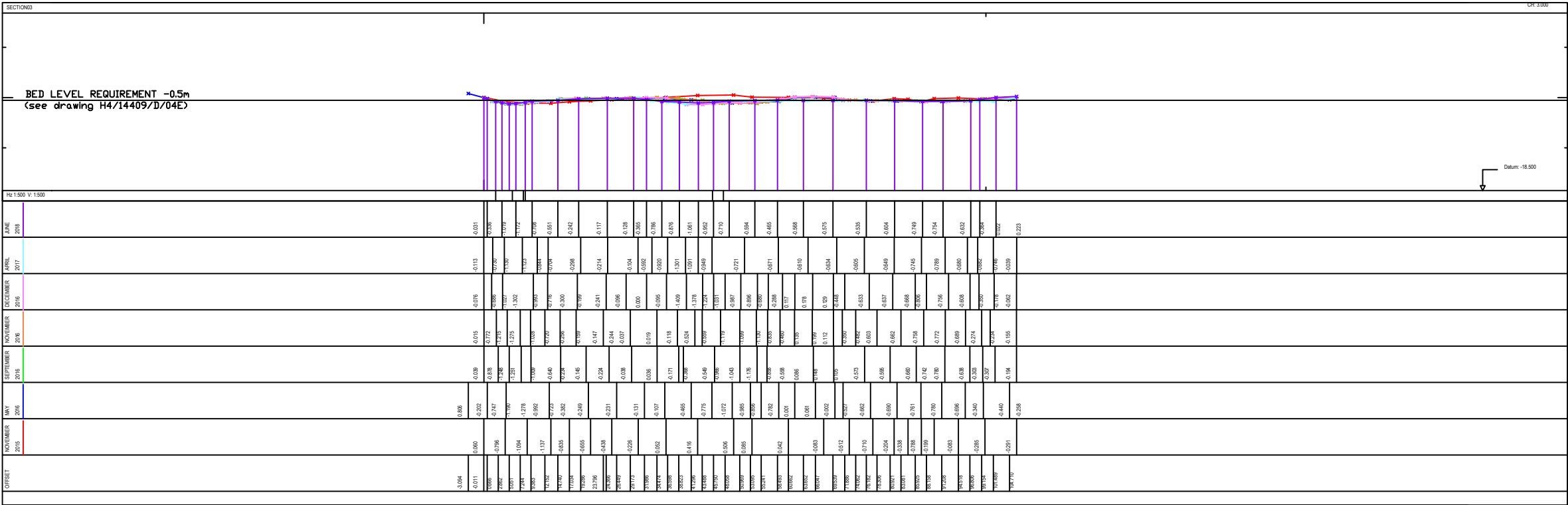
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Denbighshire County Council. 100023408. 2009

Allygrhyddir y map hon o ddeunydd yr Ordnance Survey gyda chaniatâd yr Ordnance Survey ar ran Rheolwr Llyfrfa Sirol Meirionnydd a Sir Ddinbych. Dim allygrhyddir heb ganiatâd yr hon rheolwr y Goron a gall hyn arwain at erlyniad neu achos sifft. Cyngor Sir Ddinbych. 100023408. 2009



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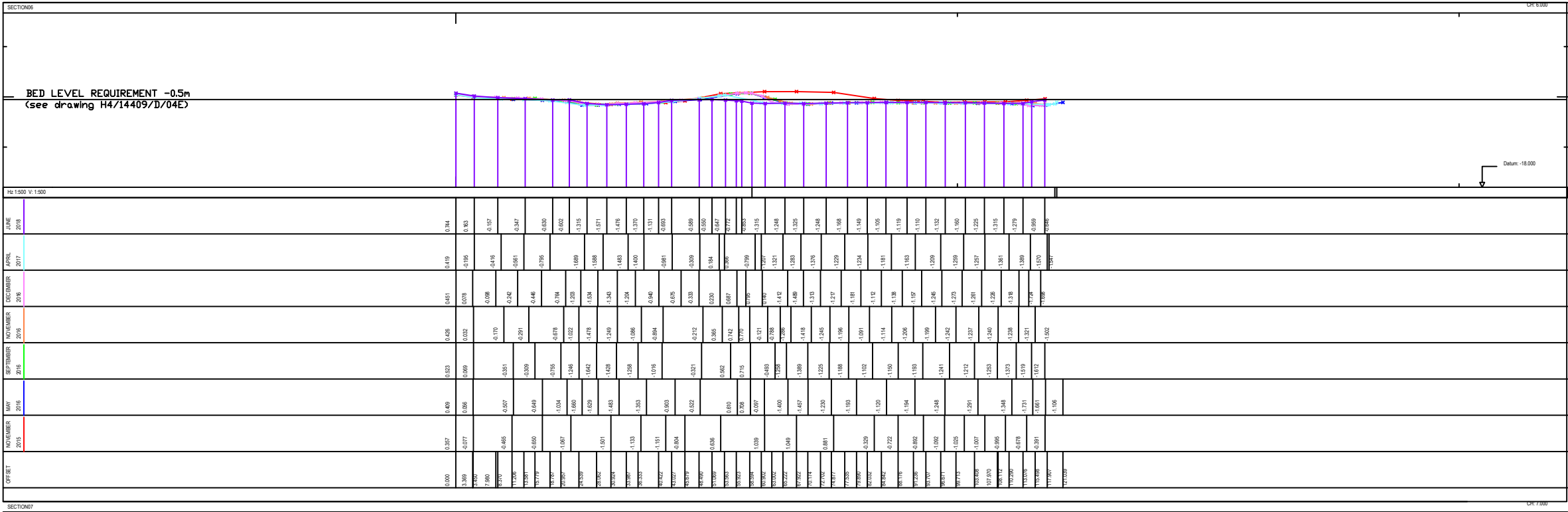
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RHIF GRID/NATIONAL GRID REFERENCE SH9980				FORYD HARBOUR MONITORING	
DYLUNIWDYD GAN/DRAWN BY SB				TRITL LLUNIAID/DRAWING TITLE	
CYMERADWYWD GAN/APPROVED BY EP		STATWS LLUNIAID/DRAWING STATUS Draft		CROSS SECTIONAL MONITORING LEVELS SECTION 3	
		DYDDIAD NEWID OLAF/LAST EDIT DATE 31/10/2018		RHIF LLUNIAID/DRAWING NUMBER	
				H4/14409/D/06	





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RHIF GRID/NATIONAL GRID REFERENCE SH9980					TRITL LLUNIAD/DRAWING TITLE CROSS SECTIONAL MONITORING LEVELS SECTION 6
DYLUNIWDYD GAN/DRAWN BY SB					
CYMERADWYD GAN/APPROVED BY EP					
		STATWS LLUNIAD/DRAWING STATUS Draft		DYDDIAD NEWID OLAF/LAST EDIT DATE 31/10/2018	RHIF LLUNIAD/DRAWING NUMBER H4/14409/D/06



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14409

GRADDFEYDD/DRAWING SCALES
NTS

RHIF GRID/NATIONAL GRID REFERENCE
SH9980

DYLUNIWDYD GAN/DRAWN BY
SB

CYMERADWYWDYD GAN/APPROVED BY
EP

NEWIDIAU/AMENDMENTS

A	Original Drawing	31/10/2018

STATWS LLUNIAD/DRAWING STATUS
Draft

DYDDIAD NEWID OLAF/LAST EDIT DATE
31/10/2018

CYNLLUN/SCHEME

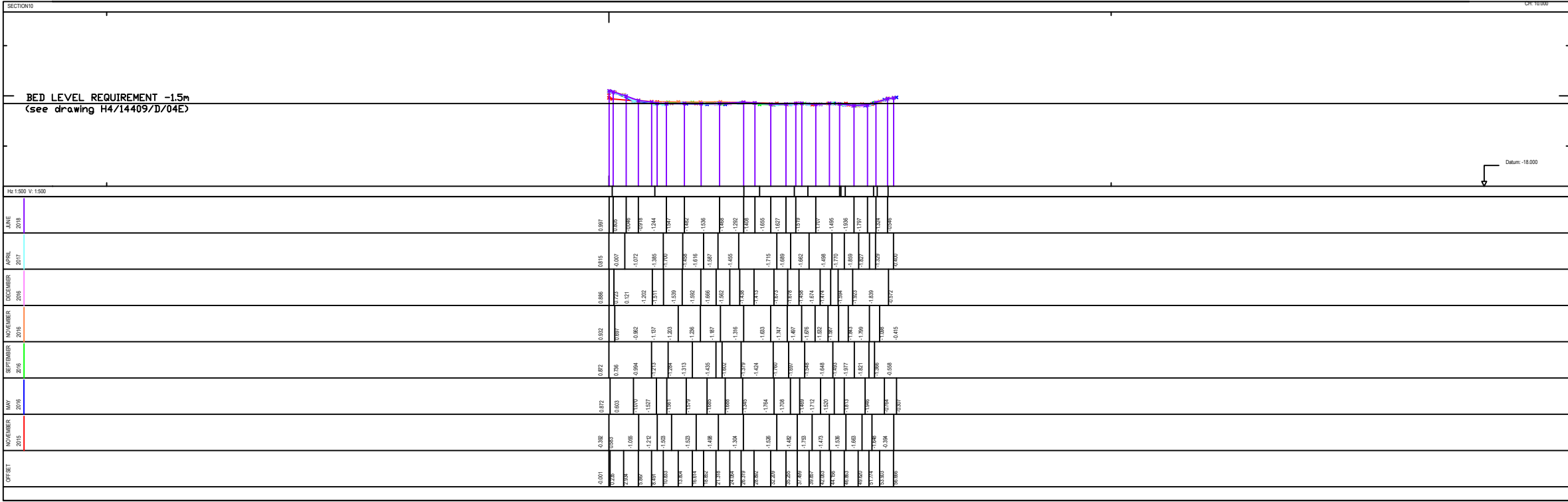
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TRITL LLUNIAD/DRAWING TITLE

CROSS SECTIONAL
MONITORING LEVELS
SECTION 10

RHIF LLUNIAD/DRAWING NUMBER

H4/14409/D/06





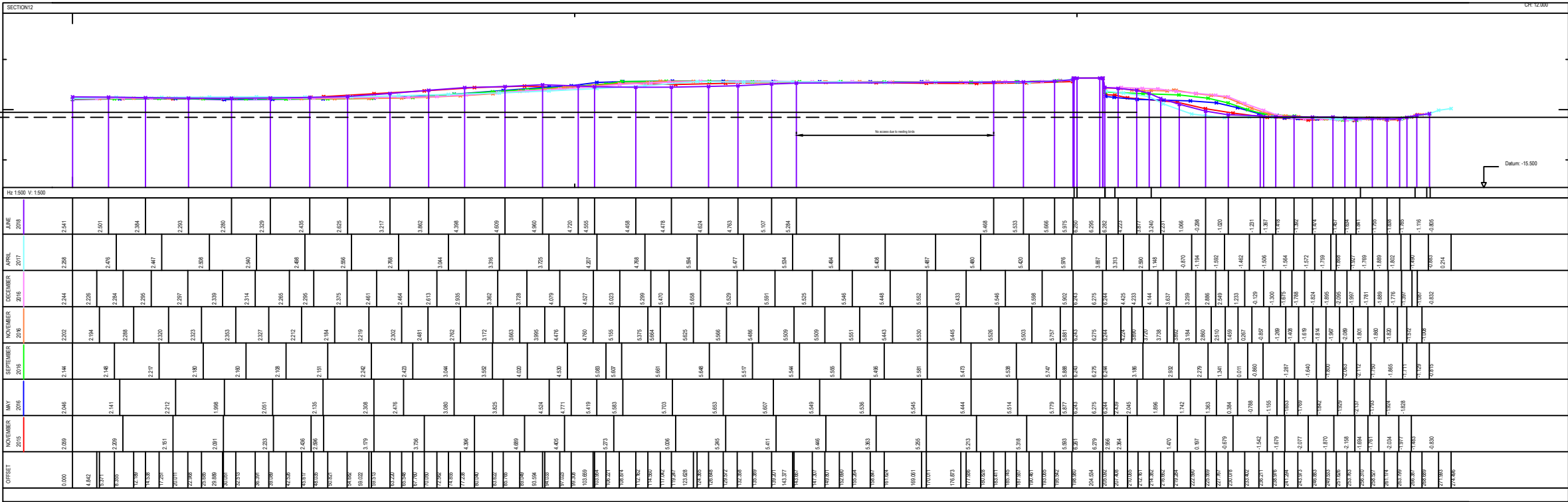
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RHIF GWAITH/JOB NUMBER	14409
GRADDFTYDD/DRAWING SCALES	NTS
RHIF GRID/NATIONAL GRID REFERENCE	SH9980
DYLUNIWDYD GAN/DRAWN BY	SB
CYMERADWYDYD GAN/APPROVED BY	EP

NEWIDIAU/AMENDMENTS	31/10/2018
A Original Drawing	
STATWS LLUNIAU/DRAWING STATUS	Draft
DYDDIAD NEWID OLAF/LAST EDIT DATE	31/10/2018

CYNLLUN/SCHEME	FORYD HARBOUR MONITORING
TEITL LLUNIAU/DRAWING TITLE	CROSS SECTIONAL MONITORING LEVELS SECTION 12
RHIF LLUNIAU/DRAWING NUMBER	H4/14409/D/06

BED LEVEL REQUIREMENT -0.5m
BED LEVEL REQUIREMENT -1.5m
(see drawing H4/14409/D/04E)



Appendix G – 2015 Marine Licence Application Correspondence

Ein cyf / Our ref: BUM1472

Dyddiad / Date: April 2015

Rhif union / Direct dial: 01824 706938



Response to queries for licence BUM1472

The below provides information from the email from 01/04/2015

- 1. Previous hydrodynamic and sediment regime assessments for the Foryd Harbour project concluded that the project would not have a significant impact on local sediment transport regimes within the harbour or along the coastal frontage. Therefore it is unclear why it is necessary to undertake additional maintenance dredging of the Harbour.**

The modelling that was undertaken for the original ES for the West Rhyl scheme and also the Foryd Harbour ES identified that there would most likely be a reduction in sediment deposition within the harbour entrance as a result of the dredging.

The maintenance dredging for the scheme was proposed to be covered in the Harbour Empowerment Order that DCC have applied for and therefore was not considered in the previous ES for the various phases of works.

The various areas that require dredging under this variation are:

Area 1 - Around the existing pontoons – this has an average volume of 1000m³. The reasoning for this removal is that sand is building up around the pontoons. The levels proposed for excavation are -0.5mAOD where required in order for the boats to rest level in the harbor at low tide (please see drawing H3/14409/D/05 attached).



Area 2 – Area under the footbridge and central pontoon – this has an average volume of 3,081m³. This area requires a level of -1.5mAOD to allow access to the main navigation channel and pontoon areas.



Area 3 – the turning circle – this has an average volume of sand to be removed of 6,000m³. This volume of material is required to be removed to allow access to the navigation channel and the fenders on the quay wall. Without this removal of sand the harbour is not fulfilling its requirements.



Area 4 – the navigation channel – this has an average volume of 250m³ to be removed. The removal of this sand is required for the navigation of the vessels using the harbour.



The material to be dredged is predominantly building up around the turning circle which accounts for approximately 6000m³ of material to be removed. The previous modelling indicated that the material was likely to build up in this area however not to the extent that has been observed recently. This is explained further In our response to question 2.

2. Have investigations been done into the potential causes and sources of increased siltation/accretion within the Harbour? If so, please provide evidence of this. If not, please provide justification as to why.

There has been no additional modelling undertaken on the scheme following the modelling that was done in 2011 for the Foryd Harbour work and 2010 for the West Rhyl Scheme. The previous modelling indicated that material was expected to build up against the turning circle however the current extent is greater than proposed. The modelling undertaken for the scheme identified that the flows from the River Clwyd was have a positive impact on reducing the sediment deposition occurring within the harbour. Over the last few months these river flows have not been experienced owing to the reduced rainfall. Without these higher river flows the material within the harbour is not being transported out of the harbour. Instead it is being deposited within the harbour.

This increase accretion of material is resulting in the siltation of the harbour and therefore the reduction in channel depth and mooring locations for the vessel users. This in turn is reducing the availability of vessel movement in the harbour affecting the local economy.

At this stage of the project it is considered that additional modelling will not identify the conditions currently being experienced. This is owing to these conditions of reduced rainfall and therefore flow speeds as being an unforeseeable localised event which could not be observed in the models.

3. Is it necessary to undertake a design alteration to the completed harbour works to remediate the increase accretion rates within the harbour?

The current design of the harbour will remain. At present there are no identified changes that could be implemented to reduce the accretion rates. Ongoing monitoring and where required excavation will be undertaken on the current scheme and if required a re-design could be considered. However this is dependent on available funding and grants.

4. The proposed dredge area extends upstream of Wellington Road Bridge, however it is unclear how the dredging operation will alter the channel profiles.

Please provide existing and proposed crossing sections to show how the dredging operation will affect the bed profiles within the dredged area.

Please see attached cross sections of the existing and proposed levels. The levels in this vicinity will be to -0.5m AOD. The volume of material will be up to 1000m³ in this area to level out the bed in the location of the mooring buoys. (Please see H3/14409/D/05 attached)

5. The dredging operation will be in close proximity to the Clwyd Flood Embankments at Marine Lake. There is concern that the operation could destabilise the critical flood embankments and hence result in deterioration of the flood defence leading to increased flood risk.

- **How will this be addressed during the operation?**
- **Could the proposed dredging operations mobilise additional materials from the upstream Clwyd / Elwy catchments and increase erosion upstream of the**

harbour? This could threaten and/or destabilise the Clwyd Flood embankments upstream of the harbour.

Dredging was carried out in the harbor under X, an emergency licence to dredge in 2013.

Where the embankment slope is to be excavated it will be undertaken to a 1 in 3 slope from the edge of the boundary, where required, with land based plant. Owing to the locations and slopes of the dredging this is not proposed to have an impact on the stability of the Marine Lake site or the Clwyd Flood Embankments also due to the fact we are taking only 1000m³ from the inner harbor area.

The additional removal of material is not proposed to have any impact on the additional materials upstream of the harbour.

6. In addition to the queries outlined above please can you also confirm the following in relation to this application:

This dredging activity is a standalone project and not part of the projects licenced under Marine Licence CRML1436 or 11/78/ML (now expired).

The dredging activity is a standalone project and will not be combined with the CRML 1436. The material will be used as part of construction material for schemes above MHWS or as beach replenishment. Where it is to be used for beach replenishment the appropriate licences will be obtained prior to use.

- **Will all the dredged material be removed? i.e. not re-distributed or used for beach replenishment.**

Please see response above.

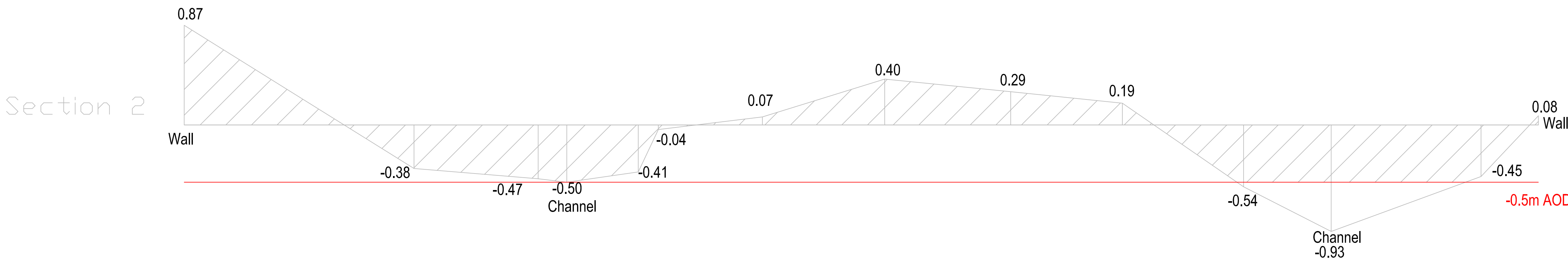
- **What will be done with the dredged material?**

Please see response above.

Cyngor Sir Ddinbych, Caledfryn,
Ffordd Smithfield, Ddinbych,
Sir Ddinbych LL16 3RJ
Ffôn: 01824 706938
Ffacs: 01824 706970

E-bost: claire.wyn-jones@sirddinbych.gov.uk
Gwefan: www.sirddinbych.gov.uk

DCC Council Offices, Caledfryn,
Smithfield Road, Denbigh,
Denbighshire LL16 3RJ
Phone: 01824 706938
Fax: 01824 706970
e-mail: claire.wyn-jones@denbighshire.gov.uk
Website: www.denbighshire.gov.uk



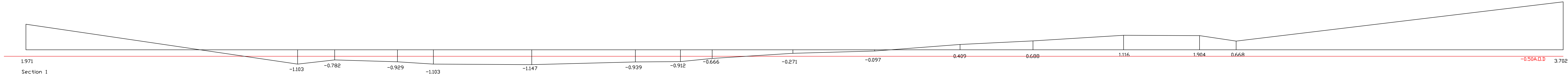
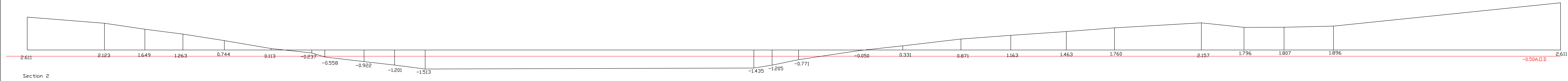
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RHIF CWAITH/JOB NUMBER 14409	NEWIDIADU/AMENDMENTS		CYNLLAUN/SCHEME
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GRADDFYDD/DRAWING SCALES NTS			TITL LUNIAID/DRAWING TITLE BLUE BRIDGE UPSTREAM SECTIONS
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CYMRADWYBYD CAN/APPROVED BY EP			
STATWS LLUNIAID/DRAWING STATUS INFORMATION			DYDDIAD NEWI OLAF/LAST EDIT DATE
			RHIF LUNIAID/DRAWING NUMBER H3/14409/D/06